have seen here, of course I write to my chief, as my letters show. I appreciated the danger here. Take my letters as an example regarding Ralph's colliery as to the way in which I carry out my duties. I have no direct power, therefore I act through my chief.

220. Do you initiate a report as to the incompetence of a Mining Inspector, or do you wait for an instruction from the Under-Secretary ?—Do you mean do I find fault with my colleagues ?

221. Do you initiate such reports, or do you wait for a request from the Under-Secretary ?—I report the actual facts as I find them, leaving my chief to condemn or otherwise.

222. When you say that you have to report as to the competency or ability—— ?—I did not say that I reported upon the competency.

223. You do not report upon the competency or ability of an Inspector of Mines ?—I am not requested to do so.

224. You do not do it ?—Naturally, I do not do what I am not requested to do, excepting when I see a serious defect. As regards my colleagues I do not report them and condemn their actions. I report upon the facts of the case, and my chief does the condemning, if any, not me.

225. You would report the facts upon which an accusation might be founded ?—My chief can form his own conclusions.

226. You do report the fact ?—To the best of my knowledge, always, sir.

227. In order that you may be in a position to report the fact, do you place yourself in a position of ascertaining the facts ?—I always get enough facts to satisfy me in my own mind perfectly that I am right and my judgment is sound to base my report on.

228. And you are editor of the report to Parliament ?—The whole of the reports of the Inspectors of Mines are sent to me, and for the last eight years I have edited them for the information of Parliament, and I have never received complaints as to what appeared in those reports. I do not write the Inspector's reports—I am not responsible for the words contained therein. I simply put their report in as appendices. I can delete nothing that appears above the writer's signature. I do not bind myself to agree with any opinions in such reports; but, of course, my own report I am entirely responsible for.

229. You are the reporter to Parliament on the condition of the coal-mines of New Zealand ?—I address the Under-Secretary, who hands the report to Parliament.

230. Do you know where it is going ?—Yes.

231. We may call it the parliamentary report ?—It is the official report of the Department for the year.

232. Your official report ?—Yes.

233. Representing the Mines Department ?—Representing the Inspection Branch of the Department.

234. Then have you always qualified yourself to be able to state the facts correctly to Parliament ?—To the best of my belief, yes. I go through the whole of New Zealand, and every little and big mine in the Dominion receives my attention, more or less. I do not claim that I can devote much attention to any individual mine, but considering the great area that I have to deal with, I think my reports are reliable, to the best of my knowledge, and always have been so. I have never received complaints on the subject.

235. Do you think your reports are a sufficient guide for Parliament ?—Parliament has never asked for any more.

236. Do you consider that your report, together with those of the Inspectors of Mines as appendices, constitute a sufficient guide for Parliament ?—A guide on what question ?

237. On the question of privately owned coal-mines ?—My reports are proof of that.

238. Are the reports sufficient to enable Parliament to make the necessary provisions by regulation ?—They are considered to be.

239. Do you consider them to be—I want to know ?—Well, Parliament has raised my salary, so that my reports must be considered adequate.

240. Parliament has raised your salary ?—Yes. It is at present £600 per annum and travelling-expenses 15s. a day for the one appointment—that of Inspecting Engineer.

241. I want to seek to ascertain whether your services are worth that, or worthless to the country ?—That is an insult, sir.

242. You say that in your judgment your reports are a sufficient guide; have you reported to Parliament at any time as to the state of the Taupiri mines ?—I only discovered their state this year. I have not reported to Parliament for this year yet. It was Christmas or the beginning of the New Year when I first became aware of those explosions. You may rest assured when I write my next report I will deal very fully with the matter.

243. How long have you occupied your present position ?—About eight years.

244. Then, for seven years it was possible for you to occupy your present position and to keep the country in the dark as to the conditions of the Taupiri Mine ?—The condition of the Taupiri mines was obtained by accident, not by report from the company, which suppressed the facts.

245. Then you really discovered the true facts about the Taupiri Mine by accident ?—Yes, by accident I discovered them; by good fortune, I may say.

246. Then if you had not had that good fortune you might have gone on for another ten years without discovering the condition of these mines ?—Apparently, dealing with such people for suppressing facts.

247. Then you consider that the people connected with this company have a special aptitude for suppressing facts from the Inspector of Mines ?—In this case they have been most successful—in the case of these previous explosions.

248. Do you consider that a system of inspection which can be rendered nugatory by the deceiving of officials over a long period of years is a satisfactory one ?—I say that it is the unsatisfactory system of management which is to blame.

249. But I was speaking of the system of inspection ?—The Inspector, in my opinion, has done his duty to the best of his ability. If he has been imposed upon by deceitful people I cannot help that. Fortunately, however, for us in New Zealand we have not many such people.

250. May I take it that these people—these deceitful owners of mines—have deceived the Inspecting Engineer as to the true condition of the mine ?—You can deceive any man once, but not twice.

251. Then it is possible, if a sufficient amount of deceit is used, to deceive and keep in the dark the Inspecting Engineer of Mines in New Zealand ?—Of course.

252. And, as a matter of fact, for seven years the Inspecting Engineer of Mines in New Zealand did not know the condition of the Taupiri mines, and was successfully deceived ?—You deceived all New Zealand; you deceived the public.

253. But you were deceived ?—Absolutely. I was uninformed of the state of affairs here until I found it out by accident.

254. May I put it this way: that unless you are informed of the condition of the mine by the owners, under existing circumstances you are quite unable to know what the condition of the mine is ?—No, you are utterly wrong; there are two ways for me to be acquainted with the condition of the mine. First, by the Inspector of Mines: he may tell my chief the condition of the mine—he does not consult with me; he does not address me officially, but addresses my chief, who sends me the Inspector's monthly reports for my remarks.

255. I asked you if you are not informed by the mine-owners of the condition of the mine, have you any method of finding out other than those you have enumerated—that is, from the reports of the Inspector of Mines to the Under-Secretary ?—Supposing I am ordered by my chief to make a special inspection of a mine, I do so and then form my own opinions. But if such conditions as explosions occur from time to time, as at Ralph's Colliery, there is not much necessity to search for further information as to the dangerous condition of the mine.

256. Then you dot not inspect a mine unless specially instructed to do so by the Under-Secretary ?—As far as coal-mines are concerned, that is generally so. Unless I am asked by the Inspector of Mines to accompany him, or by the Under-Secretary, I would not encroach upon the duties of my colleague the District Inspector.

257. Then, is the value of your report only that of the report of one who has heard the facts from the Inspectors or the Under-Secretary ?—My annual report is a summary, touching upon the main features for the year.

258. A summary of what ?—What I think the public and Parliament would like to know.

259. As to what ?—As to the condition and the prosperity of the industry. My report is an editorial on the salient features for the most part contained in the reports of the Inspectors of Mines. I refer generally to the prosperity of the industry, safety precautions, &c. I do not go into minor details. The Inspector in his report deals with what he has found.

260. Then your report is not based upon personal investigation and inspection ?—Not always.

261. It is never so based unless you are specially instructed to report ?—Unless with regard to gold-mines.

262. We are dealing with this explosion—in regard to coal-mines, I mean ?—I say, then, my report is cursory—the details are supplied by the Inspector of Mines, who is the responsible statutory officer.

263. You are not a responsible officer ?—Not a responsible officer as a District Inspector.

264. Are you in any sense a responsible officer ?—I am responsible for the duties which my chief asks me to carry out.

265. Only those ?—I am responsible in other matters—as a member of the Board of Examiners.

266. I am referring to the inspection of coal-mines ?—I am not a responsible officer in regard to the inspection of coal-mines.

267. You concur with the description given by Mr. Bennie as to your duties ?—Absolutely.

268. Had you any reason to suspect Mr. Bennie of not satisfactorily performing his duties ?—Well, now, I have written Mr. Bennie private letters.

269. I do not want that. Give a public answer to my public question ?—In this matter of these explosions Mr. Bennie and myself looked at things from a different aspect.

270. That is quite permissible, but it is no answer ?—You want me to condemn him, and I will not do so.

271. I know you cannot condemn him ?—I am not going to condemn him because he disagrees with me. I cannot justly condemn him because he holds a different opinion from me.

272. You are a responsible officer appointed to travel round the mines and furnish a report, for which the Government pays you a considerable salary, and I am seeking to ascertain the value of the return they get for it ?—You are confining me to the coal-mines—one portion only of my duties.

273. I did not say you were getting £600 a year for the inspection of the coal-mines alone. I say it is a ridiculously inadequate sum if the duties are performed ?—They are performed.

274. Had you any reason to suspect that Mr. Bennie was not performing his duties as Inspector of Mines satisfactorily ?—I cannot give you a Yes-No answer. I will tell you what happened between Mr. Bennie and myself. I will give you, perhaps, a little more than you wish. The letters are very explanatory.

275. We have Mr. Bennie's letters ?—I want to refer to a point only.

276. We do not want to go over Mr. Bennie's letters again ?—Will you kindly produce the letter in which Inspector Bennie does not recommend safety-lamps being used in this mine. [Letter produced, dated the 7th August, 1914.] He says: "I cannot recommend that safety-lamps only be used in these mines for two reasons—(1.) Very little gas is found in the miners' working-places; it has practically always been found in falls of the roof of the old workings, and two officials are specially appointed to examine the old workings; during the week daily inspections are made, and a full round of the work

is made during the week. (2.) The working-places are 10 ft. to 18 ft. high. The light from a safety-lamp is very poor." That is where I do not agree with Mr. Bennie.

277. That is a difference of opinion ?—Of course.

278. But that does not show incompetence ?—I am not here to express my opinion of the competency of my colleague.

279. I wish to ask you, do you say you decline to state whether you formed any opinion as to the competency of the Inspector of Mines ?—I formed a different opinion to his on this question of safety-lamps. I am not going to call him an incompetent man because he disagrees with me.

280. That is a difference of opinion ?—You have answered the question.

281. I suggest that that is merely a difference of opinion, and is not an indication of incompetency ?—I am not going to say.

282. Is it an indication ?—I am not going to condemn my colleague for incompetence.

283. You have told us that one of your duties is to report as to the way in which the Inspectors of Mines are performing their duties ?—I draw the Under-Secretary's attention, in the hope that he will address them and ask them to rectify defects which I may consider to exist.

284. Did you ever see prior to your visit to Huntly any defects in the administration of Mr. Bennie ?—I was requested by the Minister of Mines, Mr. R. McKenzie, to inspect Ralph's Mine when Mr. Wright was manager. I then saw defects, which were rectified promptly by Mr. Wright.

285. During Mr. Bennie's tenure of office as Inspector of Mines you did discover some small matters of neglect in the mine, and these were rectified by Mr. Wright ?—Yes, promptly rectified.

286. What were they ?—The ladders in the shaft had no protection, and a man getting nervous might fall off. I asked for a frame to be put round them. Another defect was the absence of direction-pointers in the mine towards exits in case of accident. The lights might all have become extinguished, and I had notices put up pointing the way out to the travelling-road. Another defect was to do with the telephone. I asked the manager to have the telephone carried farther in towards Taupiri West, in case of inundation by water. I insisted that a connection should be made between the three shafts. The company wished to delay it, but I insisted upon it being done. These matters were then promptly put right

287. *The Chairman.*] What connection has that with the Inspector ?—It has nothing at all to do with the Inspector, but these are defects which I myself found out and had rectified, after being specially requested by the Minister to inspect the mine.

288. *Mr. Napier.*] These matters had nothing to do with the Inspector ?—Mr. Bennie was then Inspector, but he apparently had not noticed those items. I observed these defects and had them rectified. I do not remember if I told the Inspector.

289. These things were not defects in Mr. Bennie's administration ?—They were within his administration. He had not perhaps observed them, or perhaps he did not think they were as important as I did.

290. You think he had not observed them ? Did you report that fact to the Under-Secretary ?—Yes, naturally I would report it; but I have not a copy of my report here.

291. You believe you did report to the Under-Secretary that defect in the administration of Mr. Bennie. You are not so simple as you seem. I am not referring to defects in the mine, but to defects in the administration of the Inspector of Mines. You have now given us a detailed account of certain defects in the mine. You said you did not consider him much to blame for those ?—I did not.

292. Did you report that as a black mark against him ?—I think he had just overlooked those minor matters.

293. Did you report it as a circumstance against his reputation ?—No.

294. Therefore, may I take it that during the whole time of his term of office you have not reported any facts against him which would indicate that he was incompetent or unreliable ?—Not a word. He has different opinions from me. It is for our chief to determine which is right.

295. Prior to your visit to Huntly on this occasion when did you last inspect Ralph's Mine ?—A little time ago, but I have not been down Ralph's Mine since the Royal Commission on Mines was here. I have never been asked to inspect, and I have had no occasion to.

296. Would you go at all if you were not asked ?—It depends upon circumstances. If there was something I was uninformed about I would possibly go, but there are a hundred and sixty collieries in New Zealand, besides many gold-mining claims and dredges, so that it is impossible for me to attempt a regular examination of over three hundred New Zealand mines.

297. One of my objects is to endeavour to ascertain whether one Inspecting Engineer is sufficient—whether the present control is adequate to give the public the necessary assurance that everything is right ?—Under the new Bill the Inspecting Engineer is to be Chief Inspector of Coal-mines.

298. Is it not a fact that you are at present an Inspector without a district ?—I was gazetted for no district.

299. That means for all districts ?—Not according to section 23 of the Act.

300. What were you gazetted for ?—I had no authority to enter a coal-mine for any purpose. The manager could refuse me the right of entry, and my right of entry was questioned at Kaitangata. I received that appointment in consequence, at my own request.

301. But you appreciate the significance of my question. Are you not an Inspector of Mines without any special district being assigned to you ?—That is so.

302. Therefore, can you not lawfully enter any mine ?—Yes.

303. And for three years you left Ralph's Mine unvisited by yourself ?—Yes; I only became aware of the danger nine months ago, but the evidence I obtained was tremendously strong, and there was no need for me to make an inspection to ascertain the danger. The Inspector was here eight times this year. I would not encroach upon his duties. It would have been repugnant to me.

304. You in no sense act as a supervisor of the work of the Inspectors of Mines ?—Not officially, no. I have no instruction to act as a supervisor. I have no orders to control these gentlemen, nor even to consult with them.

305. Have you any power of supervising the work of the Inspectors of Mines ?—I have no official power.

306. And have you any private power ?—We all should have the personal equation.

307. Do you exercise the personal equation by going down a mine ?—I do not interfere with the Inspector in performing his statutory duties.

308. Have you any power, official or private, to supervise the work of the Inspectors of Mines ?—No, I have not. I may take it upon myself to investigate and form an opinion.

309. But that is valueless to the public because you do not report it ?—I report it when desirable to my chief.

310. You form your opinions as to their ability ?—I keep my opinion to myself.

311. Do you report it to the Under-Secretary ?—Do you think I would write sneakingly ?

312. That is not an official opinion ?—Absolutely not.

313. Then, so far as the supervision by you of the work of the Inspectors of Mines is concerned, your services are of no value to the public ?—The supervision—that is rather vague. If I am requested to report upon a matter I do so. If I find a defect I report it if it is something I consider worthy of reporting. That is my duty.

314. I want to know whether, so far as your official duties are concerned, any value is obtained in the way of supervising the work of inspection ?—I have no authority to supervise the Inspectors of Mines, but I think the Inspecting Engineer may when the new Bill is passed into law.

315. Therefore, it is correct to say that the work of the Inspectors of Mines have not been supervised ?—I say that they are under the direction and control of the Under-Secretary for Mines.

316. Except by the Under-Secretary ?—He may consult me, and I give him my assistance.

317. I want to know what is the nature of the supervision of the work of the Inspectors ?—They are controlled by nobody but the Under-Secretary for Mines.

318. Does the Under-Secretary visit the Mines ?—No, not often.

319. Is the Under-Secretary a technical mining engineer ?—No.

320. He is the civil administrator of the Department ?—Yes; the permanent head.

321. How often have you been asked to report to the Under-Secretary during the last three years as to the condition of the Taupiri Mine ?—I have not been asked once during the last three years, but I have written voluntarily eight letters since I knew of the previous explosions. I have also reported the company for escaping, in my opinion, the payment of royalty.

322. Then you are also a debt-collector ?—I was asked by the Government to find out the companies which were evading payment of royalty on coal, and I believed that the Taupiri Company had been working Crown land without payment of royalty. They were, in my opinion, behindhand in certain payments. I was asked to make that investigation, and I did.

323. Do you suggest that they were defrauding the Crown ?—Not defrauding the Crown, but they were a bit backward in their payments.

324. You had to hurry on the payment of the accounts ?—I was asked to look into the matter, and did so.

325. Did you tell the Commission that among your other duties was to advise the Under-Secretary in regard to problems on mining matters ?—General problems—from water-races to applications for subsidies and grants. I am also on the Board of Examiners and several other Boards for the examination of mine officials, engine-drivers, schools of mines, &c.

326. They are not problems ?—Sometimes they are problems to me.

327. May we take it that the security of human life is certainly the most important problem ?—Yes.

328. You have to deal with that problem so far as the New Zealand Mines Department is concerned ?—Absolutely no. I volunteered this information about this mine gratuitously. I discovered it accidentally.

329. Your information was given thoroughly voluntarily ?—Yes.

330. What do you mean by gratuitously ?—My chief did not ask me to write those letters regarding the danger at Ralph's Mine. I did it without his request.

331. Did you consider it was part of your duty ?—I did.

332. Then you were performing your official duties ?—Well, being an official of the Department, when I received this information I communicated with my chief on the subject.

333. Did you consider it was the right and proper thing to do ?—I would not have done it unless I had.

334. May we consider this, then, that so far as the safety of human life is concerned, you would always consider it your duty to look after it ?—Yes, I have done so. If I see the danger I will go out of my way to draw my chief's attention to it.

335. If you have not inspected this mine for three years, and not often during the previous four years, you knew nothing about it ?—I have been down when they were driving the crosscut to Taupiri West shaft.

336. Prior to three years ago ?—Yes. The Inspector of Mines prosecuted the company for insecure pillars, as the company would not do as the Inspector asked. The company broke the law, and got off by the skin of its teeth, I think.

337. The case was dismissed ?—Yes; but the company rectified matters afterwards by connecting up with the Taupiri West shaft. I came up and saw that it did so.

338. The Taupiri Coal-mines (Limited) tried to get out of something which you considered it right and proper to do ?—Yes, because Mr. Roderick McKenzie, then Minister of Mines, asked me to act in the matter.

339. Then, the value of your services to the State in connection with coal-mines is only the value represented by your reports which you are instructed to make ?—As regards certain points in connection with State coal-mines my duties are official. My duties are carried out in the office as well as at the mines.

340. Your duties, so far as the stability and safety of coal-mines are concerned ?—I have told you that half a dozen times.

341. Is the value of your services only what is represented by your visits or actions when visiting the mine ?—No, I believe my services have saved a great deal of trouble and money.

342. You said to the Commission that you were here to tell the truth, and that up to that time that had not been done by some others ?—I added "to a great extent, in my opinion." I said I intended to tell the whole truth, which up to my giving evidence had not been told to a great extent, in my opinion.

343. Do you mean by the truth, that which differs from your opinion ?—No; "the truth, the whole truth, and nothing but the truth."

344. Do you mean merely that which differs from your opinion ?—I mean on questions of fact.

345. Now, when you say "to a great extent," can you further explain that term by telling us whether each witness to a great extent concealed the truth, or whether a number of witnesses stated what was false, and a number stated what was true ?—I shall not specify, even if you ask me. In my opinion, there was some concealment of the truth. If you ask me further, I shall not answer you.

346. You tell us that the truth has been concealed to a great extent: do you mean as far as a large number of persons are concerned, or that all the persons have not spoken the truth ?—I did not say all the persons.

347. You mean that a number of the witnesses have spoken the truth ?—Some witnesses have told the truth.

348. Entirely ?—I believe they have—some of them.

349. Others have stated what is false ?—In my opinion, untrue as to facts.

350. Taking the mining experts, do you class them in the category of truth-tellers or in the other ?—Mining experts are both good and bad.

351. But the mining experts who have given evidence in this case ?—I shall not specify. I decline to name whom I mean. I am not going to pick them out.

352. Some of those who have given expert evidence, you believe, have sworn falsely ?—They have not told the whole truth.

353. They have suppressed the truth ?—Well, yes, they have suppressed the whole truth, in my mind. I feel sure that certain gentlemen here have not told the whole truth in their evidence, but I shall not mention their names.

354. *The Chairman.*] Deliberately, do you mean ?—I say they have not given the whole circumstances as known to them.

355. Such as they thought would be of use to this Commission ?—They could have given more information to this Commission than they have done. Perhaps they have not wilfully suppressed it, but the whole truth has not come out in connection with this inquiry.

356. *Mr. Napier.*] You mean "suppressed," and you adhere to "suppressed" ?—Yes, I do adhere to it. I think they could have been more candid in giving the whole truth. I made my first remark in haste; I will withdraw. I will say that some witnesses, in my opinion, have not helped the Commission to the full extent of their knowledge and ability.

357. When you are nettled do you speak in haste ?—It is not often that I have been connected with a case such as this.

358. You have had to do with a great many Royal Commissions and inquiries ?—Yes, several.

359. You are not a novice ?—No, possibly.

360. Until Mr. Fletcher's report to Mr. Bennie on the explosions which caused the injuries to Kelly and others, you knew nothing about the explosions in these mines ?—I knew nothing till last Christmas.

361. As far as explosions are concerned, the public have no guarantee that the Mines Department is well informed ?—In this case because the fact was suppressed. I think, generally, we know. I think this is a unique case of suppression. I have never known another company suppress facts regarding explosions as this one has done.

362. You have told us that until lately you did not know that any gas was generated in the Taupiri Mine ?—I did not think it was in dangerous quantities here before I was told.

363. Did not you tell us how surprised you were when the men told you about the explosions ?—No; I was surprised because of gas being present in dangerous quantities. Every mine gives off gas in small quantities.

364. It is impossible to get a coal-mine without a trace of gas ?—Yes, without a trace.

365. The gas is in the coal ?—Yes.

366. Then, when you said to the men at the Exhibition, "You have no gas up there," you meant in dangerous quantities ?—In perceptible quantities.

367. That is to say, in quantities of more than 1¼ per cent. ?—Just so.

368. Then, the Mines Department and the Inspecting Engineer of Mines were for seven years in entire ignorance of the fact that gas in perceptible quantities was generated in the Taupiri mines ?—That is true.

369. Do you consider that a system which permits that is adequate ?—I do not think it is adequate. I think there might be more Inspectors in a country like this.

370. But, Mr. Reed, the gas when found is always reported in the deputies' books ?—Is it.

371. You have seen the books: do you deny that it is ?—I do not always see the books.

372. Therefore you cannot say ?—I cannot say.

373. Do you consider a system of inspection is adequate which does not provide that the Inspecting Engineer shall see the deputies' books containing their daily report ?—Do you mean me to see every deputy's book in New Zealand.

374. I mean a system which permits you to see those books ?—I have never heard of such a thing—that the Inspecting Engineer should examine the whole of the books of the deputies in the country. You would want half a dozen Chief Inspectors of Mines or Inspecting Engineers to do all you suggest.

375. Do you consider it to be the duty of Inspectors of Mines to report to the Under-Secretary when gas is discovered ?—Yes, I do; and I consider that they should report every case where firedamp is found in a mine.

376. If it be true that for more than seven years—indeed, for nearly twenty years—these books of the deputies show that gas was found, and that those facts were not reported to the Under-Secretary, would you consider it negligence on the part of the Inspector of Mines ?—No; the Inspector of Mines is not to duplicate the work of every official in the mine. You have already heard that it took two of your Inspectors a week to go round your old workings.

377. I refer to the books ?—You said to check those books.

378. I say to report when gas is mentioned in those books ?—I say the Inspector should report when gas is found.

379. Do you say that that has never been done ?—No; I have seen it myself in Inspector Bennie's reports since Christmas.

380. Concerning the Taupiri mines ?—Yes.

381. Then, the Mines Department was aware that there was gas in the Taupiri Mine ?—Since Christmas, to my knowledge.

382. Then, Mr. Bennie only since Christmas became aware of those explosions and that gas was present ?—Mr. Bennie became aware of them shortly after I did.

383. If he says that he was aware that gas was discovered in the mines before that, but not in dangerous quantities, would you believe him ?—I would.

384. Do you think he ought to have reported it ?—I do.

385. And do you say that he only reported the presence of gas since last Christmas ?—To the best of my recollection. I do not remember him having reported it before.

386. You, as Inspecting Engineer, believed up till last Christmas that there was no appreciable quantity of gas in these mines ?—That is true.

387. And that belief was not well-founded ?—You must not say it was not well-founded, because I had been deceived by the company.

388. The facts would not justify it ?—For you deceived the Government by not reporting the explosions before you were compelled to do so.

389. The facts did not justify your belief ?—What facts did not justify my belief ?

390. The facts in regard to the mine as to gas ?—I really cannot see what you are getting at.

391. Did the actual condition prior to last Christmas of the Taupiri mines, regarding gas, justify the belief you held as to the gas in Ralph's Mine ?—The actual condition was bad prior to Christmas. I did not know the amount of gas in the mine until I was informed of the explosions about Christmas.

392. *The Chairman.*] Did the amount of gas turn out as you thought ?—My opinion as to the quantity of gas has been proved to be right by my subsequently measuring it.

393. *Mr. Napier.*] You have said that prior to Christmas last the condition of the mine was bad ?—The actual condition was bad.

394. Was that ever reported to the Under-Secretary ?—No, not until after I found out about the explosions.

395. Do you say that the slight explosions which caused those minor accidents to Kelly and others were the circumstances which justified you in believing that the condition of the mine was bad ?—That together with other things, and the conditions as I have recounted them to Mr. Wilford. You had there all the conditions for a holocaust by the ignition of gas, even a small ignition.

396. Then, I understand you to agree with Professor Dixon that a very small quantity of gas is sufficient to begin an explosion ?—A small quantity of gas. I knew it before I ever saw or heard of him, and my knowledge is confirmed by what he said in evidence after he experimented with my sample of coaldust.

397. Then we may take it that the existence of a small quantity of gas in a mine would oblige you to class that mine as a bad mine ?—You have to consider other matters as well as gas.

398. Those are the words of Professor Dixon, and you accept them ?—Yes.

399. Will you tell us what you mean by a small quantity ?—The limit of the quantity in cubical contents I would not like to say. I would not fix the minimum which would be sufficient to raise dust and cause an explosion after the ignition.

400. Do you mean to say you do not know ?—If I were to express a minimum it would be more or less a guess. I do not think anybody knows. It depends upon the inflammability of the dust.

401. It would be a guess in any case ?—Not having tested it in this mine to see what is necessary to explode, it would be a guess.

402. Would you experiment in the mine to see how much it would take to blow it up ?—You have been trying until you succeeded.

403. You say then that the mine-owners of the Taupiri Mine have been experimenting to see how much gas would be required to blow it up—the people who created the explosion in the mine have been experimenting ?—Accidentally experimenting.

404. Will you explain to me what you mean by "experimenting"?—The ignitions which have taken place in this mine were accidental, and any one of the ignitions might have created a holocaust.

405. What has that to do with a holocaust?—I do not know what you are trying to get at.

406. Do you adhere to the statement that the management has been experimenting in the mine with a view to blowing it up?—No, these accidental ignitions might possibly have created a holocaust.

407. You say that you do not know the minimum quantity of gas that would be sufficient to generate an explosion with Taupiri coal. May we take it that if a mine contained the minimum quantity of gas which would generate an explosion, you would class that mine as dangerous?—Yes.

408. If you do not know what is the minimum quantity of gas required, how can you classify a mine as dangerous?—If I saw a gas-cap in a safety-lamp over a certain percentage I would regard that mine as dangerous under such conditions as obtained in this mine. If there were accumulations of gas perceptible which, in my opinion, when ignited would raise the dust, then I would say it is a dangerous mine.

409. Do you say, then, that it requires an accumulation of gas to raise the dust?—It may only require an accumulation of 2 ft. or 3 ft.—the exact capacity I cannot say.

410. An accumulation of 2 ft. or 3 ft. might possibly cause an explosion?—I think, under certain conditions even 2 ft. or 3 ft., if ignited in a confined space, of pure methane mixed with oxygen, from 18 ft. of air, might create a disastrous explosion.

411. Then, a mine containing 2 ft. or 3 ft. of pure methane in one confined space would be classed as dangerous?—If it occurred in this mine.

412. Or in any mine with similar coal?—Under the same conditions as Taupiri, yes.

413. How long would it take to exude 2 ft. or 3 ft. of gas from a bleed?—You may get the slightest emission or a huge volume.

414. It might be an outburst or a bleed?—An outburst or a breaking into a magazine of gas. It depends on the size of the cavity containing gas.

415. But 2 ft. or 3 ft. is a small quantity. You have told us that in all coal-mines there is gas—that you cannot get a mine without it?—In all mines there is gas given off, perhaps not perceptible except under the most careful analysis.

416. Would you consider a mine which generated 2 ft. of gas in one bleed in a few days an unsafe mine?—No, but if I found 2 cubic feet of pure firedamp in the roof in a confined space where there was inflammable dust I would say it was dangerous.

417. This point has not been brought out very distinctly before. When you referred to gas being present in dangerous quantities you meant quantities of 2 ft. or over?—In this dusty mine, yes. If the mine-gas is sufficient in quantity to raise the dust when ignited and throw a flame into that dust it is a dangerous mine.

418. If a mine generates 2 ft. of gas in one place you consider it dangerous?—I have said it three times—under certain conditions which I have already specified.

419. Would 2 ft. of gas remain stationary?—It has been suggested that gas remains stationary, is that so?—No, it does not remain stationary. The molecules of all gases are constantly moving.

420. You cannot tell us what gas is? Cannot you give us a short description of what it is?—No, I am unable to answer unless you state what gas you refer to.

421. Do you know how to answer? What is gas in general? Can you not give us a popular and short description of what gas is?—I would not attempt it unless you specify the name of the gas.

422. I will ask if you agree with this definition of it. I have a book here which says that gas consists of a number of rapidly moving particles: do you agree with that?—Yes, and the rate of diffusion of all gases varies inversely as the square root of their specific gravity or density.

423. Do you agree with the statement that gas can remain stationary?—Gas may lodge in the roof. There is diffusion taking place, but there is also perhaps a continuous admission of more gas, so that the quantity diffused might not be so great as the further quantity admitted.

424. There is a constant tendency to diffuse?—Yes. If a fixed quantity of gas is not increased it will gradually be diffused and become mixed with the atmosphere.

425. Is it not true that a large quantity of gas is really safer than a small quantity, so long as it is not mixed with oxygen?—It is true that it will not explode if over 16 per cent., but if it is between 5·6 per cent. and 16 per cent. it will explode; about 10 per cent. it is the most explosive mixture.

426. Do you know of any gas-explosions in mines which have happened where there was a strong current of air at the time?—No, but a mine may be well ventilated in one place and ill ventilated in another.

427. Do you know that explosions have occurred where there was no gas at all, and where there was a splendid current?—Yes, a blown-out shot may project the flame into the dust, and if it were inflammable an explosion would occur.

428. I am not referring to dust-explosions, but to gas-explosions?—You cannot often dissociate the two things in mines.

429. Have you read about the explosion at Silkstone?—I do not know the details of that disaster.

430. I think there was 40,000 cubic feet of air rushing past, but the explosion was so violent that the flames reached 120 ft. above the shaft-head?—What was the contents of the air rushing past?

431. It was pure air?—Was that stated in the report?

432. One writer on the subject says: "The more active the ventilation sometimes the more coal-dust will find its way into the returns, and therefore render the conditions more dangerous." So that ventilation is not a complete preventive?—No, you want intelligent management and so on.

433. In the case of the Silkstone explosion to which I referred there was from 40,000 to 50,000 cubic feet of air passing along the road which was the main intake. There were three shots fired. From the positions of the men it was believed that these were not fired simultaneously. Shot-firing

in the main road was common ?—It should never be allowed; it is a very dangerous practice in a dusty mine.

434. In that case the author says that from 40,000 to 50,000 cubic feet of air was passing along the road, but, notwithstanding that, a disastrous explosion occurred ?—It was probably the result of a blown-out shot. No mine-manager of any sense fires a shot in a haulage-road. The quantity of air passing does not effect blown-out shots and coaldust.

435. Do you agree with the statement which appears in a volume I have here—that whenever an explosion of firedamp occurs a great pressure proceeds in every direction from the point of origin ?—I say that at the point of origin all explosions exert an equal force in every direction, but take effect along the line of least resistance.

436. I think that mining men classify leakages of gas into those from a blower and those from an outburst ?—There is also the normal emission from the face. That makes three classes.

437. But for practical purposes, in order that we may understand the position there are normal emissions, the blower, and the outburst ?—That is so.

438. And these may vary in intensity as between one another ?—Yes.

439. You told us about the large quantity of gas you found after the explosion in Ralph's Mine ?—Yes.

440. Do you suggest that immediately prior to the explosion there was a very large quantity of gas there ?—Yes, when Martin ignited it, I believe that there was 68,000 cubic feet of gaseous mixture above his head.

441. That was over 5·6 per cent. ?—Yes.

442. Have you investigated it to see whether it came from a blower or an outburst ?—I have investigated as well as I could. I have no indication that it was from an outburst, and as regards a blower it is problematical. Redmayne states that tapping a blower is like driving a pick into a gas main in a street. In the North of England they have had blowers for forty years, sometimes of an enormous magnitude. We cannot yet prove whether it was a blower or not. If it ceases shortly I would not classify it as a blower. It is not proved to be a blower, and it is not an emission from the face of coal.

443. Do you suggest that this gas was collected in a reservoir ?—Not in a reservoir.

444. In a cavity ?—It was collected in the coal-seams, and fissures, and bedding planes of the strata, communicating perhaps a long distance away. The stratum is broken by a fall, perhaps, and liberates the gas. That is my theory of the cause of this explosion.

445. You consider that the gas was not concentrated in a reservoir, but distributed among the coal-seams ?—We have no evidence of any cavity.

446. Your theory is that the gas which caused this explosion was not concentrated but was distributed among the coal and strata, and that some portion of this strata was tapped and thus allowed the gas to exude into the mine ?—That is my opinion.

447. Then it is quite clear that it was not an outburst ?—I cannot tell if there are cavities there, but to the best of my knowledge there are none.

448. Is not an outburst of gas classified as a great and sudden diffusion in the mine ? You told us you had investigated the place, and that there is no outburst as ordinarily understood ?—Absolutely none.

449. There is no evidence of a blower ?—There is no complete evidence of gas in that form.

450. There is no complete evidence that it was a blower ?—There is partial evidence, but I would not place a great deal of reliance on it.

451. What is the nature of the evidence ?—That the emission has not been normal directly from the coal-seams.

452. That is evidence that it was a blower ?—I am not going to say that. The evidence is incomplete and unsatisfactory.

453. Do not blowers frequently occur very suddenly ?—Yes, I think they generally do and are generally continuous for a considerable time.

454. Then if this portion of the mine from which this gas was exuding was inspected and reported safe three days before the catastrophe, the blower must have burst out during the three days ?—It depends upon the inspection. If the place was inspected efficiently three days before, there must have been a great emission of gas during those three days.

455. Is there any one word you can suggest which we may use to describe this ?—It is at present simply an emission of gas. The quantity I estimated was 68,000 cubic feet of gaseous mixture. If the place had been efficiently inspected three days before, then that quantity must have accumulated in those three days.

456. I take it that that 68,000 ft. was not methane, it was gas mixture ?—Yes.

457. When it exudes it is pure ?—Not exactly.

458. Well, comparatively ?—Yes. There might be 6,800 ft. of methane, that is 10 per cent.

459. It would require less time than would be indicated by your figures ?—Yes.

460. That gaseous mixture does not exude from the strata ?—No.

461. You spoke of 68,000 cubic feet of gas ?—No, gaseous mixture. Of course the 68,000 cubic feet does not all exude; it is only the 6,800 ft. of methane which exudes.

462. Might not 6,000-odd feet of gas become emitted in a very short time ?—It depends upon the circumstances.

463. It all depends upon the pressure behind the gas ?—Yes, also the barometric pressure.

464. And you say that the exudation is not ceasing ?—Well, it is now small in comparison; it is being dealt with by ventilation.

465. Would that not prove that, at all events, it was abnormal ?—Yes, to a certain extent.

466. Have you looked for any cavity from which it is exuding ?—No, we could not get there We could tell the general position, but there is a hugh fall.

467. But the air is getting better and better ?—They have put brattice up and are carrying in an air-current.

468. The ventilation is removing the gas, and the gas is not being replaced by a further supply ?—I do not think, to any extent, but we have no means yet of telling.

469. Later on they will be able to say with greater accuracy if there is a cavity or places from which the gas exuded ?—When it is possible to clear away the gas the source of it will no doubt be found in the course of an examination.

470. Do you remember the New Oaks explosion ?—No, I have only heard of it.

471. The work I have here says that in connection with this explosion 10,000 ft. of fresh air per minute was passing through at the time of the explosion ?—If the explosion was caused by a blown-out shot it would not matter how much air was passing; indeed, the air would probably make matters worse.

472. Can I put it this way: that it is practically immaterial what ventilation is present ?—In a dusty mine the air does not matter a bit where an explosion is started by a blown-out shot. As I said before, it only aggravates matters.

473. The explosion in the New Oaks Pit commenced in the rise longwall workings, according to Pamely, and these workings were ventilated by a current of 10,000 cubic feet per minute; but it does not say whether the air was passing along near where these outbursts took place ?—There were probably gas reservoirs present, and these no doubt caused sudden outbursts.

474. Pamely goes on to say that the returns became so loaded that Mueseler lamps at the bottom of the upcast were extinguished in a current of 140,000 cubic feet per minute ?—That would assist the explosion. If there had been no air there would have been no explosion, for such enormous outbursts to become explosive much oxygen is necessary.

475. May I put it this way: that it is entirely immaterial how much fresh air is pumped into the mine, if a sudden outburst of gas occurs, there is bound to be an explosion ?—No; if it is an outburst of gas, and there is a certain amount of oxygen present, sufficient to bring the mixture to an explosive state, an explosion would occur after ignition; but if there is an enormous amount of air, sufficient to dilute the gas below explosive proportions, there will be no explosion. There will be no explosion if there is an adequate amount of ventilation.

476. Is it material how much fresh air is pumped into the mine ?—If there is a sudden emission of gas, and it is ignited, will not an explosion take place ?—I say that if there is a sudden emission of gas it is the quantity of air entering the mine which will very materially affect the result. If there is a sufficient quantity of air to dilute the inflammable noxious gas no explosion will occur.

477. Tell me what quantity of air is sufficient to prevent an explosion by sudden outburst of gas ?—It all depends upon the quantity of gas also, the quantity of air present, the coaldust present, and what lights are used.

478. Does it matter what ignites the gas so long as it is ignited—say there is a naked light at the point of ignition ?—No, it does not matter.

479. We know you have proved conclusively that a very small quantity of gas will begin an explosion. That is conceded by all ?—Yes.

480. I am now seeking to get your full meaning of your evidence in relation to this gas matter. I am citing cases of other mining disasters, and I suggest that it was immaterial what quantity of pure air was going into the mine, because the explosion was overpowering ?—Two things were absolutely material for a firedamp explosion—a large volume of gas and an insufficient quantity of ventilation to adequately dilute that gas.

481. You cannot answer the question as to the quantity of gas and the quantity of air necessary to dilute it ?—Not without further particulars from you.

482. I think the author means that the fresh air will not sufficiently rapidly mix with the gas under those circumstances ?—I really do not know what you mean.

483. Would you agree with that ?—I am afraid you are trying to assume an involved case.

484. If there is a sudden outburst of gas, or from a large blower, would it matter very much how much fresh air was introduced ?—Certainly, because you must get within certain proportions in order to create an explosion at all—between 5·6 per cent. and 16 per cent.

485. We may assume there was enough oxygen to cause an explosion ?—If there is enough oxygen to make it inflammable, there must be an explosion if a flame is applied.

486. Irrespective of the ventilation ?—The mixture will start an explosion. If the inrush of gas and the air present maintains about the same proportions, you are going to have a great explosion. You cannot answer these questions as to whether explosions will take place and what will happen unless you know whether the proportions of gas and air are maintained and if fine coaldust is present.

487. A mine may be well ventilated, and yet disastrous explosions may occur from blowers or outbursts ?—If the blowers are of sufficient magnitude to vitiate the airways under such conditions, why have naked lights ?

488. Pamely says, as you did, that you could not class this as a blower; but it might have come from remote strata ?—From coal-seams and the adjacent strata, yes.

489. Pamely continues as follows: "Under certain conditions of roof, and where the roof yields firedamp freely, if may be that spaces exist out of sight yet communicating with the air of the mine through cracks. These spaces being filled with an explosive mixture might form a train of fire, and thus ignite an accumulation of gas at a considerable distance. The condition most favourable for this would be where the roof for a few feet immediately above the coal subsided gradually upon the coal as the face advanced; yet the next stratum above, consisting of hard rock several feet in thickness, only

subsided at intervals of some weeks for a certain distance back from the face. Thus, a cavity for gas would be formed, which might extend for hundreds of yards following the line of faces. That this is so is frequently shown by abnormal quantities of gas coming off when a sudden weighting of a strong upper roof occurs, while at other times no gas can be detected. For weeks the gas filling this hidden space may remain comparatively pure; but sooner or later some communications with the atmosphere of the mine will be affected, and will thus lead to the formation of a highly explosive mixture, mechanically, as well as by changes in pressure and by diffusion. A train may be thus prepared and lie ready in waiting throughout a network of crevices and fractures communicating with a distant place containing a body of gas which may have escaped detection. It is thus conceivable that if an explosion fires this train, the flame may be carried along until it reaches the distant gas, when it would set up a second full explosion, which would then run its course independently but almost simultaneously with the first."—That is not applicable to the present case at Ralph's Mine.

490. Can you suggest any reason why the gas should have suddenly exuded into this place?—I have an opinion that it was released by the fall.

491. But did not the gas cause the fall, or was the fall caused by some other means?—I have no evidence upon that point.

492. Do you say that the fall and the coming-away of portion of the material from the cavity caused the exudation of gas?—It possibly intersected a fissure which communicated with gas through a continuation of bedding planes or cracks in the superincumbent rocks above the coal, and perhaps in the coal-seam itself. Possibly the upper portion of the coal-seam contains a greater proportion of gas than the lower portion. I think that may safely be assumed. It is open, hydrous coal. The gas may have worked its way up to the impervious roof, and if you could take a sample of that coal and quickly subject it to analysis, and also a sample from the floor, the roof coal would contain more gas in proportion than the floor coal. I think that the gas which is produced in this mine comes from the upper coal.

493. Do you believe that it would be possible for that fall to have occurred, and the escape of gas, consequent upon the seismic disturbance at White Island, assuming that the eruption was at the same time?—No, I do not think there is any connection between the two.

494. But siesmic disturbances do liberate gas?—If there are fissures and cavities containing gas in the vicinity.

495. Are such cases not referred to in the text-book?—I have never heard of them.

496. One author whom I have read on the subject says that earthquakes accompanied by earth motions may change the position of gas fissures in the earth's crust?—I have no knowledge of anything of the kind. I have no doubt that if in Rotorua there were magazines containing gas alongside volcanic or thermal activity gas would be liberated, but as for saying that this explosion was due to the White Island eruption that is too far-fetched.

497. What is the distance?—About two hundred miles, I should think.

498. I want to get at what is approximately the force of the explosion caused by an ignition of gas such as this. I understand that 1 cubic foot of gas is equal to 13 horse-power?—I cannot determine that offhand.

499. Is it not your business to know that?—Do you think I am an encyclopedia?

500. Do you know how much flame 1 cubic foot of gas would generate?—No, I do not know what flame a cubic foot of gas would generate; it would depend upon the proportions of gas, also the temperature.

501. Firedamp?—Do you mean the length of the flame?

502. The volume of flame. Take a cubic foot of firedamp of explosive mixture; what would be the cubic contents of the flame?—That is a matter of experiment, and I would not attempt to guess it here, especially upon the inadequate information you supply.

503. Do you think it would lead us to something if we knew?—You must start upon the percentage of methane which exploded, and state how much oxygen there is present, also if other gases are present.

504. Let us assume the average?—This explosion was increased by the coaldust, which was a very important factor. You are asking a question which no man could answer offhand.

505. I suggest that the volume is as 1 to 21—that 1 cubic foot of gas will generate 21 cubic feet of flame?—I do not deny that under certain conditions, but you stated no conditions.

506. Do you not think if that was so you could approximately calculate the quantity of gas if you knew the quantity of flame?—But there is the coaldust to be taken into account.

507. Then you do not consider you could calculate it approximately?—No, because the coaldust took control after the ignition. That is another impossible question you gave me to answer.

508. You stated yesterday that the explosives used in these mines did not conform to the standard adopted in England?—I said nothing of the kind. What I said was, that the explosives used in these mines were not the permitted explosives on the English Home Office list. You are using dangerous explosives here, after you have been ordered by the Inspector of Mines not to use them. I mean at the Extended Mine. Ten days ago your company was ordered to use only such explosives as are on the Home Office permitted lists, and you are now breaking the law by using flame-producing explosives. That order covered both mines. The company is working the same seam under the same conditions in both mines, and there have been ignitions of gas in the Taupiri Extended as well as at Ralph's Mine. When the order was given by the Inspector that the company was to use only permitted explosives it covered both mines.

509. *The Chairman.*] But we are only into the explosion at Ralph's Mine?—But the order for safety-lamps applied to both, as did that concerning permitted explosives.

510. *Mr. Napier.*] Do you not know that there is a barrier of coal between the two mines 2 chains in thickness?—That is only 44 yards—not as far as from here to across the street.

511. You said there are only 44 yards between the two mines. Did you mean by that answer that the barrier between the two mines is quite thin, and that an explosion in one mine might cause an explosion in the other mine ?—It would not blow through 44 yards of solid coal, if you have that barrier, as you infer.

512. Is the barrier sufficient between the two mines to make them for all practical purposes two separate mines ?—I am unable to state, not having measured the barrier.

513. Do you consider that 44 yards of solid coal is sufficient to resist an explosion ?—Yes.

514. Are not the explosives which are used in these mines the explosives which are contemplated by the Coal-mines Act ?—Which Coal-mines Act ?

515. There is only one ?—You refer to the obsolete Coal-mines Act at present in force.

516. I am referring to what is the present law ?—For perhaps a few hours more.

517. I said the Coal-mines Act for 1908. There are one or two amendments, but that is the principal Act according to the interpretation clause. Are the explosives used in these mines the explosives contemplated by the existing Act and the special rules under it ?—The existing Act does not specify what class of explosives shall be used in a mine, but section 56 makes provision by which the Inspector of Mines may forbid the use of dangerous explosives such as your company is now using in the Taupiri Mine from being continued.

518. Do you say that the explosives which are now being used in this mine are not contemplated by the Act ?—The Act does not define which explosives are safe and which are dangerous, but it gives the Inspector power to object to dangerous practices. And with a view to safety the Inspector notified your company about ten days ago not to use these dangerous explosives, and you are continuing to do so in defiance of his order, notwithstanding that the Commission is sitting here.

519. Does the Act permit the use of the explosives now being used ?—I am not a lawyer. The Act does not specify the names of the explosives.

520. You are a responsible officer of the Department, its Inspecting Engineer; have you ever had occasion to consider whether the Coal-mines Act permitted the use of explosives now being used ?—Directly, no. The Royal Commission on Mines, 1911, of which I was a member, considered this matter and found that there was no direct provision in regard to any special class of explosives. Consequently they recommended those explosives on the English Home Office permitted list, but as nothing exists in the Act specifying which explosives shall be used we can only apply section 56 to the case, in my opinion.

520A. Do you agree with the report of the Royal Commission that there are practically no explosives prohibited by the Act ?—The Act does not directly recommend or prohibit.

521. Have you ever had occasion to consider section 40 of the Act ?—Yes, I have had a great deal to do with section 40.

522. You know its provisions ?—Yes, very well.

523. Look at subsection (2) of section 40. It says, "The use of gunpowder or other explosives or inflammable substance in a coal-mine shall be subject to the restrictions and provisions following" ?—Yes.

524. Do you believe that that means that these explosives can be used subject to the conditions ?—Those are only some of the conditions.

525. Have you always understood that that gives power to use these explosives subject to the conditions ?—No, I have not. There are other provisions which common-sense dictates, and which are not enumerated there.

526. Then you do not consider that explosives of the kind mentioned in subsection (2) may be used according to the conditions laid down in the Act ?—The Act is good as far as it goes, but it does not detail or specify many dangerous uses of explosives.

527. Then do you contend that there are other provisions not set out in the Act which must be observed before these explosives can be used ?—I do. Under section 56 we have power to enforce them as regards flameless or permitted explosives.

528. Have you or the Department ever ordered any other conditions to be observed in the use of explosives in the mine, other than those specified in section 40 ?—I have no record. Ask the Inspector of Mines who is the responsible officer.

529. You have no knowledge of it ?—I have no knowledge of it.

530. Have you ever recommended to the Department the necessity of adopting other conditions for the use of explosives than set forth in section 40 ?—Certainly, our Royal Commission recommended it.

531. Did you ?—I was a member of the Commission. I did recommend it as a member, and signed the report.

532. May I say that except as a member of the Royal Commission you have not recommended them ?—No, I recommended them for another colliery—Kaitangata, and for Ralph's Colliery in my recent letters.

533. Other conditions ?—Permitted explosives.

534. Then you did not recommend the use of any other explosives than those which were in use at this colliery ?—I also conferred with Mr. Bennie, and advised him privately—not officially—to have safety explosives introduced here. That was my private advice, and he followed it.

535. Why did you not officially place on record your belief that the safety of the mine required conditions to be observed beyond those in section 40 ?—The accident happened only three weeks ago, but in my letters to the Under-Secretary several months ago—namely, on the 29th July—I recommended to him that only flameless explosives should be used at Ralph's Mine.

536. You only recommended the use of permitted explosives three weeks ago ?—No, you are mistaking my position—I am not the Inspector of Mines, to directly address the manager.

537. I am speaking to you ?—I have reported six times that your mine was highly dangerous, and mentioned the necessity for permitted explosives, and the Inspector of Mines would be aware of the condition; he would carry out his duty, no doubt, to the best of his ability.

538. I assume that you, believing the mine to be dangerous, desired to remove those dangerous conditions ?—With all the power that I had.

539. And upon that assumption did you ever officially report that conditions other than those contained in the Act should be observed regarding the explosives used ?—Yes, read my letters, and you will see that I say, "The manager should be forced to become aware of his responsibility," and so on.

540. What has his responsibility to do with explosives ?—I referred to his responsibility all round in connection with the matter.

541. Do you understand my question ?—This is my letter to the Under-Secretary dated the 27th June in regard to the matter: "The Inspector of Mines, Mr. Bennie, in his monthly report hereunder for May reports that firedamp and fine coaldust exist at the Taupiri coal-mines. These are the conditions which occasion colliery disasters. Ignitions of gas causing men to be burnt have been reported from these mines lately. The Royal Commission on Mines, 1911, recommended amendments and additions to our Coal-mines Act to provide for better ventilation, laying coaldust, safety explosives, safety-lamp regulations, &c.; our Act is generally obsolete, being based on a British Act long since repealed. If a disaster occurs as a result of an inadequate law the Inspection Branch of the Department cannot be held responsible; the Brunner and Kaitangata disasters cost a hundred lives. It is the unexpected that happens." That is my answer to your question, in addition to my letter of the 29th July to the Under-Secretary.

542. There you are referring to the provisions of the Act, and you state that the Royal Commission reported on the subject. Now, did you at any time suggest that conditions should be imposed under the powers of the existing Act as far as the use of explosives in this mine was concerned ?—I have made adequate representations right through in connection with this mine, as you will see by my letters. I have done more than my duty in drawing attention to the dangers of this mine, including the use of unpermitted explosives.

543. That is, generally ?—I have gone sufficiently into detail.

544. Did not you write to the Under-Secretary requesting that the Inspector of Mines be instructed to insist upon the use of safety-lamps and permitted explosives in these mines ?—Yes, on the 29th July, in the letter which has already been read.

545. Then, you did believe that you had power under the existing law to compel the use of permitted explosives ?—I; no, I am the Inspecting Engineer, and have no power. I think still that under section 56 the Inspector has not the power to enforce it without arbitration.

546. You have the power to order the use of such explosives and safety-lamps, and if the order is not complied with the matter may be submitted to arbitration; did you contemplate exercising that power ?—As Inspecting Engineer I had no power to do such a thing, and I did not do it.

547. At the present time, with the exception of Kaitangata, are not all the mines in New Zealand using the same kind of explosives as are being used here ?—Kaitangata and those at Huntly are the only gaseous mines, to any extent, that I know of.

548. My question was: At the present time, with the exception of Kaitangata, are not all the coal-mines in New Zealand using the same kind of explosives as are being used here ?—No, they are not all using the same kind of explosives.

549. The same kind as Taupiri ? Is any mine except Kaitangata using safety explosives ?—I do not think Kaitangata is using safety explosives.

550. You have ordered that such explosives be used in Kaitangata ?—I have recommended it.

551. And your recommendation has not been complied with ?—It has been made only recently —since this disaster.

552. Are any of the coal-mines in New Zealand using these permitted explosives ?—Not to my knowledge.

553. Do you consider it dangerous for mines to use explosives other than English permitted explosives ?—Yes, where gas exists, or where there is inflammable coaldust present. I agree with the English Act, which enforces the use of permitted explosives.

554. And I suppose that coaldust to a greater or less extent exists in all the coal-mines in New Zealand ?—No, not dangerous coaldust.

555. I did not say "dangerous" ?—I did not say you did.

556. Have you ever attempted, so far as explosives are concerned, to exercise the powers conferred by section 56 ? I will read it to you: "If in any respect (which is not provided against by any express provision of this Act, or by any Special Rule) any Inspector finds any mine, or any part thereof, or any matter, thing, or practice in or connected with any such mine, to be dangerous or defective, so as, in his opinion, to threaten or tend to the bodily injury of any persons, such Inspector may give notice in writing thereof to the owner or agent of the mine, and shall state in such notice the particulars in which he considers such mine or any part thereof, or any matter, thing, or practice, to be dangerous or defective, and require the same to be remedied; and unless the same be forthwith remedied the Inspector shall also report the same to the Minister." Has any notice been given prior to this disaster to any mine in New Zealand to discontinue the use of explosives except the English permitted explosives ?—Notice given by whom ?

557. By the Department ?—We have several responsible Inspectors; I cannot state everything they are doing.

558. You are the editor of the reports of the Inspectors, and though you are responsible for the Department's report to Parliament you cannot say whether any such notice has been served upon any

other company in New Zealand ?—I do not remember any notice being given regarding permitted explosives before this disaster.

559. In the absence of any such notice from the authority responsible for the administration of the law, would any mine-owner be justified in continuing to use explosives other than those on the permitted list ?—Yes, until he was notified by the Inspector to discontinue them.

560. And if a mine-owner objected to conform to such a notice you are aware that under section 57 the matter has to be referred to arbitration ?—Yes, that is so.

561. And no notice was ever given, according to you ?—Mr. Bennie gave your company notice.

562. When ?—About ten days ago.

563. You tell us that until this disaster no notice was given in New Zealand under section 56, so far as explosives are concerned ?—During the past eight years, to my recollection, no.

564. And therefore it follows that there was no arbitration under section 57 ?—Not on explosives.

565. I think you said yesterday, in answer to Mr. Wilford, that you had no power as Inspecting Engineer to enter a mine, and that in order to get the legal power you had to be appointed an Inspector of Mines without a district ?—That is so.

566. Are you aware that under the Coal-mines Act, 1908, the Inspecting Engineer of Mines has power to enter any coal-mine ?—It would be 1907, when I was appointed and gazetted.

567. The *Gazette* has nothing to do with the law. You told us that in order to get the power to enter any mine you, as Inspecting Engineer, had to be gazetted an Inspector of Mines without a district ?—That is correct.

568. And, that being so, the Department gazetted you ?—Yes, and the Act was passed the year afterwards.

569. The 1908 Act was a consolidating Act ?—Yes.

570. Do you suggest that this section was not in the Act previous to 1908 ?—I believe that it was not. I do not remember all the dates of these amending Acts, but I will say that I was gazetted an Inspector of Mines to give me authority to enter any mine. I believe that section was not on the statute-book then.

571. Then, for the last seven years, irrespective of your office as Inspector of Mines without a district, you had ample power as Inspecting Engineer, to visit any mine ?—For my duties as Inspecting Engineer, but not in the capacity of Inspector of Mines of a district.

572. Section 65 of the Act says: "The Inspecting Engineer or any other officer of the Mines Department duly authorized in writing by the Minister may enter and inspect any mine" ?—But section 23 states that an Inspector of Mines shall have a district.

573. If you were authorized by the Minister you could go into any mine in any district in the Dominion ?—Suppose I went to a mine and the manager peremptorily refused me admission, it would be awkward if I had to stand about the mouth of the mine until I received a letter or a telegram from the Minister authorizing me to enter the mine.

574. Could you not get a note from the Minister and keep it in your pocket for general use ?—Refusal is an unusual thing.

575. Should you not take care to fortify yourself with all proper authority ?—The only question I have ever heard raised was at Kaitangata.

576. You told us yesterday that these what you termed explosions of gas in this mine prior to the accident were wilfully concealed by these deceitful people who control these mines. Do you then contend that those emissions of gas ought to have been reported under section 62 ?—Yes, I do so. Willcox, who was burned, was away for three weeks; that was a serious accident, and should have been reported.

577. Do you consider that the same applies to Kelly's case ?—Yes.

578. To Conn's case ?—Yes.

579. They should have been reported under section 62 ?—Yes.

580. Wherever there is an emission of gas at the face, or in a working-place, and the gas ignites and a man burns his finger, you would say that it was a case that ought to be reported under section 62, even where no explosion in the proper sense of the term follows ?—If a man only burns his finger I do not consider that a very serious thing, but coupled with the fact that it was an ignition of gas likely to create a holocaust in the mine, that should render it sufficiently important to warrant it being reported.

581. Do you say that the ignition of a small quantity of gas which would be sufficient only to burn a man's finger would be likely to create a holocaust in a mine ?—It might, because that man's finger might be just at the extremity of the explosion. This is an extreme question, and I can only give you an extreme answer. It is possible.

582. Then, assuming that your answer is correct, you do not agree with the statement that a violent concussion is necessary, in addition to an intense flame, to cause an explosion ?—You are mixing up two things. First of all, it is possible to cause a great explosion without a concussion—that is, a pure gas and air explosion. The concussion is only necessary for a dust and gas explosion.

583. When you were referring to a holocaust you referred to a gas-explosion alone ?—Your question was put to me in such a form that you excluded coaldust, and I considered it from the gas point alone. If it is gas alone, there is no need for a concussion.

584. Then a holocaust would take place under given circumstances without concussion ?—Yes, if there was no coaldust present and gas is present in sufficient quantity.

585. If there was coaldust present the probability of a holocaust would be greatly increased ?—Yes, of course.

586. You are conversant with the provisions of section 52 of the Coal-mines Act [witness reads section referred to]. Are you still of opinion that ignitions of gas in connection with which men may

be slightly burned ought to be reported under that section ?—Yes, if a person is burned, necessitating his absence from work for two or three weeks, I say it is a serious injury, and it ought to be reported to the Minister.

587. *The Chairman.*] How can a manager know how long a man is going to be off work when he is first injured ?—What appears to be a minor accident may become a serious injury.

588. Should the report be sent in three weeks later ?—No, sir, at once.

589. So that the Inspector may come and see the place immediately after the accident ?—Yes, and to enable remedies to be taken, if necessary.

590. *Mr. Napier.*] It may be that the Inspector is travelling at the time ?—Nevertheless a notification of such accident should be sent to his office, even if it was only a week that the man was off work.

591. I am dealing with section 62. You read it, and you adhere to your statement that you believe accidents of the kind referred to, where those men were burnt, should have been reported as serious accidents under that section ?—I call them serious injuries, not minor ones.

592. Would you tell us how long a man would require to be away from his work as the result of a burn in order to justify you in reporting under section 62 ?—You are asking me as if I were a mine-manager. If so, I would report it by telegram at once, even if it were only a mild case of burning.

593. Even if the man had not to stay away from his work ?—I would notify it at once, as the conditions were serious.

594. Irrespective of the nature of the burn ?—Absolutely.

595. Subsection (5) of section 62 says that " the part of the mine where the accident occurred shall not be interfered with until inspected by the Inspector, or by some other person appointed for the purpose by the Minister, or by the Coroner's jury, unless with the view of saving life or preventing further injuries." Does not that indicate that the injury contemplated by the section is a very serious injury ?—No, not a very serious injury.

596. Then when a slight burn is sustained, and the man is not off work any time, you believe that the mine should be immediately sealed up and work stopped ?—I did not say anything of the kind, and I do not believe it.

597. Do you suggest that the part of the mine where the injury happened, however slight, should be closed up and work discontinued ?—I say if an ignition of gas occurs in a part of a mine, by which a man is burned, the Inspector should be immediately notified.

598. However slight the burn or ignition may be ?—Yes.

599. And the work stopped ?—It is only one working-place, perhaps.

600. And you think the part of the mine where the burn occurs should be closed up until the Inspector comes, and work stopped ?—I said that place should be discontinued until the Inspector saw it.

601. Irrespective of the gas emitted ?—Yes. The Inspector should be notified immediately, also the Department, because most serious conditions may exist.

602. Wherever an explosion of gas occurs, however slight, the most dangerous conditions exist ?—Yes ; when it becomes ignited in a dusty mine.

603. Do not the conditions exist prior to the ignition ?—Some of the conditions do.

604. It only wants ignition ?—It is dangerous.

605. Then you say that it was unnecessary and unmeaning for the Legislature to put the word " serious " before the word " injury " in section 62 ?—I say that the wording is bad. I would make it so that any accident by which men are burned by gas should be notified to the Inspector.

606. And you are of opinion that all the sections which follow should be amended accordingly ?—Yes, certainly.

607. Would you consider that the manager was doing something wrong if he took a different view from you as to the meaning of that section, so far as the extent of the injury was concerned ?—If he were a certificated manager, and did not report it, then I would consider him failing in his duty and concealing something.

608. Irrespective of the present wording of the Act ?—Absolutely, because we are not bound by the words of an obsolete statute where human life is concerned. I am referring to the manager—the manager is not bound by the words of an obsolete statute where human life is concerned.

609. He is bound by what ?—By his training, and his conscience, and his duty.

610. We are trying to find out what is his duty, and I am suggesting it is his duty to carry out the statute ?—He owes something to humanity and the men who are employed under him.

611. Then the statute has no regard for humanity ?—Who said that ? I say the statute has regard for humanity ; but I do not think it has a complete or perfect regard.

612. You consider that the manager should set up his own standard of his duty outside the Act ?—Not the standard of his duty. He must not conceal anything. The intention of Parliament is for managers to act in the interest of human life ; but it is impossible for Parliament always to put those words down in black and white.

613. If it is not down in black and white, how is a manager to know what is the intention of Parliament ?—I am not speaking of the manager determining the intention of Parliament, but referring to the necessity for him to use his discretion and prudence in connection with these matters.

614. But the Department has not told him to do anything except what is in the Act ?—No, I do not think the Department has told him, because they have not power to do so.

615. Do you not believe that the public and the miners employed in these mines have to be told, assuming that some protection was afforded to the miners by the activities of the Mines Department ?—I do not know what they have assumed.

616. Did it ever occur to you as a responsible officer of the Department—or an irresponsible one—that the Department is responsible for the safety of coal-mines ?—The responsibility of seeing the

Act carried out has been placed upon the Inspector of Mines for the district: he is the statutory officer.

617. The Under-Secretary is the next superior officer; may I take it that he has no responsibility?—Not under the Act.

618. And the Minister above him: has he any responsibility?—Not as far as the safety of life is concerned.

619. Then, does it follow from what you have said that the Inspector of Mines, and he alone, is responsible for human life in coal-mines?—No; the management is responsible for human life; the Inspector for seeing that the Act is observed.

620. You complained yesterday of the inadequacy of the existing law?—I have done so for the last two or three years.

621. Before the Commission you have complained of the inadequacy of the existing law to render a mine less dangerous?—Yes, in many respects.

622. Are you aware of the provisions of section 58, which reads as follows: Where in the opinion of the Inspector a mine or any part thereof is found to be exceptionally dangerous, he may require the owner or agent to withdraw the workmen from such mine or dangerous part thereof, excepting such workmen as are required to effect the necessary work to put the mine in safe condition; and mining operations shall not be resumed until the mine or dangerous part thereof is made safe to the satisfaction of the Inspector"?—I know that section well.

623. I think you told us that you considered this mine was exceptionally dangerous?—I reported six or seven times to that effect before the explosion.

624. Did you suggest or recommend at any time that the power under section 58 should be exercised?—I was never asked. I reported to the Government that the mine was dangerous.

625. Is your answer, "No, because I was never asked"?—I described the dangers to the Under-Secretary, who communicated them to the Minister of Mines. The Inspector was the responsible officer.

626. Did you refer to section 58 in any recommendation or report about this mine?—I am not in the habit of drawing attention to legal points. In the Wellington office we have solicitors who advise their Departments on such matters.

627. Do you believe that your reports were considered by the head of the Department?—I am sure that they were seriously considered, because he used to speak to me about them.

628. Then, if no action were taken under section 58, would we be right in assuming that the provisions referred to in that section do not apply?—No, you would be right in assuming nothing of the sort by the fact that no action was taken.

629. You say that no assumption can be drawn from the acts of parties in the Mines Department? Which parties?

630. "Persons," if you like?—I do not assume anything from the silence of some persons who have no business to interfere in the matter.

631. Am I not right in assuming that your Under-Secretary is an officer of experience and long service who has always done his duty?—Yes.

632. And you made certain reports to him?—Yes.

633. And you know he discussed them with you?—Yes.

634. And you say, further, that no deduction can be drawn from the fact that no action was taken under section 58?—There was an attempt at an action under another section.

635. I am dealing now with section 58?—I do not know what passed through his mind in regard to section 58.

636. But was it discussed?—No.

637. Do you believe that the power under section 58 could have been exercised in this case?—It could have been exercised in this case only by closing the whole property, because the whole of the mine was equally dangerous, in my opinion.

638. And do you not think the power ought to have been exercised, if you are right?—As matters have eventuated, it would have been wise, of course, to have closed the mine.

639. But I mean, speaking of what happened, after the event?—I wrote those reports before the event.

640. Do you think that the power under section 58 ought to have been exercised, irrespective of this disaster?—If I had been Inspector of Mines it would have been—most assuredly?

641. You would not consider anything if there was any risk to human beings?—The price that I put on human life is greater than the purchasing-power of money, and I would no more have considered your company if one man's life had been in peril than I would a snap of the fingers.

642. It was not done?—That concerns my colleague; he has his own views and opinions.

643. And you are seeking to blame the existing law?—I blame the existing law for not enabling us to enforce the use of safety-lamps, and flameless explosives, and those other necessary things.

644. Do you suggest to this Commission that there is not ample power under section 58 at present to close down the mine if the conditions are dangerous?—But, sir, suppose the company refused to do it—it would go to arbitration. It is necessary to consider this: that if the Inspector closed the whole of the mine, and failed at arbitration, the Government would be let in for damages as on a former occasion regarding Shag Point Colliery.

645. But he would have done his duty, the responsibility being on other persons?—He formed his opinion to the best of his knowledge and belief. I formed my opinion. Because he has a different opinion to mine, I do not say that he is incompetent.

646. You hold one opinion and the Under-Secretary and the Inspector of Mines hold another?—I do not know what opinion the Under-Secretary holds, but the Inspector holds a different opinion from mine, or he would have been more drastic. That is obvious.

647. You would know the opinion of the Under-Secretary if you and he discussed these questions ?—You are speaking now of section 58—if so, I do not think we discussed that section.

648. Did you discuss the dangerous condition of the mine ?—Yes, we discussed the dangerous condition of the mine.

649. And the nature of the powers you possessed ?—The notice *re* safety-lamps and flameless explosives.

650. Did not you ever consider or discuss what measures could have been taken ?—We never discussed any subject with the exception of the grave dangers in the mine, the introduction of safety-lamps, and flameless explosives, and the necessity of passing the Coal-mines Bill.

651. Were you all agreed that you could not do anything under the present Act ?—As far as permitted explosives and safety-lamps were concerned we were agreed we could enforce nothing.

652. You were not aware of the powers under section 58 ?—Yes, I was aware of them.

653. Was the Under-Secretary aware of them ?—We never discussed that question.

654. The point is that you never initiated the proceedings under the Act, neither you, nor the Under-Secretary, nor the Inspector of Mines ?—It is not the duty of the Under-Secretary or me.

655. If the responsible officer does not do it, there is no obligation on the Under-Secretary or you to see that it is done ?—No, the stationary officer is responsible.

656. Do you understand, then, that there is no power except Parliament above the Inspector of Mines to control him or to see that he performs his duties satisfactorily ?—There is a power called the Public Service Commissioner, who, upon complaint being made against an officer for neglect of duty, has power to hold an inquiry into the matter. Apart from that, I do not not know who legally controls the Inspector of Mines. I speak from experience. I was an Inspector of Mines in Western Australia for several years.

657. Was any complaint ever made to the Public Service Commissioner about Mr. Bennie ?—Never to my knowledge.

658. You knew, of course, in January last that this mine was exceptionally dangerous ?—I formed my opinion from information received before January—I think it was at Christmas.

659. And knowing that it was exceptionally dangerous, did you ever suggest either verbally or privately to Mr. Bennie as to how he should act ?—Yes, I wrote private letters to him. I always communicate with him privately and confidentially.

660. Did you tell him that you thought it was his duty to withdraw the workmen from those places where the gas was found ?—I did not tell him anything about his duty ; I would not do so.

661. Did you ever suggest that it ought to be done ?—I did not. I spoke about the dangers, but I did not order him.

662. Did you suggest ?—I remarked to him upon the dangers which were present. I could not order him to do anything.

663. Did you suggest that he should have the men withdrawn ?—I did not—in my private letters.

664. Did you in any public letter ?—I did not address him publicly.

665. Then, either in a public letter, or a private letter, or verbally, did you ever suggest to the Inspector of Mines to withdraw the workmen ?—I did not ; it was not my business or duty.

666. Did you ever either write to the Under-Secretary to that effect or suggest it to him in your discussion ?—I did not ; it was not my business or duty.

667. Then, does it amount to this : that knowing that there were a large number of men working there under dangerous conditions, and that a holocaust was imminent, and that you had the power——?—I did not have the power.

668. That the power existed : did you ever suggest that the precautions provided by the Act should be taken ?—Yes, I did suggest that all the powers available under the Act should be taken advantage of.

669. That the men should be withdrawn ?—No, it was not my suggestion.

670. You allowed this to go on ?—I did everything in my power to prevent the disaster.

671. Did you ever suggest that the men should be withdrawn ?—It was not for me to suggest it. My letters drew attention to the danger.

672. You kept pouring contempt upon the Act, though the Department had direct power if they had taken it ?—It is not my business to suggest the legal procedure which is to be followed—that is for the solicitors. This section you are referring to is a most drastic one. It means the stoppage of the whole mine, or the withdrawal of the men. If I went out of my way to recommend the stoppage of of the mine I would be exceeding my duty. The responsible officer—the Inspector of Mines—would in the ordinary course report it to the Under-Secretary, who would confer with the solicitor who would advise as to the step to be taken ; but for me to decide on a law-point would be absurd.

673. Do you call the removal of workmen from a dangerous place where gas exuded a law-point ?—No.

674. Do you say that you do not know what is the construction of section 58 ?— I know, in my own mind.

675. Is not the meaning of section 58, that the workmen may be prohibited from going to certain parts of the mine ?—Yes, if I were the Inspector I should look upon it as so.

676. You have always known it ?—Yes.

677. And you have told us that as far as human life is concerned you would not value all the mines in the world more than a snap of your fingers ?—That is true.

678. And knowing the conditions of the mine, and that men were working there, and that there was power under the Act to prevent men from going to those places, you failed to suggest that the power should be exercised ?—I did not fail.

679. Did you suggest it ?—It was not my duty to do it. I did not usurp the functions of other officers.

680. And yet you have told us that you discussed with the Inspector and the Under-Secretary matters connected with his office ?—With the Inspector in a private conversation and by letter.

681. Did you suggest the withdrawal of the men ?—I have told you that that would be dangerous, and would mean the closing of the mine, and might entail heavy damages against the Government.

682. But there are only a few sections dealing with the preservation of life ?—That is so.

683. And you were very familiar with the sections dealing with the protection of human life ?—Yes; I have had a great deal of practice in connection with them.

684. Now, I am coming to that letter which Mr. Bennie wrote to the Department, in which he suggested that he should be permitted to initiate a prosecution ?—Yes.

685. Why should Mr. Bennie write to the Department asking for permission to initiate a prosecution if the Department had no control over him ?—Ask Mr. Bennie.

686. Do you know why he wrote ?—It is the practice.

687. It is not necessary ?—There is no Chief Inspector until the new Bill becomes law, and for years past the Inspectors have addressed the permanent head, the Under-Secretary.

688. Mr. Bennie's letter of the 7th August, 1914, asking for permission to institute proceedings was subsequently sent on to you ?—Yes.

689. And you agreed with Mr. Bennie. You minuted the papers to the Under-Secretary as follows: "I recommend that Inspector Bennie consults a reliable solicitor, and if we are considered by him to have a fair chance to secure a conviction proceedings should be taken, and I will go North to assist the Inspector"?—Yes, as an expert witness.

690. You see, therefore, that you identify yourself with the Department: you use the expression "we" ?—I think we always use the word "we." It is the custom in the Departments.

691. You see what your minute is. If there was a reasonable chance of securing a conviction the proceedings were to be instituted ?—Yes. You must remember that that was written on the 11th August. The Coal-mines Bill was in print, and practically on the table of the House. We knew that, even if the lawyer's opinion was against us, we only had to wait a few weeks until the Bill became law, when we would be able to proceed under it.

692. You know that the Under-Secretary instructed Mr. Bennie in your identical words to get the opinion ?—Yes.

693. Mr. Bennie accordingly consulted Mr. Miller, and in due course Mr. Miller gave his opinion ?—Yes.

694. That opinion went to the Department and you read it ?—Yes, less than a week before the disaster. That opinion came to me on the afternoon of the 9th—the Wednesday before the explosion. I noted it: "Noted, 9/9/14."

695. You read the opinion. Did you make any objection or remark that the statement of facts was incorrect or inadequate ? Did you agree with the stateemnt of facts ?—I did not know the facts stated before the disaster. Without verbal comment or addition it is absolutely inadequate upon which to form an opinion. I think on those written facts the lawyer could have given no other opinion. That letter does not refer to the ignitions, and was in itself absolutely inadequate.

696. Then, knowing that this was a matter of great importance, and as you were very anxious about it, and having read that opinion and seen that the statement of fact was quite inadequate, and might be misleading, you made no remark or comment upon it ?—Look at my instructions. My chief minuted it "For your information." I consequently "Noted" it. When he says "For your perusal," I peruse it; when he says "For your remarks," I remark upon it.

697. If you noticed a grossly misleading statement or inadequate statement, and that the consequence might have been dangerous to human life, would you make any comment upon it unless asked ?—I was unaware whether the Inspector had given verbal or additional information to the lawyer or not.

698. So, on receiving the opinion, you only put "Noted" upon it ?—I would have exceeded my duty if I had done otherwise. Knowing Mr. Bennie so well, I felt satisfied that he would have supplemented the statement he gave to Mr. Miller with an additional history of the dangerous condition of the mine and the ignitions that has occurred.

699. You have no doubt that the statement was supplemented by Mr. Bennie ?—That was my opinion.

700. Have you had any reason to alter that opinion ?—No, the Inspector has said on oath that he has supplemented that statement, and I believe it.

701. It was not unusual, then, for the Department to get a legal opinion with regard to the construction of a section in the Act ?—No, Mr. Macassey has frequently given them.

702. And did it never occur to you, or to Mr. Blow, to get an opinion as to section 56 ?—As I said, it is not my duty to get opinions. Never since I have been in the service have I, as Inspecting Engineer, obtained an opinion directly.

703. Or suggested one should be obtained ?—At times I have done so.

704. I understood you to say that the Department was greatly concerned about this matter, and that Mr. Blow discussed it with you. Did you ever get an opinion from the Crown Law Officers as to what steps could be legally taken under the Act to remove the dangerous conditions ?—I did not.

705. Did Mr. Blow ?—I do not know.

706. Now, you said in denouncing the present Act that you considered section 56 could not be exercised in the present case because safety-lamps were referred to in another part of the Act ?—Yes.

707. You came to certain conclusions as to the meaning of section 56 ?—I did.

708. Did you ever suggest that the opinion of the Crown Law Officers, or any other legal advice, should be obtained to see whether you were right ?—You have read my letter already where I recommended that an opinion should be obtained.

709. Not about section 56 ?—About the safety-lamps.

710. Do you not know that Mr. Miller's opinion makes no reference to that section ?—That was his business. I believe that is correct.

711. Do you not know that he advises upon an entirely different section with reference to the prosecution ?—Yes, he referred to a special rule.

712. It was not section 56 he was considering ?—But as a lawyer he would not look up only the special rule.

713. Do you think he turned up section 56 ?—I do.

714. Section 56 has nothing to do with the prosecution; that is an entirely different thing ?—It has reference to arbitration.

715. But under section 56 any Inspector may give notice requiring certain things to be done, and if it is objected to the matter goes to arbitration ?—That is so.

716. Was any attempt made to get an opinion from the Crown Law Officers as to whether safety-lamps could be ordered under that section, so as to compel the matter to go to arbitration ?—Not to my knowledge.

717. Did you ever suggest that that should be done ?—I was not asked for an opinion.

718. And therefore you did not suggest it ?—Yes.

719. Do I understand you correctly that you only differed from Mr. Bennie as to the use of safety-lamps in the mine ?—That was the main thing upon which I differed from him.

720. You believe that Mr. Bennie is a conscientious man, and does his work to the best of his ability ?—I can say more than that. I consider him to be an experienced, and competent, and honourable officer.

721. Then, when he reported that he did not consider the use of safety-lamps necessary, and that their use might be dangerous, did you consider that he was honest in that opinion ?—Yes.

722. Did you disagree with Mr. Bennie as to the condition of the ventilation of the mine prior to the explosion ?—I could not tell what was the condition of the ventilation of the mine prior to the explosion.

723. You do not contradict him ?—No, he was there, and I was not.

724. Would you be prepared, knowing him as you do, to act upon his statements regarding the ventilation ?—If he said, "I saw certain conditions existing," I would believe him; but I would not believe opinions without verification. I would agree with what he saw, but he may have inadvertently overlooked something.

725. You have told us that owing to the multiplicity of your duties you could not possibly supervise the work of each man if the law requires it ?—No, no man on earth could.

726. Would you be prepared to act upon Mr. Bennie's report as to the ventilation or any other matter ?—It just depends upon what the matter was. I would sooner act upon my own knowledge.

727. But supposing that was impracticable because of your other duties ?—I would not then like to say. I would not trust my professional reputation to any man. I prefer my own opinion.

728. Now, you said that the absence of safety-lamps was the cause of the explosion ?—Yes, it was. A naked light caused the explosion.

729. Therefore, the opinion expressed by Mr. Bennie that safety-lamps were not necessary would, under the conditions existing, be a dangerous opinion to hold ?—I say that it was my opinion that this was a safety-lamp proposition.

730. Here we are concerned with the lives of hundreds of men. Yours was a very strong opinion that the safety of their lives depended upon a single matter ?—Mainly upon the question of safety-lamps.

731. Mr. Bennie's opinion differs radically from yours ?—Yes.

732. Do you not consider, therefore, seeing what the possible consequences would be, that the opinion he held was a dangerous one, from your point of view ?—I do not like to describe his as a dangerous opinion. It was different from mine.

733. But an opinion which was so erroneous on such an important matter would be a dangerous opinion to your mind, would it not ?—I have never used the words "dangerous opinion" in my life regarding a professional colleague.

734. It was a grave matter for the responsible officer to hold in a matter which you thought might involve danger to human life ?—I think that is right. It was a grave situation, and required careful consideration.

735. Did you not think it was your duty, seeing that you and he differed upon this very important point, to suggest that some other authority should be called upon to decide ?—The Under-Secretary received my opinion, and also that of the Inspector of Mines, and he was the person to exercise his discretion.

736. And his discretion apparently lead him to decide that Mr. Bennie was right ?—I do not know. Read the letter. You have his opinion.

737. I know what he says ?—Then, why ask me ? I believe the Under-Secretary did his duty.

738. So, then, the Under-Secretary did really adjudicate, as it were, between your opinion and Mr. Bennie, upon this question of safety-lamps, and he did that to the best of his ability ?—Yes.

739. And honestly ?—Every time.

740. When you visited the mine about three years ago, I think it was, did you go into many parts of the mine ?—No; we made an ordinary examination of the principal parts of the mine, but not a detailed examination. That would have taken a fortnight. I visited the mine as a member of the Royal Commission.

741. I was referring to you not as a member of the Royal Commission, but as Inspecting Engineer ?—On that former occasion I went pretty well up to Taupiri West. I was sent up by Mr. Roderick

McKenzie to inspect the connection with Taupiri West. The owners wished to delay it, but the Department wanted to see it carried through at once. I also made inquiries regarding the workmen's inspection.

742. Was not that visit made for the special purpose you mention ?—Yes.

743. And I think you did not visit the other portions of the mine because it was not necessary for the purpose of your report to the Minister ?—I never do anything that is in my opinion unnecessary.

744. Then the visit was a special one for the purpose of inquiring into the connection with Taupiri West ?—Yes, and some complaints by Mr. Fulton and others.

745. Am I not right in saying that, so far as that visit was concerned, you did not get an opportunity for judging the conditions of the mine ?—You must not confine me to what I saw. There is such a thing as the plan of the mine. I can judge a great deal from that. I had a plan last year and another one recently, and studied them both. My knowledge of the mine is not confined to what I saw on my visit to which you referred. I have the monthly report of the Inspector to refer to, which I always read carefully. I am well informed, as the result of studying these reports and plans. Although it was some time since I had visited the mine, I was in a good position to know the conditions there.

746. May I put it this way: that your visits and personal inspections were so rare and so insufficient—— ?—My visits were not frequent.

747. May I take it this way: that your personal visit would not enable you to give an opinion as to the safety of the mine ?—Uninformed as I was at that time about the presence of gas and explosions, I say it would not be fair to ask me to express an opinion on the state of the mine then.

748. Did you ever visit the mine since you have been in office and make a complete or a very full inspection and examination of it ?—By no means; it was not my duty.

749. Section 40 of the Coal-mines Act, 1908, subsection (48), in regard to the right of inspection by miners, empowers the workmen to exercise some supervision over the mine ?—Inspection, but not supervision.

750. And there is power to bring under the notice of the authorities any defects or dangers ?—Yes. They must also furnish a copy of their reports to the owner or manager.

751. And those reports are accessible to the Inspector of Mines ?—Yes.

752. Who would, no doubt, if he carried out his duty, take notice of them ?—Yes.

753. Did you ever bring under the notice of the owners of the mine, or the company that works the mine, the knowledge that you had and the opinion which you held in regard to the conditions in the mine ?—No, I have never addressed anybody except the Under-Secretary officially.

754. Are you aware whether your opinions were transmitted to the owners of the mine or the company ?—I am unaware if the Under-Secretary communicated my opinion to anybody.

755. Now, considering that you visited the mine, and that you considered the conditions there very dangerous, so much so that a holocaust was likely to take place at any moment—— ?—My visits were made a considerable time ago. My knowledge of the dangerous condition of the mine was obtained as the result of those concealed explosions.

756. About Christmas last ?—Yes, it was then obtained.

757. Then you allowed the greater portion of 1914 to elapse, and you did not even whisper to the owners of the mine, the most interested parties, that the conditions were dangerous ?—It was not my duty to communicate with them, but to the Under-Secretary.

758. Because it was not your official duty you did not do it ?—I keep to my own duties.

759. You did not take any chances ?—There is a penalty provided under the Civil Service Regulations for divulging official information. It is my duty to report to the Under-Secretary. I address official letters to nobody else. I have no authority to communicate officially with anybody else.

760. Is that true ?—The whole of the correspondence of the Mines Department goes to the Under-Secretary for Mines, as far as my work is concerned; officially I never receive a letter, and officially I never write one.

761. At all events, you visited the mine, and there were a number of things which you complained about, and which were afterwards attended to ?—I did that at the request of the Minister, and reported to the Under-Secretary, and he attended to them.

762. You have told us how extremely anxious you have been for a long time past to get this Coal-mines Bill placed on the statute-book ?—Yes.

763. And you have told us also that this Bill is, you believe, a verbatim copy of the English Act ?—Yes; I took a considerable hand in the report upon which it is based.

764. You took a great hand in the framing of it ?—No.

765. Well, in drafting the substance ?—Mr. Dowgray and I did a considerable part of it.

766. Did you draft subsection (2) of section 4 of the Coal-mines Bill ?—No.

767. Subsection (2) reads as follows: "The person exercising the powers of Inspecting Engineer for Mines at the coming into operation of this Act shall be deemed appointed Inspecting Engineer for Mines under this section." And subsection (3) says: "The Inspecting Engineer for Mines shall, by virtue of his office, be also the Chief Inspector of Mines, and shall have, in all parts of the Dominion, all the powers given by the principal Act to an Inspector of Mines" ?—No, sir, I did not draft that. That was not a recommendation of the 1911 Commission at all, but for twenty years all the Commissions on mines which have sat, but this one, has made a similar recommendation, and they have not been given effect to.

768. Is it a fact that the English Act provides that an Inspector may be appointed ?—Sir R. A. S. Redmayne is the Chief Inspector in England. They have a huge mining industry there. They have no Inspecting Engineer, but they have a Chief Inspector of Mines.

769. Am I right in stating that that subsection by statute appoints you Chief Inspector of Mines ?—Yes; that appears to be so. I had no knowledge of it until I saw it in the Bill.

770. Do you not think it right that the Minister, or the Public Service Commissioner, should appoint the best man for the position ?—Certainly.

771. Without being handicapped by having a statutory appointment forced upon them ?—I do not care to express an opinion about what my superiors are likely to do; they please themselves.

772. Have you ever during your term of office advised the owners or the lessees of this mine on any point in connection with the safety of the mine ?—I do not think I have. I have no recollection. It is not my duty.

773. You remember your letters of the 29th ultimo and the 13th July to the Under-Secretary ?—Yes.

774. When you wrote those letters did you consider there was reasonable grounds to apprehend danger from firedamp in the mine ?—Yes, the Under-Secretary had sent me Inspector Bennie's reports, and as the result of studying them I wrote those letters.

775. Now, you know the provisions of Special Rule 14, which says that "the underviewer, under the directions of the manager, shall see that locked safety-lamps are used and naked lights excluded whensoever or wheresoever danger from firedamp is apprehended" ?—Yes.

776. Those conditions existed, according to your opinion: why did you not press for action to be taken under Special Rule 14, irrespective of a legal opinion ?—This opinion was received by me three days before the disaster. My letter of the 29th July was written after hearing that Kelly had been burnt, and with a view to urging the introduction of the Coalmines Bill. In a private letter to Mr. Bennie I advised him to get an opinion, and he wrote to the Under-Secretary and asked for permission to do so. I was the originator of the proposal.

777. Then, you did sometimes privately advise Mr. Bennie upon certain matters, and he acted upon your advice ?—I went out of my way to aid my friend.

778. Is it not an odd thing that you did not similarly go out of your way and advise him that the men ought to be withdrawn from the mine because of the conditions which you considered dangerous ?—I did not do so; the responsibility was not mine.

779. Do you consider all ignitions of gas-explosions ?—Yes, but it is a fine point sometimes.

780. Irrespective of the quantity of gas ?—If it were small I would term it a minor explosion.

781. Did you ever consider it to be your duty as a Inspecting Engineer, or the duty of the Mines Department, or the duty of any of its officers, to test the inflammability of the coaldust in the New Zealand mines ?—You are asking something after the event. I did not regard it as our duty prior to this explosion.

782. Professor Dixon has testified to the inflammability of this coaldust. The Mines Department did not consider it part of its functions to test coaldust ?—I knew the danger of coaldust as long ago as he did.

783. The point is that we have it in evidence that up till the present the Mines Department has not made any tests as to the inflammability of coaldust; may I assume, therefore, that you or the Department did not consider it your duty to make such tests ?—From the knowledge which we have now, it would have been wise if that had been done.

784. But up to the time of this explosion did you or the Department ever consider it your duty to test the inflammability of coaldust ?—We did not up till then consider it necessary.

785. Would you consider that the manager of a coal-mine might reasonably think it was not his duty to test his coaldust ?—I do not think he could reasonably be expected to consider it necessary.

786. You told us yesterday about the suppression and concealment on the part of the person in charge of these mines ?—In connection with these explosions, yes.

787. You are aware, are you not, that the vouchers which have been produced to the Commission regarding the payment of compensation to Willcox, Conn, and Kelly disclose the fact that these men were burned ?—Yes, they say burns were received, but they do not say what caused them.

788. One of the vouchers says it was gas ?—Yes.

789. Which one says that ?—Willcox: "Burns on face due to gas." This is not forwarded to me or to the Under-Secretary. It is an application that comes to the clerical branch of the Department for the Coal-miners' Relief Fund.

790. Do you consider that a person who wanted to conceal the fact would send that forward with an application ?—That document is merely the doctor's certificate of injuries, with the period of incapacitation from work.

791. Who sends it ?—The medical officer.

792. It is not the man who sends in the application ?—No, neither does the company put a scratch of the pen upon it. It is the doctor's certificate accompanying the Inspector's certificate for payment.

793. The management of the mine, of course, knows the practice adopted in obtaining settlement of all claims for compensation ?—It is to be concluded so.

794. And the practice was followed in this case ?—For compensation, yes.

795. Now, would not the doctor get his information from the mine officials ?—No. The burning accident might not have happened in the mine at all, it might have happened in the smithy for all Conn or Kelly's certificates indicate.

796. Do you think it was the Inspector's duty to ascertain whether the burns were received in the smithy or in the mine from gas ?—Not unless his suspicions were aroused. I do not think it is reasonable to expect him to hold an inquiry upon every voucher.

797. The claims coming in are numerous ?—Under this Coal-miners' Relief Fund there are hundreds.

798. It is a common thing for these burns to take place ?—No, there are all sorts of claims.

799. You do not examine them critically—anybody in the Department ?—They are attended to in the clerical branch of the Department. They do not come under my own notice.

800. You have told us that this mine and the conditions pertaining to it are unique ?—In my opinion.

801. And that it requires special treatment to ensure its safety ?—Yes.

802. And as a portion of that special treatment you have told us that it requires a more powerful fan ?—Yes.

803. Did you ever report that fact to the Under-Secretary ?—I was never asked to report it.

804. You knew that a more powerful fan was necessary, and because you were not asked to report upon that fact you did not do so ?—No. . . . The responsible Inspector would doubtless attend to that.

805. So far as you are concerned, you may know facts of the most pregnant character concerning safety or otherwise of a mine, but unless asked to disclose them you would not do so ?—I just reported upon the salient features in connection with the probability of a disaster. I drew attention to the necessity of safety-lamps. The inadequacy of the fan was a minor defect. I drew attention to the main dangers. These minor matters all contributed to the risk. I did not go through the whole list of causes of danger every time I wrote upon the subject to the Under-Secretary.

806. I am referring to the provision of the fan; are you prepared to again lay stress upon the adequacy of the fan ?—Yes, great stress.

807. Then it is not a minor matter ?—In comparison with the firedamp it is a minor matter. These are very serious reasons for apprehending danger. The absence of an adequate also constitutes a danger, in my opinion.

808. And you did not report it ?—I did not report every item. One or two of the principal causes of danger were sufficient.

809. There was one thing you said yesterday which I did not understand; when you measured the gaseous mixture you said there was no air. Must not there have been air if there was a mixture ?—Will you say where, because I measured the mixture in several places.

810. Where there was 68,000 ft. ?—I said there was no perceptible ventilation in bords Nos. 4, 5, and 6.

811. Did you say there was no air there ?—Gaseous mixture consists of CH_4 and air.

812. There must have been air in that vicinity ?—Yes, but it might have been still air; by "air" miners often imply "ventilation."

813. Containing sufficient oxygen to create an explosion ?—Yes, where I estimate 68,000 cubic feet of gaseous mixture was lodged.

814. Did you say there was no ventilating-current at that place when you visited it ?—The last time I visited it they had put new brattice up to the fall; prior to that there was none in those bords.

815. Was there any there the first time ?—There was on the 19th September perceptible ventilation elsewhere in the district after the explosion. The door at No. 6 bord was blown outwards, and there must have been ventilation there subsequently of sorts.

816. You said yesterday there was no ventilating-current at that place ?—Yes, in bords 4, 5, and 6 before the explosion, judging from the mine-plan and my own observations.

817. And though nothing had happened except the explosion there was ventilation there when you first visited it ?—I would say that there was slight ventilation, the door having gone. I did not measure any ventilating-current. I would not swear there was ventilation immediately after the explosion in bord No. 6.

818. You did not mean there was no air; you meant it comparatively ?—When we say there was no air we mean there was no moving air.

819. You told us yesterday that the force of an explosion, when ignited, was equal to 102·6 lb. per square inch ?—Sir R. A. S. Redmayne states: "The pressure due to the combustion of a mixture containing 9½ volumes of dry air to 1 volume of firedamp is equal to 102·6 lb. per square inch, and the calculated temperature of combustion is 3902° F."

820. You agree with that ?—Yes, of course; he is a high authority.

821. If that is so, and the quantity of gas you told the Commission was present, would not the force have been sufficient to blow the shaft and fittings to pieces ?—That might take a long time to compute.

821A. Cannot you give an idea ?—No.

822. Would you be prepared to deny that nearly 3,000,000 horse-power would have been generated on that basis ?—I do not deny or agree with that statement.

823. If that statement of yours is correct, then the approximate horse-power would be about 3,000,000 horse-power ?—I cannot answer without calculating.

824. Supposing that such a quantity of gas had been present, and if anything approaching that horse-power has been developed, would not the shaft have been blown to pieces ?—I cannot answer that either without calculating.

825. You do not know, then, what force would have been sufficient to blow the whole of that mine to pieces ?—I cannot answer that, neither could any one else.

826. You told us about the miracle that would probably have been performed if Martin had entered by the door ?—I consider it would have been a miracle if he had entered by the door, considering the position where his body was found.

827. You stated that the gas would be purest at or about the door ?—On the roof inside the door; that is so.

828. If that gas were very pure up there it would not have ignited ?—I cannot speak as to the degree of purity of the gas there.

829. But if it had been anything over 16 per cent., or between 10 and 16 per cent., would it have exploded ?—Yes, between 10 and 16 per cent. it would have exploded.

830. And over that ?—Not without the addition of more oxygen.

831. The oxygen is necessary for the explosion ?—Yes.

832. Also down from the door the mixture would have been less pure ?—Naturally.

833. Well, if Martin had gone into this mixture where the gas was less pure, would not the probability of an explosion have been increased ?—Yes, all things remaining the same.

834. You made this statement: That when you inspected near the old fall you saw a pile of rails ?—I saw a pile with some rails sticking out near where Martin's body was found.

835. You did not really mean a pile of rails ?—I saw some rails sticking out of a pile of stone, and the rails were perhaps a foot or more from the floor.

836. The rails were sticking out of the debris a foot or more from the floor ?—Yes.

837. If it is proved that there was only one rail, would you deny it ?—There was a pile containing rails. I saw the pile containing rails and stone, and I assumed, therefore, that there was a pile of rails.

838. As regards the fan, you stated that it was adequate to comply with the existing law ?—I said the fan was adequate for the minimum quantity of air prescribed under the exisitng law—150 cubic feet per man per minute.

839. It was adequate to comply with the existing law and regulations ?—Subsection (1), paragraph (2), of section 40 of the Act says, "Provided that where the Inspector was satisfied that such rate (150 cubic feet per minute) is insufficient to provide adequate ventilation, he may from time to time require the rate to be increased." So you see 150 ft. per man per minute is an absolute minimum quantity.

840. Professor Dixon, in his evidence, said that 2½ per cent. of gas could be detected by the ordinary miner ?—I am not sure if he said that.

841. I think you said yesterday that this was a specially dangerous mine, because there were large areas of high workings to be ventilated ?—That is my opinion.

842. I suppose for the last seven or eight years you knew that fact ?—You must consider my reasons for anxiety as a whole.

843. I am trying to analyse them as a whole ?—A large area in itself is not a danger.

844. A large area of high workings to be ventilated is not in itself a danger ?—That is so unless under unique conditions, as at Ralph's Mine.

845. Another thing you stated yesterday as a danger was that there were inexperienced men all around as far as the gas was concerned ?—That is a fact, owing to there being only one other mine containing gas in New Zealand where the men can be trained.

846. You say that the mine is dangerous because there are inexperienced men all round ?—You are attributing to me words that I never uttered.

847. You say the men all round: did you only mean the New Zealand men ?—I mean all through the mine. The New-Zealander is not experienced in gas-testing as the English collier is, because the men at Home often work in a gaseous mine. A man may be working at such mines as Denniston all his life, and never see gas.

848. You have said that the men here all round are inexperienced in dealing with gas ?—I have explained why.

849. Do you say that it is a cause for fear that in this mine the men all round are inexperienced in gas ?—It was one of my causes of fear that the men all round generally about the mine were inexperienced in firedamp.

850. Did you report that fact to the Department ?—No.

851. Do you consider it important ?—I considered it as one of my reasons for my fear of danger.

852. Did you consider that it contributed to the danger ?—It does.

853. But you did not report it ?—I have told you over and over again that I did not write a specification of all my fears; I simply remarked the prominent causes.

854. You made this statement yesterday, on the ventilation-point: "As I was not in the mine for a long time before the explosion I cannot say that the mine was ill ventilated, but the fan was not sufficient" ?—That was my statement.

855. Is it correct ?—Yes.

856. If Mr. Bennie reported that the mine was not ill ventilated, would you be prepared to contradict him ?—He forms his opinion and I form mine. I do not answer for his opinion.

857. Do you adhere to your opinion if he denies it ?—I am satisfied that the mine could not be adequately ventilated with that small fan—that is, adequately ventilated to remove and render harmless the noxious gases.

858. Do you know the provisions of Special Rule No. 3 ?—Yes; it is to the effect that the manager shall see that an adequate amount of ventilation is constantly produced in the mine to dilute and render harmless noxious gases, to such an extent that the working-places of the shafts, levels, stables, and workings of the mines and the travelling-roads to and from such working-places shall, so far as is reasonably practicable, be in a fit state for working and passing therein. It does not matter what the fan is doing. Every working or travelling part of the mine must be adequately ventilated. That is where I consider the company made the mistake and the mine was wrecked for the time being. Your company broke the rules, and you have taken good care to avoid alluding to ventilation of the mine.

859. Do you know the provisions of Special Rule 1 ?—Yes.

860. When did you form the opinion that the duties imposed upon the manager under Special Rules 1 and 3 had not been fulfilled ?—When I heard of the explosions and ignitions.

861. Since the explosions ?—Yes.

862. And am I right in inferring from that that the fact of the explosion caused you to entertain that opinion ?—Whenever there was a man burned by an explosion there was inadequate ventilation at that place, otherwise the noxious gases would have been diluted and rendered harmless in that section.

863. Please refer to section 40, which says, "The following general rules shall, so far as may be reasonably practicable, be observed in every mine: (1.) Ventilation shall be constantly maintained in every mine at the rate of not less than 150 cubic feet of air per minute for every person and 600 cubic feet of air per minute for every horse or other animal while employed underground. Provided that where the Inspector is satisfied that such rate is insufficient to provide adequate ventilation he may from time to time require the rate to be increased to such extent as he thinks reasonable, either throughout the underground workings or in any specified part thereof"?—Yes, that is the Inspector's power, but under Special Rule 3 the manager has certain duties to perform.

864. Do you know whether the manager ever reported that he was not satisfied with the rate of ventilation provided?—I do not know, but I do know that he reported to the Inspector that the company was getting a new fan owing to the small fan at present in use not being adequate, or words to that effect.

865. Do you know that that was voluntarily done, and that the company has never been requested to do it, nor ordered?—I do not know.

866. You know that the Inspector has power to secure efficient ventilation in the mine?—It is the duty of the manager. The section says that the Inspector may from time to time require the rate to be increased if he thinks it insufficient.

867. He did not order it in this case to be increased, according to our evidence?—Apparently not.

868. Do you say that he failed in his duty?—I say he was lenient, but that does not absolve the manager.

869. I am not referring to the manager, but to the Inspector?—He was lenient, in my opinion.

870. You said this was a mine which required special treatment?—Yes.

871. You said that locked doors ought to be provided and ventilators inserted above the doors?—Yes, above some of the doors in old workings.

872. That is what you meant by "special treatment"?—That is correct so far as it goes.

873. Did you ever report that opinion to the Department?—No.

874. Did you report it to anybody?—No.

875. Did you advise that it ought to be done?—No, it was not my duty.

876. *Mr. Tunks.*] You gave us a list of your qualifications, Mr. Reed, and there is only one point in connection with that matter to which I wish to refer. Will you tell us what coal-mines you have actually managed—those of which you have been the actual certificated manager?—The Mokihinui Coal Company's mine in New Zealand; the State Colliery at Collie, in Western Australia—I was manager of that mine, but in that country the manager did not then require a certificate, although I held two.

877. The only one in New Zealand was the Mokihinui Company's mine: where was that?—On the west coast of the South Island. For a short time I was certificated manager of a little mine at Waimangaroa, near Westport, and also certificated manager of a mine of which I was one of the owners—the New Cardiff, at Mokihinui.

878. Take the Mokihinui: does that belong to a private company?—Yes, it did—to a New Zealand company.

879. How many men were employed there?—At the first, perhaps sixty or seventy; that is twenty-nine years ago.

880. That was the first one you managed in New Zealand?—Yes.

881. And how long were you manager of that?—About two years.

882. What did you do then?—Within a few months I went to the New Cardiff Mine. I discovered that mine while at Mokihinui in 1886.

883. How many men were employed there?—During my time, just a few prospectors. I do not suppose there were more than half a dozen. After that I went to the Westport Coal Company as assistant engineer and surveyor, where I was for five years.

884. You were not the certificated manager there?—No.

885. After the New Cardiff, how long was it when you went to the Waimangaroa Mine?—I should say, a year or two.

886. How long were you there?—I think I was only about a month or two there; it was a prospecting mine.

887. And that was all your appointments as colliery manager in New Zealand?—Yes.

888. Your other experience as colliery manager was prior to that, was it?—Yes, and afterwards in Western Australia.

889. And were you manager of a coal-mine in Western Australia?—A coal-mine and also a gold-mine.

890. One of each?—Yes.

891. Where was the coal-mine?—It was at Collie River. And I also developed the coal-area near Vasse.

892. You were manager of the Collie River Mine?—Yes.

893. How long were you manager of that mine?—About eighteen months.

894. Then I understood you to say that you were interested in some other mine, but you were not the manager?—Yes, I had the management of the Vasse boring operations.

895. But you were not manager?—There was no mine-manager. I was in charge of the operations.

896. Then you opened the State coal-mine at Seddonville?—I was the prospector and the first discoverer of it twenty-nine years ago, before it became State property, and it was then named the New Cardiff Mine.

897. From the time you left Waimangaroa, did you manage any other coal-mine in New Zealand?—No, I left New Zealand; but I held positions in connection with coal-mines elsewhere. I

have had five years' experience at collieries in Durham, England. I entered the firm of Bell Bros., where I started as a mining apprentice, and ended up as a first-class certificated manager.

898. What mine did you manage at Durham ?—The Lumpsey Ironstone Mine at Cleveland, near Durham.

899. But not a coal-mine ?—No. I was five years in a coal-mine, and got my first-class coal-mine manager's certificate in Durham.

900. May I take it that we have got down now all your experience as a manager of coal-mines ?—That is correct.

901. Is there anything else which you think we ought to know regarding your experience ?—I had four years and a half at Durham, and went through every grade in the mines. I joined the Westport Coal Company under the late Mr. Brown. I was assistant engineer and surveyor there. For two years and a half I was Inspector of Coal-mines for Western Australia. Then, since I have been in this country, during the last nine years, I have been dealing with coal-mining matters. For the last four years I have been Consulting Engineer to the State coal-mines. I was manager of the Peak Hill Goldfields (Limited) in Western Australia, employing hundreds of men. I was manager of the Doric Goldmines, Colorado, U.S.A., for eighteen months or two years. I was Inspector of Mines for the Central Goldfields of Western Australia. I have visited mines in Transvaal and British Columbia, reporting upon them for British syndicates.

902. Was the mine in British Columbia gold or coal ?—Copper.

903. And the Transvaal ?—Gold. I was also engaged upon the Tasmanian silver-fields for about six months, and reported in that country on coal-mines at Jerusalem and Sandfly Bay, Huon district.

904. I understand from you that you inspected the Taupiri coal-mines some three years ago ?—Yes, I went round part of them.

905. You did not say you have inspected them ?—I kept my eyes open as I went round.

906. Three years ago—was any report of your inspection given to the manager ?—No; it was for the Royal Commission.

907. May I take it that you have never made any inspection of the Taupiri Coal-mine, after which you reported to any one ?—No, that is not so. On one occasion Mr. McKenzie, then Minister of Mines, asked me to go down this mine and investigate certain matters.

908. That was in connection with the Taupiri West connection ?—Yes, and some complaints from the men.

909. And I think I understood you to say that so far as the complaint of the men was concerned, it was attended to ?—I think so, promptly, by Mr. Wight, then manager.

910. You have told us about how you came to learn about the gas in the mine—certain burnings were reported. We want one point: you said something about the danger; are you depending on the four cases—Willcox, Conn, Rustin, and Kelly ?—There were some others also communicated to me, but I do not remember the names. I did not make a note of them, because I did not want my informant to know that I was uninformed. One name sounded like "Dexter"; it was a boy who had been trespassing in a part of the mine where he had no right to be—namely, old workings.

911. You cannot give his name, so perhaps you will agree that it would be better to leave that case out of count ?—Yes, you can leave it out.

912. You rely upon the four cases—Conn, Rustin, Kelly, and Willcox ?—And probably further concealed cases, as since admitted here.

913. You made comment upon the fact that so many Taupiri men presented themselves for gas-testing certificates ?—Yes; several miners came down to the Exhibition.

914. Did you not ask the secretary of the union to suggest to the men that they should come and submit themselves to the test ?—Very likely.

915. Then, as a matter of fact, there is nothing surprising in the number of men that came ?—The number did surprise me when I knew the reason.

916. Did it surprise you that your simple request had produced such a result ?—I believe it did.

917. Did you know whether any of the men who came up for that test were deputies who had been down for an examination in December—about Christmas ?—No, I did not know about Christmas whether they were deputies or not.

918. Did you about that time hold an examination for deputies ?—I held an examination in February or March. There were then a lot of candidates coming up for deputies' certificates, also underviewers. The men who came up for underviewers' certificates also took the gas-testing examination.

919. Were some of them from Huntly ?—Yes.

920. Can you say, roughly, how many ?—Not exactly.

921. Can you say how many men you tested ?—No.

922. Not a rough idea—not between six and sixty ?—Yes, considerably fewer than sixty. From the Taupiri mines or other mines ?

923. From Huntly, I mean ?—I cannot remember how many came from Huntly. I examined a good number, and they came intermittently during two months.

924. You cannot say—twenty or thirty ?—I think there were less than thirty from Huntly.

925. Do you remember this man, Young: he brought a letter from Mr. Fletcher to you ?—I think he did. I could not, however, swear that he did.

926. Well, then, did all these men whom you tested get their tickets ?—Some did and some did not.

927. Can you give us any idea of the proportion who failed ?—In the underviewers' section I think they all failed for their certificates as underviewers; perhaps one out of half a dozen passed, but I cannot remember.

928. Were they all Huntly men ?—I could not say.

929. I mean the gas-reading test?—The majority of them passed. I gave them a demonstration first, and then they were examined.

930. And the majority got the certificate for the gas-test?—Yes, I think they were mostly from the Extended Mine. I think there was only Darby and Young from Ralph's.

931. Do you remember whether there was any more from Ralph's?—I could not say.

932. You are unable to say exactly how many men came from Huntly, and how many of them failed?—I cannot say.

933. Would you say more obtained the certificate in the gas-reading test than failed?—Yes, after I had taught them how to test for gas. I then examined them in gaseous mixtures.

934. Now, in regard to these celebrated cases of Conn and Willcox, is there anything in the Act which requires an accident to be reported simply because it is a gas-burning?—I do not think so, but I would not be sure.

935. You have said that the first intimation you had was in Mr. Fletcher's letter of 8th January, 1914?—Yes.

936. You asked Mr. Bennie to get him to report, without prejudice?—I told him, "Tell him if he gives us a letter reporting the cases we will treat the matter as past, as far as these men are concerned."

937. Mr. Bennie's letter read this way: "Will you be good enough to forward me at your earliest convenience a list of the persons burned by the explosion of powder and also the ignition of firedamp during the past two years, together with the dates of the accidents. An early reply will greatly oblige." There is nothing in that about "without prejudice"?—No, he has not put it in.

938. Now we will take Mr. Fletcher's letter in reply, dated 14th January, 1914: "I beg to acknowledge your letter of the 8th instant regarding accidents by powder explosions and the ignition of firedamp. In the Extended Mine there were two cases of burning by explosions of firedamp during the past two years, but not serious. The first occurred to David Conn, a shiftman. There had been a fall of roof at the face of the west heading, and he with other men had been sent to repair same. During the course of repairs slabbing had to be done, and while putting the slabs into position overhead he got his naked light, which was on his head, too far into the fall; some gas which had apparently collected in a pocket was ignited and he received burns to both arms: date of occurrence, 16/2/12. This place had been inspected and reported "All clear" just previous to the shift commencing. The next occurred to William Willcox, who was a roadman at that time. It appears that on the previous afternoon this man had commenced to lay a turn into a cross-heading which was driven in a distance of 15 yards and brattice carried right to the face. He did not complete the laying of the turn, but went in a little earlier next morning, but not before the examining deputy had inspected the place. At the point where he was laying the turn, 15 yards back from the face, an ignition of firedamp took place. Mr. Wood, the certificated manager, in company with Deputy Duncan and Assistant Deputy Wood, immediately inspected the place after the accident and found no trace of any gas. It may have collected in a roof cavity through a disarrangement of the brattice, but Mr. Wood is of the opinion that the acetylene-lamp he was carrying at the time on his head had exploded. I might add these explosions occurred during the time the small fan was doing duty, and there is no doubt—although plenty as regards quantity to comply with the Act—there was not sufficient volume to keep down small accumulations during the time the mine was not working; but since the new fan has been erected these troubles are things of the past: date of occurrence, 26/3/12. Regarding the burning of Alexander Reid by an explosion of blasting-powder on the 14th December, 1912, this accident was reported to you under date 16th December, 1912. In Ralph's Mine a roadman named Arthur Ruston went into an old bord in Dooley's Dip to lift some rails near the face, and he ignited a small accumulation of gas near the face with his naked light. He escaped without injury." On the face of it there is a doubt as to whether really that was a gas-burn or not?—Not in my mind.

939. There was no occasion to report Arthur Ruston?—Legally or morally?

940. No occasion under the Act to report Arthur Ruston—he suffered no injury?—I shall not state that there is nothing in the Act.

941. Let us assume that it is only cases of serious injury which have to be reported; therefore there was no necessity to report Ruston's case?—Do you say so. I dare say you could puzzle me quite easily with your interpretations of the Act.

942. In those three cases I want to put it to you that the only definite and clear case so far as the reporting of a burning by gas is concerned was the case of Conn?—I count all those other concealed burnings by gas. I did not believe that letter.

943. You did not believe Mr. Fletcher's letter of the 14th January, 1914?—That it expressed all the burnings in the company's mines up to that date?

944. Bear in mind that what you asked for was a list covering the past two years. Do you say that you do not believe that Mr. Fletcher's letter contains all the cases of burnings he was asked to give for the two previous years?—I do not believe that it contains them up to that date.

945. During the past two years is the only point we are discussing. Do you say that Mr. Fletcher's letter of the 14th January, 1914, does not contain a true account of the burnings for the past two years?—I doubt very much if it does. The two years was not mentioned to me when I answered your first question. I meant all burnings up to that date.

946. We are dealing with this particular letter, which covers a period of two years only. Do you say that that letter of Mr. Fletcher's does not contain a true account of what Mr. Bennie asked for?—I cannot say whether it is true or untrue; that is my final answer.

947. Have you any reason for suggesting that it is untrue?—Well, I do not give any reason. I think the truth of it is doubtful.

948. You have no reason, but you have formed the opinion without any reason that the truth is doubtful ?—The truth is doubtful; I have my reasons for believing so.

949. You have doubts, but you have got no reasons that you can assign for those doubts ?—I have no actual evidence.

950. Have you any information ?—From information received, I have.

951. There is no reason why I should not have got that at first. You could have supplied a reason for believing that it is not true. You have told me that the letter was not worthy of credence. Do you realize what you have said ?—I did not use the word "credence".

952. That is a pure quibble; you said the letter was not true ?—In my opinion, it is not true.

953. The letter of the mine-manager is not true ?—I doubt its truth.

954. As far as it goes, or whether it is the whole truth ?—I doubt if it is the whole truth, from information I have received.

955. What is the true information ?—That there were burnings that were not put down in Mr. Fletcher's letter.

956. Since two years before the 14th January, 1914: were you told of these burnings during the two years previous to that ?—They were of comparatively recent date.

957. And you were told it by a man who had got into a place where he had no business to be. Did it ever occur to you that Mr. Fletcher had not heard of that case ?—I do not know whether Mr. Fletcher knew or did not know, but that was only one of several cases.

958. When did you find out about the inaccuracy of Mr. Fletcher's statement ?—I have formed my opinion, and I am going to stick to it.

959. I want to know if you are going to stick to the opinion that Mr. Fletcher did not in his official letter state the whole truth ?—Yes; he did not report everything that occurred in the way of burnings.

960. That is your opinion, and it is based upon the fact that some one whom you, quite rightly, do not name told you of a case—one case ?—One case specially, but he referred to other cases.

961. If Mr. Fletcher were to state on his oath that he knew nothing at all about such a case, would you then withdraw what you said as to the inaccuracy of his letter ?—I think Mr. Fletcher is a truthful man, and if he swore on oath that there were no other cases to his knowledge I would believe he was speaking the truth; but that would not clear my mind that men had not been burned.

962. That is an entirely different matter. You are prepared to accept Mr. Fletcher's statement that he knew nothing about such a case ?—If he swears that he knew of no other cases but those, I am prepared to believe him.

963. And you want Mr. Fletcher's oath before you accept his official letter to the Inspector—do you want his oath before you accept his letter ?—Not unless he desires to give it.

964. Will you accept his letter ?—I will if he now endorses it.

965. Then all you stated about your doubts may be crossed out now ?—If he now says it is true.

966. Do you think Mr. Fletcher requires to be put under such a serious condition before he states the truth ?—I would like him to say that.

967. Why do you suggest that he should be asked to say that it is true now ?—Because we are now under totally different conditions. That letter was written before the great explosion occurred, and I would like him to say now whether it is absolutely true.

968. Do you suggest that Mr. Fletcher has two methods of writing letters—one when he is serious and one when he is not serious ?—I do not suggest anything.

969. Do you still say, in spite of my examination, that you doubt the accuracy of that letter ?—Until Mr. Fletcher has absolutely stated that it is true, I still doubt it.

970. Does that apply to every letter and every report to the Inspector ?—No, they are written under different conditions altogether. This letter admits concealment of burnings of men. The other letters from him are ordinary business letters.

971. Giving up a concealment ? Do you think he was under any impression or concealment ?—Mr. Bennie did not show me his letter before he wrote it. I asked him to put "without prejudice."

972. Is there anything anywhere that leads you to suppose that Mr. Fletcher ever thought he was suspected of concealing anything ?—I do not know what was in his mind.

973. If Mr. Fletcher had wanted to conceal this, would he have included it—these matters of Conn and Willcox—in the letter that he wrote to Mr. Bennie in 1912 ?—I do not know what the letter he wrote in 1912 contained. This is the first I have heard of a letter in 1912.

974. You realize now that you have Mr. Bennie's letter and Mr. Fletcher's reply, that Mr. Bennie did not have to resort to "without prejudice" to get the information ?—Unless he said it verbally.

975. Have you not heard of this letter of the 29th March, 1912, from Mr. Fletcher to Mr. Bennie ? He says, "I enclose a list of workmen who have received accidents" ?—I never heard of it.

976. It includes quite a number of various kinds of accidents, amongst the number is one of burns: "16th February, David Conn—burns to face and hands." It does not say by gas. It also refers to William Willcox. You admit that Mr. Fletcher reported the fact that Conn and Willcox had been burned on the 29th March, 1912 ?—Yes, but the report did not mention "burns by gas"; they might have been burns received at boilers or in the smithy.

977. Now, may I have those vouchers of the payment to these men from the Coal-miners' Relief Fund, which you referred to a little while ago ? "David Conn: Arms, neck, and face burnt." This, at any rate, reached the Under-Secretary, Mr. Reed, and also the Minister ?—Yes.

978. It contains the same information—the doctor's certificate that the burn was due to mining ?—Yes, but it is for the Coal-miners' Relief Fund, and includes blacksmiths and enginemen.

979. Now we come to Willcox; here we have a pink form and a green form—the pink is declaring on and the green form declaring off. The doctor's certificate says, "This is to certify that Mr.

William Willcox is suffering from burns to face due to gas due to mining, and is therefore unable to do any work" ?—Yes, but this was not from Mr. Fletcher.

980. This also reached Mr. Blow and "J. C." (Mr. Colvin), Minister of Mines. Now, Mr. Reed, are you aware that a form similar to those pink and green ones is supplied to Mr. Fletcher ?—I do not know.

981. Do you know that a similar form is supplied to the Inspector of Mines ?—I take it that this is the Inspector's copy.

982. You see that it is signed "B. Bennie, Inspector of Mines" ?—Yes.

983. And no doubt when this form, so far as Willcox is concerned, reached Mr. Bennie on the 20th April, 1912, he was aware that Willcox had been burned by gas ?—If he read the form he would be aware.

984. Do you think that this would pass through his hands and he would not be aware that Willcox had been burned by gas—do you suggest that ?—I say it is possible. If an officer has to deal with a great number of forms in one day he may pass them on for payment without reading the details on all of them.

985. You have said that you do not know whether Mr. Fletcher received a similar form ?—I asked Mr. Bennie if he knew of these burnings, and he deliberately said "No." I believe that he had not read Willcox's doctor's certificate.

986. Mr. Fletcher was aware, as I pointed out, that he gets a similar form that would go to the Inspector ?—You say so.

987. Then he wrote the letter of the 29th March, 1912, and this going on—that Willcox was burned from gas—where is the suggestion that he was trying to conceal the burnings by gas ?—He did not report the fact in a proper manner. A detective might be able to trace a burning from that clue, perhaps, if he happened to find it.

988. Where is the evidence of a deliberate attempt to conceal the fact that Willcox was burned by gas ?—In that case there is no evidence of deliberate intent to conceal in the doctor's certificate.

989. You have charged the company with a deliberate attempt to conceal these things ?—Some of them.

990. In all these cases, with deliberately concealing ?—And not reporting them.

991. Suppression of facts by the company, of deceiving the Government, and a unique instance of suppression of facts; were those statements correct ?—The first two are my opinion, but the unique instance——

Mr. Tunks (to the Chairman): My position is this: Mr. Reed has charged us with successfully and deliberately concealing these things over a period of two years.

Witness: Yes, from the Mines Department.

992. *Mr. Tunks.*] So far as Willcox is concerned, at any rate, there does not appear to be any evidence ?—Not of a deliberate attempt, but of concealment.

993. Let us take Kelly's case ?—Kelly's case was reported after concealment was useless.

994. Then the only case we have left is that of Conn ?—And what about Ruston ?

995. Ruston was reported as having escaped without injury, and assuming, Mr. Reed, that Mr. Fletcher's letter is correct, that was not required to be reported, so we eliminate Ruston ?—I say his moral duty was to report everything.

996. Then we have eliminated Ruston, Kelly, and Willcox, so that we are reduced to the one case of Conn as having been deliberately concealed. Now, you are aware that the Inspector has the right to look at the manager's books whenever he goes to the mine ?—Yes.

997. I think you said it was the right and proper thing for an Inspector to do ?—Yes.

998. Here is Mr. Wood's book—that is, the manager of the Extended Mine. I want you to look at it. Mr. Wilford has seen this book. Mr. Bennie saw it at that time—17th February, 1912. It says, "During the week examined working-places, airways, and have had examined shafts, buildings, and machinery, and find all safe and in good order. Ventilation good.—W. Wood." "On Thursday, 15th February, a fall took place in the west side at No. 4 heading face; sent men to repair it. On Saturday morning back shift, Deputy Thomas Brownlie reported that a shiftman named David Conn had got his arm burned the previous night while repairing the above fall. It had previously been examined and found all clear. It appears he had been slabbing some of the timber, and had put his light up to see what he was doing when a slight explosion took place, burning his arms.—W. Wood." That is Conn's case, so that Mr. Wood had it in his book. Then another entry in the book is as follows: "Extended Mine, 30/3/12. During the week examined working-places, airways, shafts, buildings, and machinery, and found all safe. On Tuesday morning, 26th, W. Willcox, roadman, got slightly burned in No. 4 dip, back heading, west side, by an explosion of gas. I examined it immediately after and failed to find trace of gas. The deputy, F. Duncan, and W. Wood, assistant deputy, accompanied me.—W. Wood." He has duly entered these things in his book, which the Inspector had the right to see ?—The Inspector should have seen these entries.

999. Is there any evidence now of concealment ?—No, not in that book by Mr. Wood.

1000. There is no evidence of concealment so far as Mr. Wood's book is concerned ?—No, not in those cases of Conn and Willcox, but there is concealment under section 62 of the Act, which states that, "The mine-manager shall forthwith after the occurrence of any accident attended with serious injury to any person give notice thereof by telegraph to the Minister and to the Inspector, and shall also at the same time send written notice thereof to the Inspector and to the workmen's inspector. Every manager who omits to give such notice shall be guilty of an offence." That was a concealment; putting it in a book and not drawing the attention of anybody to it.

1001. That is, Mr. Reed, assuming that it would be held to be a serious accident under section 62 ?—I say all burnings by gas-explosions are serious accidents.

1002. You have not the right to say. His Worship might have been called upon to say so ?—In my opinion they are most serious accidents.

1003. Which are ?—Any burnings by gas-explosions by which men are kept off work two or three weeks. I consider it most serious.

1004. You consider it ought to have been reported ?—Yes.

1005. Mr. Fletcher took a different view ?—Yes.

1006. Now, then, Mr. Fletcher having exercised his intellect, and having taken a different view, where is the evidence of concealment ?—The evidence is that he never reported it in proper manner, and was liable to be punished for it.

1007. That is, assuming that it was held to be a serious case; but if Mr. Fletcher considered in good faith that it was not serious enough, where is the concealment ?—He nevertheless concealed these burnings.

1008. He did not report it. You say that the fact that he did not report it because he did not think it was serious was a concealment ?—I do.

1009. Why, sir, I might as well suggest that Mr. Reed concealed his colliery experience because he did not tell it to us ?—He should have reported it, and the very fact that he did not report it means that he concealed it. I say again that he concealed it. I have proved it, that the concealment occurred.

1010. We have it down to this: that notwithstanding what I have placed before the Commission you still say that Mr. Fletcher deliberately, and with intention to deceive somebody, concealed those cases ?—I say he concealed them; what his intentions were I do not know, but he concealed that information from the Minister.

1011. Do you say that Mr. Fletcher deliberately and with intention to deceive somebody concealed those cases ?—I shall not say he deliberately concealed them.

1012. You do not say so ?—No.

1013. I am not asking the question as to whether the information reached the Department or not ?—It never did.

1014. I am trying to convince you that there was no concealment of it ?—You cannot convince me.

1015. You are still of opinion that he deliberately—— ?—As facts have proved, he concealed those burnings from the Minister.

1016. Then, non-reporting was concealing ?—Under the conditions, yes, in view of the danger.

1017. Now, you have shown us by all your letters to the Department and the Under-Secretary how uneasy you were. I am only sorry your suggestions were not carried out. I am acting for the company, and also realize that you have made strong statements against the company ?—And I believe them to be true.

1018. Now, can you say that Mr. Fletcher was made in any way acquainted with your opinion as to the extreme danger that existed in Ralph's Mine ?—I do not know.

1019. So far as you are concerned, did you do anything yourself to make him aware ?—No, it was not my duty.

1020. So far as you are aware, was any other person connected with the company made acquainted with your views ?—No.

1021. Did you take steps yourself to make any other person than Mr. Fletcher connected with the company aware of your views ?—I do not understand who you refer to.

1022. Did you take any steps to make any person connected with the company other than Mr. Fletcher aware of your views ?—No, it was not my duty.

1023. Then, so far as your views are concerned, Mr. Reed, there was nothing to bring them to the knowledge of Mr. Fletcher, or any one else connected with the company, except anything that might have come to the Inspector ?—From the Under-Secretary; that is correct.

1024. Now, sir, we have had all the correspondence between the Inspector and the manager put in, and you have seen it ?—I did not hear their evidence and have not seen it.

1025. There was a letter from the Inspector of Mines dated 30th May, 1914; Mr. Fletcher's reply of the 4th June, 1914; a note by Mr. Bennie in the manager's report-book dated 2nd July, 1914; a letter dated 25th August, 1914, from Mr. Bennie to Mr. Fletcher; Mr. Fletcher's reply of the 26th August, 1914; then a further letter from the Inspector dated the 11th July, 1914; and Mr. Fletcher's reply of the 20th July, 1914. I think that is the whole of the correspondence that took place between the Inspector and the manager. Now, then, my question is this: With the exception of anything that appears in that correspondence, there is nothing to acquaint Mr. Fletcher with the fact of your views as to the danger in the mine ?—There is not, unless verbal communication may have taken place between the Inspector and Mr. Fletcher.

1026. There is no evidence of any such verbal communication ?—Oh!

1027. We may take it that neither Mr. Fletcher nor any one connected with the mine had been made aware of your views of the danger in Ralph's Mine ?—I am not aware.

1028. And you will admit that the correspondence does not disclose any such evidence ?—The correspondence mentioned does not. In one of your letters you made the point that safety-lamps ought to be used in the mine; that was in your letter of the 13th August ?—Yes.

1029. It is quite clear that the company were never recommended to use safety-lamps ?—I do not know what the Inspector of Mines recommended verbally.

1030. Unless there was a verbal recommendation we may take it that no such recommendation was made ?—Except it was made verbally, I have no knowledge of it.

1031. You made reference to the shaft-pillars; they have nothing to do with the cause of the explosion in the mine ?—But the Commission is empowered to deal with the matter of safety precautions generally. That is included in No. 5 of their order of reference.

1032. But these shaft-pillars did not contribute to this disaster ?—No, but they are a source of danger.

1033. Have you measured the shaft-pillars ?—No, but your surveyor has, and I have his plan.

1034. You are taking your evidence from the plan ?—And my recent inspection.

1035. Did you make any calculation as to the cubic contents of the pillars ?—I did not.

1036. Then your statement that the pillars are insufficient is based upon your observance of the pillars and the plan, without any computation ?—No, but it is palpable without computation.

1037. Then, from that examination, without measurement, you say that it is palpable that the pillars are insufficient ?—There are no pillars of any magnitude, and round about the shaft is riddled with workings.

1038. Round about the shaft is not safe ?—It is not safe.

1039. Have you any idea how long it has been as it is now ?—A considerable time, I believe.

1040. Do you know whether any change of any kind has taken place in those pillars ?—There must have been.

1041. Do you know whether any change has been noticed ?—I saw the change myself.

1042. You do know it, because you saw it ?—Yes.

1043. Since when ?—It is going on all the time.

1044. Did you take notice of those pillars when you were here before ?—No.

1045. How can you say, then ?—Because the coal is piled up. The pillars fret so much that we had to move the broken coal aside to use our instruments for air-measurement. Once fretting commences it continues.

1046. Was there any appreciable effect on those pillars ?—Yes.

1047. To what extent—say, $\frac{1}{8}$ in. ?—Piles of broken coal were near the pillars in places.

1048. Which you assume have come from the pillars ?—It could have come from nowhere else.

1049. What do you suggest should be done to remedy the trouble ?—I think it is a difficult problem. I would build up circular stone pillars. The area of the shaft-pillars in square yards should be equal to sixteen times the depth in fathoms; that is an approximate formula.

1050. Have you made any calculation to see whether that formula has been complied with ?—I can see that it has not.

1051. Then you made some remark about the arbitration proceedings which this company engaged in: that was in connection with the second shaft across the river, was it not ?—Yes.

1052. And I think you said the company eluded its duty ?—Yes, but they won the arbitration case.

1053. Now, do you suggest that the company concealed anything, or did anything that was not correct ?—They fought the case, and won; but they should not have done so.

1054. The tribunal was two mine-managers and Mr. Justice Denniston ?—I know; but the Inspector had no expert assistance. Your company had more expert witnesses, and thereby won the case, in my opinion.

1055. I think the Inspector was represented by Mr. F. E. Baume ?—Possibly; but I knew he would be beaten through absence of expert evidence.

1056. That was no reflection upon the company ?—Not a bit.

1057. There is one other small matter I wish to refer to: you said you understood that men have been burned in the winning-places in Ralph's: have you any evidence of that—as to the burnings in the working-places ?—I meant the new workings, where you have got a better air-current than in the old workings.

1058. Actual working-faces ?—Where there ought to be a current of air men have received burns.

1059. Which are better ventilated than the old workings: what is your evidence ?—Kelly was not burned in the old workings.

1060. No; he was burned in the stone drive ?—That is so; not in old workings.

1061. You were referring to Kelly's case ?—Yes.

1062. Is there any other case ?—I do not know exactly where those other men were when they were burned. Mr. Fletcher can tell you, perhaps; but they were not in the old workings.

1063. The only one you know of is Kelly ?—I understand that Conn and Willcox were also burned in new workings.

1064. When you made that statement, what was the ground for your belief ?—That is my impression. It has been on my mind that those men were burned in new workings. I remember reading that it was in some new drive that was being put in.

1065. When did you get that ?—At the time of Bennie's report.

1066. You knew of Kelly's case at the time ?—Yes; that was the only case Mr. Fletcher properly reported at the time.

1067. Kelly's case is the only case that you can remember on which you based this statement ?—I believed that the others were burned in new workings, too. I have always believed so.

1068. What made you believe it ?—It was upon my mind that nobody was allowed in the old workings. The new workings only are where men should be allowed to go.

1069. Since when has it been on your mind ?—As far back as when Mr. Fletcher's report came in on the 14th February; he did not then say that they were in the old workings. I took it then that they were in the new workings.

1070. Now we come to the question of the samples. You said something about Professor Dixon taking part of your samples without your permission. What did you mean ?—He went down to Wellington, and without asking my permission he proceeded to the Dominion Laboratory, and got a coaldust sample of the mine. He tested it, and came back here and gave evidence without admitting

that it was my sample. He said he got it from the Minister, though my name, in Dr. Maclaurin's handwriting, was on the bottle containing the sample.

1071. Has it got anything to do with the bottle ?—I had subsequently to identify that sample in this Court.

1072. It is quite clear that that sample came from the Taupiri Mine ?—Yes, unless the contents have been changed after it left my hands.

1073. And that established the veracity of the professor ?—His veracity is rather complicated.

1074. Do you suggest that Professor Dixon did anything in regard to that sample which he should not have done ?—Only that it was not professional etiquette to take another man's sample for analysis without asking for or acknowledging it.

1075. We heard a great deal about this grab sample—the sample grabbed from the coal-scuttle—do you know anything about it ?—Only what I have heard here.

1076. That is all you know about it ?—It was grabbed by the professor at the local hotel a week before I came here, so I am informed.

1077. You do not suggest that Professor Dixon took a piece of coal, and did not know where it came from, and analysed that and gave evidence upon it ?—No; he said he threw that sample away, and reported to the Minister without taking any sample for analysis.

1077A. According to the analyst's report, you say in your references that No. 16 sample was two large pieces of coal from Ralph's Mine; did you get those out of the coal-scuttle ?—No, I am not a professor; I asked permission from the company's chief clerk to get them. They were obtained out of the bin at Ralph's shaft.

1078. You cannot swear that they came out of Ralph's Mine ?—They were from Ralph's Mine bins, which contain only coal from Ralph's Mine.

1079. You told us that in Mr. Alison's presence you made a rough test ?—Yes; I took a match and dropped some of the coaldust on to it. The whole of it went off like gunpowder.

1080. That was the first indication that you had of this dust being so explosive ?—Yes: its inflammability astonished me.

1081. So that the latent power in this dust has remained concealed until the explosion took place ?—The excessive inflammability was unknown to us before the explosion. We gave it credit for being ordinary dust, but it is much more dangerous. And, of course, to Mr. Fletcher and everybody else in connection with the company its true nature was not known.

1082. We have had some big figures from you; you said you measured hundreds of thousands of cubic feet of gaseous mixture in the bords near Martin's body ?—For certain, 350,000 cubic feet in the locality I measured it to my satisfaction.

1083. Is it a question of measurement or opinion ?—It is a satisfactory estimate, to my mind.

1084. Is it by measurement or opinion ?—Measurement.

1085. You say you call it measurement. Why do you call it measurement ? Did you actually measure anything ?—If you will allow me to explain, I will do so.

1086. Did you measure anything ?—I measured upon the plan the lengths of the bords, and then took samples which proved to me that this gaseous mixture was continued up the bords to their dead ends.

1087. That is what you mean when you say you measured ?—Yes; I measured 40 chains of bords containing gaseous mixture—bords averaging 10 ft. high by 14 ft. wide; that comes to about 350,000 cubic feet. I say "For certain," because there was some ventilation ? I believe, as a matter of fact, there was nearer 500,000 cubic feet of gaseous mixture emitted.

1088. Do you mean 500,000 cubic feet of gaseous mixture ?—Yes; 10 per cent. of gas. That is the most explosive mixture.

1089. You had this analysed, and you said there was no afterdamp in any appreciable quantity; what do you mean by appreciable quantity ?—There was no carbon dioxide and no carbon monoxide in any serious quantity such as you expect in afterdamp.

1090. What do you deduce from those analyses ?—That there was ventilation in those places. Here is the analysis; the afterdamp is a combination of gases given off after an explosion, CO, CO_2, N, and possibly unconsumed CH_4. The main constituent of afterdamp is carbon dioxide, that is CO_2. In this analysis the CO_2 is really harmless. The highest quantity is 0·37. The afterdamp had apparently been carried out by some ventilation which had taken place.

1091. Is it heavier than air or lighter ?—It is one and a half times heavier.

1092. Is it not a fact that it is usually difficult to get any appreciable quantity of afterdamp after an explosion ?—This was six days after.

1093. But it is usually impossible to get afterdamp immediately after an explosion ?—No, it kills on an average 80 per cent. of the men who die by colliery explosions.

1094. I think you admitted to Mr. Napier that so far as Martin was concerned there is no evidence of burning ?—No, it was an extraordinary thing that Martin's hair even, according to the doctor, was not burned, and the upper portion of his body was not injured; but his intestines were burned, and the lower limbs were also burned and fractured.

1095. This is what the doctor said of Martin: "This man had a compound fracture of the skull—a piece of coal was driven into it; there were compound fractures of both legs below the knee: There was a fracture of the left femur in the middle third; the body was devoid of clothing; there was a fracture of the left side of ilium; the intestines were exposed and charred; death was due to violence." If there had been, as you suggest, 68,000 cubic feet of gas round about there which had ignited and exploded, would not Martin's body have been charred to a cinder ?—There is no evidence against my theory. I would like to explain to you the phenomenon. The gas at that point may have been so extremely high in proportion to oxygen that the explosion was only a feeble one at that point.

That is one reason, and another is this: There might have been so much CO_2 generated as to prevent the subsequent flame injuring his body. CO_2 is a product of combustion.

1096. Would that be the case with the man who ignites the gas?—Yes, it is possible that he was in such a high proportion of gas that the flame might pass on its way, and much of the gas round about him might have been inexplosive owing to absence of oxygen.

1097. The actual flame was produced by his lamp?—And that flame round about his body might have been limited in extent owing to the necessary proportions not being there on account of the surplus of CO_2 subsequently, or CH_4 at the time of ignition, the conditions might thus have not been favourable to complete combustion; this would result in his body being somewhat protected. At Kaitangata Colliery they always confine blackdamp within stoppings, and although there is CH_4 on the roof there is no explosion owing to the quantity of blackdamp present.

1098. But there was an explosion here?—The magnitude of it round about Martin's body nobody can tell. The state of destruction to a man's body is no indication of the origin of the explosion.

1099. Redmayne says, I understand, that you may have no evidence of force for 40 or 50 yards from the origin of the explosion. The force does assume great proportions, but he does not state the area of the burning?—He says, "Little damage is done near the point of origin of the explosive flame, and for, say, 50 to 80 yards therefrom. Then great damage is evidenced. And after the cessation of the advancing explosion there is evidence of a 'backlash' or rebounding force."

1100. That is force, not flame?—No.

1101. So that that has not to be taken as governing the area of the flame?—No.

1102. And you have not shown us anything which limits the action of the flame?—It is a problem which nobody can account for, and which of those conditions existed I am not able to say.

1103. Have you examined that bord for any distance?—I have been up it four or five times.

1104. Did you find any evidence of burning in that bord?—There is nothing to burn—it is all coal and stone.

1105. Would not the coaldust show any sign of flame?—There was a film of soot, which was the result of the flame. Martin's coat was smoked and discoloured with soot, I think.

1106. Is it not the fact that you got a small injury near the part of origin, an indication that the amount of gas was small?—Not a bit.

1107. Do you suggest that the whole of this 68,000 ft. was exploded?—Yes. I say it was consumed or exploded by the original explosion and the backlash.

1108. Would not the force be terrific?—And it was.

1109. How did we get anything of Martin's body?—It was at the point of origin. It was thrown on the ground, and we know that a prostrate figure would not suffer as would a vertical obstruction to the force and backlash. Nevertheless, it had given him a tremendous smash and stoved in his head. Redmayne says that the force is small at the point of origin.

1110. That is because the quantity of gas was small?—Not at all, Redmayne says nothing about that.

1111. Would not the amount of gas which is present at the initial point make some difference in the amount of damage?—It must, to a certain extent.

1112. If we find that the man's body at the point of ignition is not burned?—But he was burned: his stomach was charred. The man was no doubt in a flame, but that flame did not last long; he would have been burned more seriously if it had lasted longer.

1113. You say that the amount of gas which is present, whether large or small, would have no appreciable difference in regard to the effect of the flame at the point of origin?—Within reasonable limits it would not. Taking the quantity of gas at, say, from 20,000 to 60,000 cubic feet. I do not think there would be any difference in the condition of the corpse at the point of origin.

1114. If you found it tremendously charred?—I would say that there was sufficient oxygen there to keep the flame going for a long time.

1115. If there had been less gas and more oxygen, you might have had a bigger flame at that point?—I do not know what the proportion would have been.

1116. But you have given us a certain quantity of gaseous mixture; I ask you does not the fact that the body was not charred throw any light upon the quantity of gas present?—Not a bit.

1117. And if you found the body charred?—No.

1118. And the fact that there is no evidence of burning in the bord?—I saw a film of soot on the sides of the pillars. Where we found his coat I tried to mark the word "coat" on the coal, but the chalk would not write upon it owing to soot.

1119. If that was evidence of burning, would not there have been evidence of burning on that coat?—I could not say there was any evidence of burning as it was so dirty when dug up.

1120. What do we gather about the lack of ventilation and as to the length of time the gas was there? Do you suggest that those bords have been continually dangerous for any period before the explosion?—There was a period during which they were dangerous—before Martin was there.

1121. How long before the explosion?—I am unable to say. The gas did not come in there instantaneously.

1122. Why do you say it was not instantaneously?—Gas never does come instantaneously.

1123. That was only 6,800 ft. of gas. Is that a large outburst? Was it not quite possible for 6,800 cubic feet of gas to be given off at that point within, say, about an hour?—Yes, it is possible for mines to give off gas at that rate.

1124. You will not say it is impossible in this mine?—It is difficult to say what is impossible.

1125. It is impossible in this mine?—From my knowledge of the mine I think it is impossible.

1126. Is there anywhere else in the world a mine like this? It is unique. Is not the size of the seam unique?—Yes, but there are thick seams in other parts of the world.

1127. You admitted that it had not been shown yet definitely that gas is being produced at that old fall ?—It is being emitted from the upper stratum above the old fall.

1128. That is your opinion ?—The exact locality has not been proved, and it may never be proved.

1129. It has never been proved whether it is an outburst or a blower ?—I believe that can only be found out by exploration.

1130. That is a matter of opinion ?—Yes. My opinion is sound; it has proved itself to be sound in regard to this explosion, which I foretold. This is an easier question than that.

1131. These bords are contained in the area in regard to which you say the plan indicates that the ventilation has short-circuited and that there is ample opportunity for gas to be accumulated ?—Just the place for an accumulation of firedamp.

1132. You are aware, at any rate, that within a fortnight previously men had been there with naked lights: did you hear Brownlie's evidence ?—No.

1133. He has said that on the previous Saturday fortnight he met Deputy Smith on the other side of that door in that section, not where the old fall is, but in the bord, taking rails through the door ?—Did he try the roof for gas ?

1134. At any rate, does not the fact that men working there with naked lights lifting rails indicate that there was some ventilation there ?—No, it does not. A man can work in stagnant air, with explosive gas on the roof above his head and not ignite it.

1135. But you said in these places there was no ventilation ?—I repeat that the plan shows this place to be a cul-de-sac; there was no means of directing the air through that cul-de-sac.

1136. Where did you go ?—We walked round about this section.

1137. You did not explore thoroughly all the bords in that area marked with green ink ?—No; but I explored bords Nos. 4, 5, and 6—the gaseous area.

1138. You are not able to say whether there was or was not any bratticing there ?—I found no brattice there, and your surveyor's plan shows no stoppings or no ventilation equipment of any kind within this area. The plan shows the air short-circuited.

1139. But you did not make an inspection of the whole area ?—No, but the upper portion of it has no ventilation equipment at all. The lower portion I did not examine.

1140. So far as any ventilation appliances are concerned, you are basing your statement on the plan ?—And my own inspection.

1141. From you own inspection can you say that there were no ventilation appliances ?—Not as regards the whole section, but there was none in the upper portion. I can swear that I saw none.

1142. The whole gaseous zone ?—Above the level of Martin's body, in bords Nos. 4, 5, and 6, there was not the slightest indication of anything to direct the air to the dead ends. This portion which was filled with gaseous mixture was devoid of ventilation.

1143. Did you suggest that in order to test for gas a man should carry a glass ?—No, but I say that for an expert to read minutely he should have a magnifying-glass.

1144. But it would not require a glass as good as yours ?—No, a glass worth 10s. would be quite sufficient.

1145. Now, as to your reasons for thinking there would be an explosion in the Taupiri Mine: when did you make that tabulation ?—When I heard of those explosions, in January, the reasons for fearing a disaster passed through my mind.

1146. Did you set them down anywhere in writing ?—No; that is, I did not write them down then.

1147. When did you first write them down ?—Before I came here—they were notes made by me yesterday morning to refresh my memory.

1148. They were not communicated to anybody until you gave them in evidence here ?—In my letters I speak about some of the principal ones.

1149. They were not communicated to anybody otherwise than as they appear in your letters ?—No, it is not my business to create fears in the general public.

1150. On what evidence did you base your statement that we have a lot of men here inexperienced in testing gas ?—That is natural. When they come up for examination I have to demonstrate to them—to teach them how to read a gas-cap—before examining them. From my knowledge of the New-Zealand-born miners, I do not think many of them are skilled in gas-reading.

1151. Are you aware that all the deputies here were trained at Home ?—I do not know the experience of all the deputies here.

1152. You are not aware that some of them were trained in your own district, Durham ?—Some of them may be, but those men did not come to me for gas-testing certificates.

1153. But your statement is that these men are inexperienced all round, as far as gas is concerned ?—That is, generally.

1154. Then was that statement based on sufficient evidence ?—How could these New-Zealanders learn about gas.

1155. You made a statement which you afterwards had to qualify ?—I altered the words "all round" to "generally."

1156. You do not get the whole facts ?—As many facts as I can get.

1157. You had no knowledge when you made that statement as to the qualifications of the deputies in the Taupiri Mine ?—I had reason to form an opinion as to their qualifications because only one of them had got his certificate up to March last; that was Young.

1158. But he was not a deputy ?—He was an assistant inspector of old workings.

1159. Did you know whether these men had been tested for gas ?—Considering that the gas-cap-observation machine I was using was the first introduced into the Dominion I naturally knew.

1160. Had you any knowledge of the qualifications held by the deputies here for testing for gas? —Not all.

1161. What right had you then to say that the company had no experienced men in regard to gas-testing?—All the New Zealand collieries are the same.

1162. It was couched in general terms?—It was based upon my great knowledge of the miners of New Zealand. There were no possible means of learning about gas-testing here. There are from 140 to 150 collieries in this country, and in only two of them are the men likely to see firedamp—at Kaitangata and here.

1163. But if deputies had been trained at Home that would not apply to them; you were not aware of that fact?—No, I did not know what you state.

1164. You suggested that the company is putting in a new fan because the present one is insufficient?—They have put in a fan at the Extended Mine which is four or five times as large as the present one at Ralph's, proving that the fan at Ralph's is insufficient.

1165. Cannot you allow in the size of the fan for future developments?—Four or five times is a great difference; the company would not sink its capital in such a fan if it were not necessary.

1166. If you were advising the company as to the size of the fan to put in, would you not make provision for a good long way ahead?—I would have installed a large fan at the start.

1167. The decision to install a large fan was arrived at long before the explosion?—I do not know when it was arrived at.

1168. Do you not know that the decision to install a large fan was come to before the explosion? —I did not know; in fact, I do not know yet that such decision had been arrived at.

1169. You are aware that the new shaft has been sunk at Ralph's Mine?—I have heard so.

1170. For the purpose of installing a new fan—there is machinery being installed there?—I am not aware of it. I am rather short-sighted, but tell me where it is.

1171. Were you not aware that new machinery was being erected at Ralph's Mine?—I think the Inspector reported it, but I have not seen the new shaft.

1172. I do not think the machinery now being installed is the machinery for the new fan?— Where abouts is this mysterious place?

1173. Near the shaft?—I do not know it.

1174. It is a proper thing to make provision for future developments by putting in a new fan? —Yes, it is. I do not think this disaster would have happened if you had had an efficient fan and adequate ventilation.

1175. In regard to Special Rule 1, which provides that the manager shall be responsible for the appointment of a sufficient number of competent persons to carry out the requirements of the Coal-mines Acts and the special rules, and also to see that the working of the mine is carried on with all reasonable provisions for the safety of the persons employed, do you know what number of persons the company employs?—No, but Mr. Fletcher has told me there are 160 in Ralph's Mine.

1176. Do you know what is the number of persons, such as deputies and so on, who are employed to see that the provisions of the Act are carried out?—I do not know.

1177. You have no means of finding out how many men are employed in this mine?—As regards the number of officials, I do not know.

1178. When you were asked as to whether there was anything you could have done in order to remedy the state of things you knew to exist in this mine, I understood you to say that in regard to the Kaitangata Mine you thought certain things ought to be done respecting the explosives used?— Yes, but not as regards explosives.

1179. What was the nature of your reference to Kaitangata? Was it in regard to permitted explosives?—No, it was as regards the dust—both at Kaitangata and Nightcaps. I have written to Mr. Green, Inspector of Mines, and he is sending samples of coaldust from both mines for analysis.

1180. Supposing you get them analysed, and find them dangerous, what are you going to do if the new Act is not in force?—We will have to do the best we can.

1181. Who?—The Inspector of Mines and the Government. I am not a responsible official as far as the statutes are concerned.

1182. I understood you to say that if there is any point in regard to which an Inspector of Mines ought to take some action, you would call the attention of the Under-Secretary to it, and he could write to the Inspector, and that sometimes you draft the letters?—When the Under-Secretary has asked me, yes.

1183. If you had gone to the Under-Secretary and said, "I am in great trouble about the Taupiri mines. I think a letter ought to be written at once to Mr. Bennie, and he should immediately communicate to the manager what I have told you in regard to the condition of the mine," would not that have got such a letter written?—I do not know. I wrote to Inspector Bennie as a personal friend would write, and why are you trying to belittle me for it?

1184. I have given you full credit for what you have done. I am only suggesting that you could have carried it a little further?—I suppose I should have taken a gun to him.

1185. Now, Mr. Reed, you have made a reference to the company not paying its debts. I would like to understand what you referred to?—They were working under the river on Crown land. They had not got it on a proper lease.

1186. Are you referring to the case Mueller *v.* Taupiri Coal-mines (Limited)? Are you aware that that is something like ten years ago?—It might have been ten years ago.

1187. Are you aware that it went to the Court of Appeal to decide whether the river-bed was Crown land?—I do not know.

1188. Why do you make such statements as that the company is not paying its debts?—It proved that you were taking something that did not belong to you.

1189. You charge the company with doing something which they were not entitled to do?—I referred to the time when the company were taking Crown coal without payment of royalty.

1190. The question in dispute was as to whether the river-bed was Crown land or not, and the Court of Appeal decided it was Crown land. The company, after the decision, took out a lease and paid everything it was asked to pay?—Because it was made to.

1191. We have had some remarks from you in regard to the question of permitted explosives?—Yes. You are now using flame-producing explosives.

1192. That explosive known as monobel?—It is not a Home Office permitted explosive.

1193. Do you know whether there is any permitted explosives in New Zealand at the present time?—I am not aware.

1194. Do you know whether there are any permitted explosives in Australasia at the present time?—I am not aware.

1195. If the company has made inquiries and can get no permitted explosives in Australasia, do you say that it is the duty of the company to close down the Extended Mine?—Yes; if I had the power I would close it down to-morrow, because you are risking the lives of your men in it. A blown-out shot amongst that dust might create another holocaust, and I think the company ought to be ashamed to defy the Inspector's orders in this matter so shortly after a disastrous explosion.

1196. Monobel was permitted to be used?—That is a misstatement.

1197. Did not Inspector Bennie give permission to use monobel?—In his first letter, no; but then somebody came to him and misled him, and he added it to his list afterwards. They told him that monobel without the numeral was a permitted explosive. When I told him that he had been misled he altered the list by inserting "monobel No. 1" in place of "monobel," that with the numeral being on the permitted list.

1198. Who do you say misled him?—Somebody hoodwinked him. Some representative of your company deceived the Inspector.

1199. Are you quite sure that some representative of this company hoodwinked and deceived Mr. Bennie?—I was told by Mr. Bennie the name of the man.

1200. Are you quite sure that some representative of this company hoodwinked and deceived Mr. Bennie?—I believe that he did, because I was told so by Mr. Bennie.

1201. What explosives are being used in the Kaitangata Mine?—I do not know.

1202. Can you tell me what explosives are being used in the State mine?—Blasting-powder, I think; but I am not quite sure.

1203. Is that still being used in the State mine?—I am not sure.

1204. Have you taken any steps in regard to the State mine?—What steps do you suggest?

1205. In regard to the explosives which are in use there?—None whatever at present.

1206. Then, perhaps you are aware that up to this time they are using blasting-powder?—As far as I am aware. It is a wet mine.

1207. Does that make any difference?—Quite a great deal as regards the dust problem.

1208. Is there any gas in that mine?—Occasionally, I believe, they find it. They use safety-lamps, so no doubt there is gas, though I have never seen it.

1209. It is a safety-lamp mine, and they are using blasting-powder?—It is a wet mine, and it is bituminous coal, the dust of which is not very inflammable.

1210. Are you satisfied that they should go on using blasting-powder?—Until I make further investigations and can satisfy myself that it is not a dangerous mine, I think they can safely go on as they are for a time.

1211. Do you say it is a bituminous or semi-bituminous coal?—In my opinion, it is a bituminous coal; we class it as one.

1211A. Is it a true bituminous coal?—I think so; it has always been so classed in the statistics of the Mines Department, at all events.

1212. What is the coal at Kaitangata?—It is a superior lignite.

1213. And you do not know what explosives they are using there?—No.

1214. Assuming that they are using blasting-powder, do you propose to take any action?—I told you that the Inspector is sending samples of this coaldust to be tested, and investigations are being rapidly carried out, and upon the result of them depends what action will be taken. It is extremely probable that definite action will be taken.

1215. Has any notice been given to any of these people that this position was likely to arise?—I do not know.

1216. Have you made any inquiry as to whether there are any permitted explosives to be obtained in this Dominion?—I only know from Mr. Leggo, who has disposed of monobel to the Taupiri Company.

1217. Do you suggest that it was he who misled the company?—I understand that Mr. Bennie, Mr. Bishop, and Mr. Fletcher went to him, and he told them that monobel without the numeral was a permitted explosive, and they induced Mr. Bennie to add the word "monobel" to his list. His letter had been sent or delivered to the company, and it was returned to Mr. Bennie to add "monobel." Mr. Bennie, in his honest way, did so, and the company preceeded to work with it. I came upon the scene and saw Mr. Leggo, and asked him if the explosives they were using were monobel No. 1, and he nodded. The next day I searched the Home Office permitted list, and found that it did not include monobel, but only monobel No. 1. That list was complete up to 1913. You will find that monobel does not occur at all on the lists since 1912. When I discovered that it was monobel No. 1 which was on the list, and not monobel, which the company was using, I told Mr. Bennie that he had been deceived. He then drafted a letter to the company stating that monobel No. 1 was the only monobel which was on the permitted list. Mr. Bennie was deceived by these two gentlemen, and I was, perhaps unintentionally, deceived by Mr. Leggo, who is the agent for Nobel's Limited. Monobel is not permitted in England,

as it is a flame-producing explosive, and this company has purchased this unpermitted explosive to the danger of the lives of the miners.

1218. Are you finished ?—I have told the truth.

1219. Now, do I understand you to say that Mr. Fletcher and Mr. Bishop said to Mr. Bennie that monobel without the numeral was a permitted explosive ?—Mr. Bennie informed me so. He stated that there was no numeral mentioned.

1220. But they did not say to him, "Monobel without the numeral is a permitted explosive" ?—No; I have no doubt that they took care not to use the word "numeral."

1221. Are you a thought-reader ?—No, but one would wish to be when that sort of thing is being done.

1222. If you were, as you say, informed by Mr. Leggo that monobel was a permitted explosive, do you not think it is quite possible that he informed Mr. Fletcher and Mr. Bishop to the same effect ?—I do not know what he told them.

1223. You were misled, were you not, by Mr. Leggo ?—Yes, at first.

1224. Is it not possible, therefore, that they were also misled——?—You are assuming too much.

1225. By Mr. Leggo, intentionally or unintentionally ?—I do not know. It depended upon their object. They were not likely to be both misled.

1226. How did it come about that you were misled ?—I was misled in this manner: He informed me at night that the company was using monobel No. 1, but in the morning I was informed otherwise.

1227. "This is another performance of the company." Will you kindly say what are the other performances of the company ?—Working the Taupiri Extended with monobel, which is not a permitted explosive, and after receipt of a notice from the Inspector that only Home Office permitted explosives must be used.

1228. These are not specified performances ?—Yes.

1229. Well, then, I want to assume that we cannot get a permitted explosive in the Dominion: are you going to close down all the mines in the Dominion ?—I would close down all those which are gas-producing and dangerous from coaldust. If human life is at stake, as it is here, I would close down every such mine until precautionary measures are established.

1230. Are you going to say that blasting-powder can still be used in mines in New Zealand ?—If a mine is not suspected to be dangerous owing to gas and dust, and is a naked-light mine, I would permit the use of blasting-powder if I had power.

1231. Is this the only mine at the present time in which permitted explosives only are to be used ?—This is the first. The Department is dealing with this company first, but the Department is getting on to the others as fast as possible. The Inspectors are vigilantly searching for dangerous conditions. The new Bill is on the verge of becoming an Act, and the Department is losing no time.

1232. So far as this company is concerned, you are not waiting for the Bill to become an Act ?—No. The Inspector is taking this action against you under section 56.

1233. If it applies to this company, does it not also apply to every other mine in New Zealand ?—Directly the Department finds them taking risks.

1234. Are you going to wait for some explosions in the other mines ?—No, the Inspectors are sending the dust for analysis immediately.

1235. Are you waiting for analyses before you take any action ?—Yes, the Department must experiment with the dust. The Inspectors of Mines are acting.

1236. Is it not a fact that monobel has been largely used in New Zealand ?—It may have been largely used in New Zealand.

1237. Do you know that it is so ?—No, I do not know it is so. It may have been. I will not dispute your word if you say it is.

1238. Is it not your business to know ?—No, it is not my business to know the quantities and varieties of all explosives that are being used in New Zealand.

1239. Is it largely used in New Zealand ?—I do not know. There is an Inspector of Explosives, who has charge of that department; you may inquire from him.

1240. Are you acting in conjunction with the Inspector of Explosives now ?—I am not acting in conjunction with anybody.

1241. What has he got to do with your knowledge of what explosives are being used in coal-mines ?—Nothing whatever.

1242. Do you mean to tell me that you are not aware of what explosives are used ?—I know what explosives are used, but I do not know the quantities.

1243. Did you know that monobel was being used in New Zealand ?—I did.

1244. What other explosive ?—Blasting-powder.

1245. What else ?—I believe gelignite is being used in New Zealand, but the quantities I do not know.

1246. I may take it, so far as you are concerned, that the only thing the company can do is to close down the mine until they can get permitted explosives ?—I am not the Inspector of Mines for this district; he only can close the mine.

1247. That is your opinion ?—If I were Inspector of Mines I would close the mine until a safe explosive was obtained.

1248. Although a permitted explosive is not to be got in the Dominion and safety-lamps are being used ?—I do not know that.

1249. Would you take into account, if you were Inspector of Mines, the fact that permitted explosives could not be got in the Dominion, in dealing with this mine ?—No, I would prefer the safety of human life rather than let the company receive the profit from a month's work at the risk of their employees' lives.

1250. They were cabled for a fortnight ago ?—But Mr. James Bishop has been employed by your company for the last fortnight. He told me the matter was going to arbitration, so that does not look as though the company had cabled.

1251. I presume you will admit that it takes a little time to get explosives if they are not in the Dominion ?—Naturally.

1252. And you realize of course that the miners will be out of work in the meantime ?—I realize that the safety of the miners' lives is our first consideration.

1253. You realize that the men will be out of work ?—It is better to be out of work than dead.

1254. So that it is not only the question of the company's profits and the month's coal ?—I think I have already given you my answer to that—human life in preference to profits.

1255. Why was it necessary to introduce any references of a particularly offensive character in respect to the company's profits ?—In the interest of truth and justice.

1256. What has it got to do with truth and justice ?—Everything, in my opinion.

1257. Now, I want to ask you a particular question: you have known Mr. Fletcher for some time ?—Yes, for eight or nine years.

1258. You knew him as manager of the State mine at Seddonville ?—Yes.

1259. He was under you there, was he not ?—Well, I was consulting engineer; he was mine-manager.

1260. And supposing he had remained in the service of the State, was there any prospects, so far as you knew, for him with his abilities ?—Yes, he was a man that I always respected, and he did his duty well for the Government.

1261. Has he all the qualifications necessary for a successful colliery manager ?—Mr. Fletcher has been surveyor at Millerton, and for a non-gaseous mine like that at Seddonville he was a good manager. I do not know whether he has sufficient experience in gaseous or dangerous mines.

1262. Have you any reason to doubt his integrity ?—No, I have no reason to doubt his integrity.

1263. You realize that Mr. Fletcher is in charge of the technical work of this company ?—Yes, he is in charge of the mine, but I think Mr. H. A. Gordon is consulting engineer above him.

1264. And that if the company has been guilty of deception, or of any other performance, as you designate it, he is responsible. The company itself does not conceal or do anything; it can only act through its agents ?—It has neither body nor soul.

1265. Do you suggest that Mr. Fletcher has been guilty of all these things, as representing the company ?—Apparently he has, as representing the company. My good opinion of him was formed in the past.

1266. You say that Mr. Fletcher has apparently done these things ?—That is my opinion.

1267. You say that Mr. Fletcher has had no experience of a dangerous mine ?—To my knowledge. He is only a young man, and has been in this country many years, so that he must have been only a youth when he came here. He got his certificate here, and if he came from another part I think he would be but a youth when he arrived.

1268. Do you suggest that Mr. Fletcher has not acted according to his knowledge and judgment as manager of this company's mine ?—I do not like to suggest anything.

1269. You have been making the most astonishing statements in regard to the Taupiri Coal-mine and the company ?—I have stated facts.

1270. That is a matter of opinion, and it is not for you to decide; you have made extraordinary statements, and I want you to support those statements ?—I have told you about the explosives and monobel.

1271. Do you suggest that Mr. Fletcher has not exercised his knowledge and ability with the best intentions ?—I cannot say whether he has exercised it to the best of his knowledge and ability.

1272. Have you any opinion ?—I would sooner not express an opinion. It is for the Commission to judge of certain persons' characters and abilities. I have given the facts; let the Commission determine whether those people are culpable or not.

1273. You have made these wild statements about the company ?—They are not wild; they are true.

1274. Upon what evidence have you based these statements ?—Which statements do you specially allude to ?

1275. The statement that the company was guilty of concealing ?—The company is responsible for the acts of its agent or manager.

1276. And you have shown that its agent or manager did not report two cases, but which cases were open to the Inspector ?—Yes.

1277. Do you still say that the company was guilty of the offence of concealing those two cases ?—Yes.

1278. You do not allow Mr. Fletcher to have any opinion as to what is a proper case to report under section 62 ?—Yes; it must be a serious case. I consider these serious accidents.

1279. If Mr. Fletcher, according to his ability, considers them not serious, and does not report them, do you still say that he was guilty of concealing ?—Yes.

1280. Notwithstanding that he honestly exercised his judgment in the matter ?—Yes, I say he was guilty of concealing.

1281. Is it usual for the Inspectors to institute prosecutions without the authority of the Department ?—No, they write to the Under-Secretary for authority to prosecute and to employ a solicitor. The Government pays the solicitor.

1282. In regard to the prosecution of the manager, you will remember that Mr. Bennie, in his letter of the 7th August to the Under-Secretary, says, "I may fail to get a conviction, but the moral effect of such a prosecution will be to produce a more effective supervision the value of which we cannot

foresee." You gather from that that Mr. Bennie was prepared to prosecute whether he succeeded or not ?—Yes ; but there is a subsequent memo. from Mr. Bennie in which he said, " I see no good purpose in prosecuting."

1283. You will also remember that in your memo. you recommend that Mr. Bennie should consult a reliable solicitor, and " If we are considered by him to have a fair chance to secure a conviction, proceedings should be taken " ?—That is so.

1284. So that your recommendation was only to prosecute in case you were considered to have a fair chance of securing a conviction ?—That was my final opinion ; but I was not the final arbiter.

Mr. Macassey : The Minister approved a prosecution in terms of Mr. Reed's recommendation, and Mr. Bennie took the opinion of Mr. Miller, which has been read to the Commissioners, in which he said there was no reasonable grounds for apprehending firedamp. Mr. Bennie reported to the Under-Secretary the trend of that opinion in his letter of the 2nd September, and added that he had decided, after careful consideration, that no good purpose could be served by a prosecution. With his letter he enclosed a copy of Mr. Miller's opinion. That was sent to Mr. Reed for his information by the Under-Secretary on the 8th September, and noted by Mr. Reed on the following day. Three days afterwards the accident happened, and the first intimation the Department received of it was a telegram from Mr. Bennie's clerk as follows : " Manager, Taupiri Collieries advises explosion Ralph's Mine about 7.30 this morning. No particulars to hand, but stated to be serious. Inspector left for Huntly by first train this morning." Mr. Blow sent this on to the Minister on the same day, with the following minute : " The above is the only intimation so far received, but doubtless Mr. Bennie will wire a further report after he reaches Huntly." This shows that the fears of the Inspecting Engineer were well grounded, and points to the urgent necessity for proceeding with the Coal-mines Amendment Bill. Please see Mr. Reed's minute on mines, 14/188, herewith. In addition to this, you will recollect that I sent you a special memorandum from Mr. Reed a few days ago." Then there is the following minute under that from the Minister of Mines : " I presume you refer to the memos. from Mr. Reed dated the 18th August, covered by your memo. to me of the 27th August. Mr. Reed's memo. was dated three days after my approval was given to prosecute Huntly Company if they declined to use safety-lamps. I was unaware until after the accident happened that this instruction of mine had not been acted on.—W.F., 16/9/14."

1285. [*Mr. Tunks.*] My only point was that your memo., Mr. Reed, differed from Mr. Bennie's letter in this respect : that you suggested a prosecution only in case the solicitor considered there was a fair chance of securing a conviction ?—Mr. Bennie's subsequent letter stated, " I see no good reason in prosecuting," knowing perhaps that the amending Bill was ready for the House.

1286. There is another " performance " which must be cleared up. Some reference was made to Special Rule 3 in regard to ventilation, and you said to Mr. Napier that we had " avoided alluding to it " ?—So far you had not alluded to it, and I think you have done so because it hits you hard.

1287. Where did we avoid alluding to it ?—At the inquest and here while I have been in the room. It is such an important thing because it bears upon the ventilation of your mines.

1288. You say we have avoided alluding to it ; when was there any opportunity of alluding to it ?—We have been talking ventilation and gases all the time ; there was every opportunity to refer to Special Rule 3.

1289. If the manager differs from you, and considers that the ventilation is adequate, why should he allude to it ?—Because this inquiry is appointed to consider all such things ; also because this is an impartial inquiry to consider certain things, and your company's solicitors have been going through the Act and examining me on many sections, but avoiding Special Rule 3 ; and that rule is most pertinent.

1290. The solicitors have examined you on every section, and avoided that one ? Who is acting for the company ?—I do not know ; there are two or more of you, apparently.

1291. Are you stating the truth—that you do not know who is acting for the company ? I believe you, for one, represent the company.

1292. Do you ever read the papers ?—The preliminary portion about the solicitors I have never read yet.

1293. You are a singularly unintelligent person ?—Why should I want to know about lawyers.

1294. I am acting for the company ?—I thought so.

1295. Until you were in the box, and I rose this afternoon to cross-examine you, when had I an opportunity of cross-examining you before in regard to Special Rule 3 ?—You had no opportunity previously.

1296. You say the company avoided alluding to this rule in the examination of you ?—I said throughout the whole inquiry it had been avoided.

1297. Will you withdraw that so far as the solicitor for the company is concerned ?—I will. Upon my word, I never knew which of you was the actual solicitor for the company.

1298. Then the statement which you made, that you always get informed of the facts before making your judgment, was not correct ?—In that matter apparently it was not ; but it appeared to me that there was more than one solicitor here acting for the company.

1299. I have asked you, so far as the company was concerned, when its solicitor had an opportunity of examining you upon this matter. Why should the company have tendered any evidence or said anything about it ?—I was not aware which of you represented the company and which represented Mr. Ralph, who is a director of the company.

1300. What steps do you suggest should be taken to deal with the dangerous dust in this mine ?—It is a very difficult problem. I have not yet thought it out thoroughly.

1301. You admit it is a very difficult problem ?—I do.

1302. And you yourself are not prepared at the present moment to make a pronouncement upon it ?—Not a complete pronouncement, without full consideration.

1303. Then, I suppose I may take it that you do not suggest that Mr. Fletcher should have made any pronouncement upon it or done anything very definite ?—He is the responsible man.

1304. But I am asking you the question ?—I hope he is getting to work very quickly. It is not for me to suggest the best methods. If I make an impromptu suggestion without mature consideration it will go down in print, and I do not desire that.

1305. I understand that you have been considering this question ?—It is a peculiar case. I would have to examine your old workings to see how much dust was created, and then as to whether your roofs and sides would be effected by watering. Altogether there is such a variety of phases of the matter that to venture an opinion prematurely would not be wise.

1306. Is there any provision in the new Bill which enables you to deal with the question of inert dust ?—I do not know, but I think there is. There is a section empowering regulations to be drawn up dealing with the allaying of dust.

1307. Were you present when I read the report of this New South Wales Commission of Inquiry as to the best methods to be adopted to remove dust or to render it innocuous ?—No, I was not present.

1308. This is the paragraph to which I refer: "Having regard, however, to the enormous extent of the roadways and working-places of a modern colliery, the increasing depth of cover, and in some cases the temperature of the strata, it is not, in our opinion, practicable to maintain a dusty mine throughout all its ramifications in a constant state of safety in relation to coaldust explosions. We emphatically recommend, therefore, a remedy such as stone-dusting of a permanent character in preference to watering, which by evaporation may become useless within a few hours if not renewed. In no case within our experience where the seam is dry and dusty have we observed any mine so thoroughly treated by watering as to prevent a coaldust explosion being carried through the workings; and while thorough treatment by watering would undoubtedly ultimately arrest an explosion, the impracticability of doing so is fully recognized by many authorities; and, in effect, therefore, to look upon watering alone as a remedy for coaldust explosions is to lean upon a broken reed." Do you agree with that ?—It seems sound and logical, and in accordance with accepted opinion.

1309. Your Bill is a little bit defective in regard to coaldust ?—No, there is provision in section 8 providing for regulations dealing with certain matters. We can make provision in the regulations, I think, regarding stone-dust and watering.

1310. Can you suggest any dust which can be obtained that is innocuous to breathe ?—Yes, I have had a good deal of experience regarding miners' phthisis (pneumoconiosis). If you could get indurated shale or fireclay it would serve as a perfectly safe dust. I wrote that portion of the Royal Commission's report which deals with miners' phthisis. Quartz-dust is most injurious to the lungs, and anthracite coaldust is also harmful, but the clay or shale dust is practically harmless.

1311 Have you had any analyses made of that fireclay dust ?—No, but I am taking two samples to Wellington with me for analysis.

1312. Have you known of a jet of water being used in connection with coal-cutting machines ?—Not with coal-cutting machines, but with rock-drills in quartz-mines.

1313. Is there any means of learning the testing of gas in Huntly ?—The Department has obtained for the Huntly School of Mines a Hailwood gas-testing apparatus, but the difficulty is in getting town gas at Huntly. I am inquiring whether compressed gas can be brought here, but I am afraid it is difficult to obtain. The Railway Department only have a compressor for filling cylinders. When you are ready in Huntly for the machine it will be sent to you. They are installed at the Thames, Whangarei, Westport, Greymouth, Invercargill, and at Wellington.

1314. Do I understand that while the machine is available there is a difficulty in regard to gas ?—Yes, but we may be able to get it in cylinders. Immediately you get your gas-supply here the Department will do the rest.

1314A. Further, in regard to this Coal-mines Bill, in clause 6 there is a provision for official inquiries in regard to accidents; the Court is to consist of a Warden and two assessors. Do you object to that ?—It depends upon the two assessors.

1315. One is to be an experienced miner and the other a mine-manager; that Court would have the power to deprive the manager of a mine of his certificate ?—Yes.

1316. This is a matter upon which perhaps you can express an opinion. Do you think that a tribunal is satisfactory which consists of one certificated mine-manager, an experienced miner, and a Warden, which can sit in judgment on a manager, and possibly take away his certificate ?—The Warden has the privilege of the casting-vote. I think the tribunal is a competent one. Who selects the two assessors ?

1317. The Warden ?—Then I think it will be satisfactory.

1318. Do you suggest that a miner, however experienced, should have the power to take away the certificate of a mine-manager and to sit in judgment upon him ?—I do, under the conditions previously stated.

1319. That does not happen at a nautical inquiry. There you have a Magistrate sitting with two assessors, both of whom are certificated officers ?—Yes.

1320. You are putting yourself in the same position as would obtain if a Magistrate, an experienced A.B., and an officer were allowed to cancel the certificate of a captain of a ship. I am suggesting that the proposed tribunal is not a fair one ?—I think it is fair if we can have a Warden such as we have here to-day. If the Warden chooses the assessors you may be assured they will be suitable men.

1321. Then it depends upon the choice of the Warden ?—Yes.

1322. And if the Warden is able to constitute a good Court you think the tribunal is a fair one ?—It would be fair enough for me if I were on trial.

1323. You would be prepared for your certificate to be dealt with by a Warden (a non-professional man in mining matters), a miner, and a mine-manager, the miner having no diploma or certificate of any kind ?—Why do you assume that a miner has no credentials ?

1324. But this Bill presumes that he is only an experienced miner ?—But the Warden would take into account the miner's experience. I am perfectly satisfied with the tribunal provided by this Bill.

1325. And you would be satisfied to have your certificate cancelled in that way ?—Yes, I would be perfectly satisfied that I would get fair-play.

1326. I want to direct your attention to clause 7, subsection (*j*), page 9, in the new Bill. Subclause (*b*), which allows the check inspectors to make an inspection once at least in every fortnight. The English Act allows such an inspection to be made once a month. Do you not think that is sufficient ?—I would let them make it as often as they liked. I think they do good rather than harm. They relieve the Mines Department and the management of responsibility.

1327. That is looking at it from the point of view of the Mines Department ?—In the interests of human life.

1328. In the interests of the Mines Department ?—That is one side of the question also.

1329. I want you to consider the side of the colliery-owner: do you not think once a month is enough to have these inspections made ?—If I were a manager I would like them to come round every day, so long as they caused no hinderance. The present Act states once a month, and the English Act states once a month. The Royal Commission here considered it more suitable to have these inspections made once a fortnight if necessary, and as a member of that Royal Commission I support the proposal.

1330. They are required to make their report within twenty-four hours from making their inspection. The English Act says they shall make their report forthwith. Do you not think that is better ?—There is no reason why they should not make their report before they leave the mine ?—Exactly, and I think that should be done.

1331. Will you please refer to page 5 of the Bill, section 7, clause 1 (*d*): "The total number of men ordinarily employed in any ventilating district shall not, without the consent in writing of the Inspector, exceed fifty at any one time, and in no case shall the number exceed seventy." I understand that the British Act gives the maximum as seventy-five ?—I approve of seventy.

1332. Seventy as a minimum or seventy as a maximum ?—Maximum.

1333. Do you not think that fifty is very low—for which the Inspector's consent is necessary ?—It will not be very often required, and the Inspectors are reasonable men.

1334. I understand there are likely to be difficulties—supposing the Inspector is away. Is there any harm in raising the limit slightly ?—Personally, I think seventy is reasonable. I do not think it is a very serious matter, and I believe that you would not find the Inspector unreasonable.

1335. But he might be absent, and it might result in hampering the working of the mine. Why should not the English Act be followed ?—It is a very small matter.

1336. Now, Mr. Reed, will you look at section 9 of the Bill, which authorizes the making of additional rules ?—The present Act also provides for additional rules.

1337. This Bill makes provision for a committee to make additional rules for any mine. That committee is to consist of the mine-manager, a representative of the workmen, and the Inspector. Do you not think that that is an improper position to place the Inspector in ?—I think that section is satisfactory; it was a recommendation of the Royal Commission.

1338. You approve of the Inspector being on that committee ?—Yes, he occupies an impartial position.

1339. If the Inspector is to be the suggestor of special rules, and if he has some special rule which he wishes to introduce into any mine, then he is not an impartial person on that committee. He cannot be impartial, because he is setting forward a special rule for adoption ?—He is impartial because he is neither interested as a capitalist nor as a workman. That is what I mean by impartial.

1340. But those rules of his may or may not be impartial ?—Is there any appeal ? I think that Board is properly constituted.

1341. Yes, the Minister has the right of veto in regard to those rules ?—There is no appeal to another Court.

1342. Would not an experienced Warden be a more suitable person than the Inspector to be on that committee ?—Not in that capacity. It is a technical committee as regards mining, where judicial knowledge is not so important.

1343. But as to the determination of whether a man should lose his certificate or not ?—We are referring now to additional special rules.

1344. But the trial may depend upon technical evidence ?—But this is to determine working-conditions. I think the committee is excellent.

1345. I want to show you that if an Inspector is endeavouring to get certain special rules introduced into a mine, he is not an impartial person on that committee, because he goes there with his mind made up that those certain rules should be introduced ?—No, he puts them on the table for discussion. I often bring up matters before my colleagues on a Board, to hear what they have to say. I do not think he ceases to be impartial because he tables certain suggested rules.

1346. Will you admit that there may be circumstances in which he is not an impartial judge ?—Quite possibly.

1347. Would it not be better to appoint a Warden instead of an Inspector ?—No.

1348. You take the risk of having your Inspector acting in an impartial manner ?—There is a very remote risk.

1349. You are prepared to take that risk ?—Yes, that very remote risk.

1350. *Re* Special Rule No. 3 in the schedule to the Bill, on page 15: "A backstay or trailer shall be attached to each ascending tub, or set of tubs, on every inclined haulage road where mechanical haulage other than endless rope or chain is used." The ascending tubs are the empty ones?—Yes.

1351. The idea is to stop that tub in case of a breakage. What is going to happen to the full tub?—A trailer would be useless to it, but one would save the empty tub. If you have two horses bolting it is better to save one than lose both. I think the section is plain enough.

1352. What do you understand by an inclined haulage-road? Does that include a main jig?—I take it that it applies to a jig.

1353. And you are quite satisfied that the section is all right?—It saves the empties, but you may not be able to save the others. It may also save life.

1354. It could have no possible effect on a full truck?—Not a bit, as the full truck or tub is descending the incline.

1355. And a full truck can go out and you cannot stop it?—No.

1356. *Mr. Macassey.*] Will you define the duties and responsibilities of an Inspector of Mines. I think that was laid down by the British Royal Commission on Mines, 1906. Will you please read it?—This is the report of the British Royal Commission on Mines, 1906 (page 38). I may say this is the highest authority as regards coal-mining. All the modern coal-mining Acts of the British dominions are framed more or less upon its recommendations. "Inspections by Firemen and Deputies, and Inspection of Mines.—The responsibility for the supervision of men underground rests with the manager and under-manager and the various grades of subordinate officials. As the conditions of a mine from the point of view of safety may vary every hour, the principle of systematic inspection is a most necessary one, and this is entrusted principally to the important class of officials known as firemen or deputies (in South Wales also called examiners). The inspections made by these officials are to be sharply distinguished from those made by the Government Inspectors, who are appointed to see that the Acts and rules are being observed by the owners and management, or from the periodical inspections made by the men under General Rule 38, in order to satisfy themselves that the conditions prevailing in a particular mine are such as to ensure their safety. The direct responsibility for the safety of the mine is placed not on the Government, but on the owners and the management, who have to see that the systematic inspection by firemen is properly carried out." That is the highest authority on that subject.

1357. That means that the duties of the Inspector are confined to seeing that the Act and regulations are observed?—Yes.

1358. It is not the duty of the Inspector to direct as to how the mining operations are to be carried on?—No.

1359. You know Mr. Bennie, Inspector of Mines?—Yes.

1360. I think he won the gold medal at the Waihi School of Mines?—He did.

1361. He is a very experienced man in mining matters?—Yes.

1362. He has had some forty-seven years both coal- and gold-mining in England, Scotland, Australia, and New Zealand?—Yes.

1363. And would you describe him, Mr. Reed, as a very careful and capable Inspector of Mines?—Yes.

1364. And an Inspector who diligently performs his duties as far as you are aware?—Yes.

1365. And you have no reason to think that his reports are not true and faithfully written?—No.

1366. It is his duty to receive directions from the Under-Secretary, and to report to the Under-Secretary?—Yes.

1367. And I think that he makes a monthly report to the Under-Secretary for Mines in regard to his visits to the various mines under his jurisdiction?—Yes.

1368. And you see his reports as they come to hand at the Head Office?—I believe so.

1369. He has reported every month as to the conditions existing in the Taupiri mines?—Yes, recently.

1370. I think he has only reported in regard to Ralph's Mine one case of burning by gas—Kelly's case?—Yes, as far as I am aware.

1371. He has reported also that he found small accumulations of gas in the old workings?—Yes.

1372. He never found any accumulations in the existing workings?—Perhaps so.

1373. And you believe him?—Yes.

1374. And whatever small accumulations he found in the old workings were cleared away?—I do not know that. He said the Inspectors took a week to go round the old workings.

1375. You think he has reported truthfully everything that he has found?—Yes.

1376. Letters have been put in which show Mr. Bennie's recommendations in regard to Ralph's Mine, and his suggestions in regard to the appointment of shot-firers and the watering of the coaldust?—They are very wise recommendations. He did these things on his own account, without any suggestion from me or anybody else, as far as I am aware.

1377. I want to clear up this official file. The Under-Secretary wrote to Mr. Bennie for a report, on 4th August, as per the letter which has already been put in and quoted. Mr. Bennie in reply, under date 7th August (in a memorandum which has already been put in and quoted in full), stated that he could not recommend that safety-lamps only should be used in these mines for two reasons which he sets out in full. That was, of course, before it was ascertained how highly inflammable the coaldust in the mine was?—That is true.

1378. That letter was referred to you by the Under-Secretary for Mines, and you recommended that Inspector Bennie should be authorized to consult a reliable solicitor, and if the Department was considered to have a fair chance of securing a conviction proceedings were to be instituted, and you would go north to assist the Inspector?—Yes.

1379. He recommended a prosecution whether it failed or not. The matter was referred to you, and you advised that an opinion be obtained ?—Yes, likewise a prosecution, in the first part of that letter, which you have omitted to read.

1380. So that Inspector Bennie's instructions were to consult a reliable solicitor, and in the event of the opinion being favourable to the Department's chance of securing a conviction, proceedings were to be taken ?—Yes.

1381. He obtained a solicitor's opinion, and was advised that a prosecution would not be successful. Mr. Bennie performed his duty and carried out all his instructions ?—Yes, and reported that no good purpose would be served by a prosecution.

1382. He showed you the solicitor's opinion ?—He put it on the table in his office, but I did not have time to read it. We were very busy on other matters.

1383. His recollection is that he handed it to you ?—Yes.

1384. Mr. Bennie would not be aware of the letters which you wrote to the Under-Secretary in connection with this mine ?—I do not know, unless they were sent to him by the Under-Secretary. In the ordinary course of his duty he would not see them.

1385. You arranged with him to visit the Taupiri Mine about the 5th September ?—I do not remember. We were talking about the visit, but it did not come off because I was summoned to Greymouth by telegram. I arrived there on the 10th September, two days before the disaster at Huntly.

1386. You were at the Thames on the 5th September, and were called away ?—Yes.

1387. *The Chairman* (at the request of Mr. Napier).] Did you see the legal opinion when you were in the Inspector's office at the Thames ?—I am not sure. My recollection is that I first saw it on Wednesday, the 9th, just before I left for Greymouth, when it was sent to me by the Under-Secretary in Wellington. If Mr. Bennie says that he showed it to me when I was in his office at the Thames on the 5th September, it was not read by me. I cannot recollect it.

1388. *Mr. Dowgray.*] Did you give evidence at the inquest ?—I was never asked to give evidence at the inquest. People appeared to shun the subject of my giving evidence at the inquest.

1389. You stated that the Inspector of Mines had ordered the company to install safety-lamps; did the Inspector of Mines get his instructions from the Minister ?—I do not know.

1390. Since the disaster there have been instructions given to the company to install safety-lamps ?—Yes, I understand so.

Mr. Macassey: The Minister gave the Inspector of Mines instructions to that effect when he was here, and the Inspector ordered the company to install the lamps accordingly.

1391. *Mr. Dowgray.*] I know there was a statement made by the Minister that he had given instructions to this company that they were to use safety-lamps. I wanted to know whether Mr. Reed knew that the company had been instructed to use safety-lamps and permitted explosives ?—I did not associate in the instructions permitted explosives with safety-lamps. The newspaper in which I read of it stated "safety-lamps," and I understood it to be safety-lamps only.

1392. *Mr. Brown.*] I would like to draw your attention again to section 48 (*b*) of the Bill, in regard to the appointment of workmen's inspectors: do you not think that these men should have at least five years' underground experience ?—I think it would be better if experienced men were appointed, though I take it that the unions would not appoint inexperienced men.

1393. It has been brought under my notice that young men of limited experience have been appointed as workmen's inspectors, and I think you will agree that they should have at least five years' underground experience. You will know that this provision enables them to appoint any one, whether employed in the mine or not, to be an Inspector. It does not necessarily specify that the Inspectors shall be miners ?—No.

1394. Do you not think that they should have five years' underground experience ?—The Department has not hampered the unions in the selection of their inspectors. It was concluded that they would appoint experienced men.

1395. Are you of opinion that it would be better to stipulate the amount of experience a man should have ?—Yes.

1396. In regard to the question of additional rules, if it is reasonable that a man should have five years' experience before he can be appointed a workmen's inspector, it should also be reasonable for him to have five years' experience before he can be appointed to the Board to consider these special rules ?—It has not been put in the Bill, but I think it would be better if it were.

1397. Clause 13 is also a very important one. It has reference to the height of lifts in pillars. We may take it that the manager or the underviewer visits the working-places of the mine as often as he can. Now, this clause appears to me to be a very dangerous one. If you have, we will say, a seam 14 ft. thick, with a tender coal roof and a hard stone roof, is it possible to hold that coal in the first lift ?—No. I think this was the most debated subject in the whole Bill: it was considered that 10 ft. was as high as a man could safely timber under ordinary conditions; if it is a bad roof it was not to be insisted upon, in such cases to take out the coal to the roof in the first lift. This provision of 10 ft. in the clause is not a hard-and-fast rule, as is stated in the next paragraph.

1398. I do not take it that the matter is treated fairly, inasmuch as the man who examines the place daily, and the manager who inspects it frequently, is in a much better position to judge whether that coal can be worked safely than the Inspector who pays a casual visit. Assuming that you are taking out a row of pillars and in a safe place, you are able to take it up, as you suggest, in a 10 ft. lift. In coming back it may be important to get a certain pillar out so that the fall which you expect will be a good one. According to this clause you must wait until it is judged by the Warden, or the Inspector, or the Inspecting Engineer before you can take that particular pillar out, and probably that delay will do damage ?—If you look back to clause 9 (*b*) you will see the additional rule that committee can prescribe the height of first workings.

1399. But this does not apply to this particular section—that only applies to workings other than pillars ?—That is true, but in the clause you are dealing with the first decision is given by the Inspector, and if it is objected to it is finally referred to the Inspecting Engineer. You would get permission to carry on work until the question was decided.

1400. I would like to know what you are going to do if you cannot keep the coal up ?—You will be treated fairly. I do not think it is a very hard rule.

1401. Who takes the responsibility under section 60 of the Coal-mines Act ? Supposing a responsible manager knows his mine well he may know it is impossible to comply with that section. If he is instructed by the Inspector, or the Warden, or the Inspecting Engineer to do a certain thing he may be quite sure in his own mind that it is a very dangerous practice. Can you imagine the feelings of that manager if a man gets injured as the result of that practice, after he (the manager) has objected to it all along ?—I am not prepared to debate that point. This is a very well-established provision.

1402. I am afraid that all mining men, and working-men too, will view that clause with alarm ?—The Inspector is not the final arbiter. The matter may come before the Minister and the Inspecting Engineer.

1403. In regard to this schedule of special rules applicable to a coal-mine, No. 3 (*a*) in the Bill, is it not rather foolish to put trailers on behind the empty trucks going up a jig ?—It does no harm, and it might do good; it saves one of the tubs, and might also save life.

1404. I think you said it applied to mines nearly all over the world ?—The trailer is nearly always used on all haulage inclines.

1405. Can you tell me whether it applies to jigs in other parts of the world ?—I do not know any mine that I have been connected with out of New Zealand where they have jigs. In Durham they have no jigs. I think it is a very good provision.

1406. Is it not a fact that some of the most disastrous explosions in the world's history have occurred in mines that have been supposed to be the best equipped and the best managed ?—There have been explosions in such mines.

1407. You will remember the explosion at the Courrierres Mine, in France, in 1911. Was it not classed as a model mine as to equipment and management ?—I do not know.

1408. *Mr. Dowgray.*] There has been a lot of evdience as to whether a mine-manager was obliged to report to the Mines Department an exudation of gas. You will probably have noticed that there is provision in the British Act to compel a manager to report all ignitions of gas. It says, "Where, in or about any mine, whether above or below ground, any accident occurs which either is caused by an explosion of gas, or coaldust, or any explosive, or by electricity, or by overwinding, or by any other such cause as the Secretary of State specifies by order, and causes any personal injury whatever to any person employed in or about the mine; the owner, agent, or manager of the mine shall forthwith send notice in writing of the accident, or of any loss of life or personal injury caused thereby, to the Inspector of the division, in such form and accompanied by such particulars as may be prescribed, and, in the case of an accident causing loss of life or serious personal injury, notice in such form and accompanied by such particulars as may be prescribed shall also be sent to the person (if any) nominated by the persons employed at the mine for the purpose of receiving notice under this section on their behalf" ?—Yes, they have to be reported according to the British Act.

1409. That would do away with a lot of trouble if we had such a section in our Act ?—Yes.

1410. Do you think similar provision could be put into the new Bill ?—Yes, it would be a most excellent thing, but I think the new Bill provides for that by enabling us by regulation to require managers to report these matters.

1411. It is better to have it in the statute—everything would be then reported ?—Yes.

ROBERT CUMMING, Labourer, sworn and examined. (No. 15.)

1. *Mr. Wilford.*] What are you, Mr. Cumming ?—I was a miner for twenty-two years; I have been a navvy since then—for the last two years.

2. Did you at one time work in Ralph's Mine ?—Yes, I was there for six years.

3. Up till two years ago ?—Yes.

4. Did you ever know of any gas-explosion happening while you were there ?—I knew of one—in the little dip section, No. 2 bord.

5. About how long ago ?—About five years ago.

6. Was Mr. Wight manager at that time ?—Yes.

7. You can speak of an explosion of gas taking place in that particular mine ?—Yes.

8. How do you know ?—When I went up to the bench, after crib time, gas exploded and burned my head and face.

9. Then I may take it that five years ago, when you were working there, there was an explosion of gas in Ralph's Mine, which caused you personal injury ?—Yes.

10. *Mr. Tunks.*] Can you indicate whereabouts that was ?—In the little dip section, No. 2 bord.

11. Can you show it on the plan ? Was it along the winch-level ?—Straight in from the horse level, where the heading opened up into the bord.

12. Was it on the right or the left ?—On the left from the horse-road.

13. How long were you incapacitated ?—I was away from work only that afternoon. We were sent away.

14. The deputy stopped you from working there ?—Yes, the ventilation was carried in, and the next day there was no gas in the place.

15. And you went back next day ?—Yes.

16. Is that the only gas you have seen there ?—No. I remember when we were working in a heading from No. 7 to No. 5 there was gas to be occasionally seen. We had to keep the ventilation close up. There was a continuous bleeding.

ALBERT JENKINS, sworn and examined. (No. 16.)

1. *Mr. Wilford.*] What are you, Mr. Jenkins?—I have been a miner for the past ten years. I am now driving a greengrocer's cart.

2. Were you working in Ralph's Mine?—Yes.

3. How long ago?—About four years ago, up till the last strike, when I was victimized.

4. Were you there while Mr. Fletcher was manager?—Yes.

5. I want you to tell the Commission whether you know of any explosions of gas which burned anybody while Mr. Fletcher was manager and while you were there?—Yes, I saw one of my fellow-workers burned by gas.

6. What was his name?—William Dennis.

7. He and you were working together; where?—In No. 7 north.

8. What were you actually engaged in doing?—Driving a heading up towards No. 5.

9. What occurred?—It was after crib time. We had been back, and had had some lunch, and when we returned to the coal place my mate went up to the cut to continue his work, and I was close behind him. He ignited some gas in the cut, which had accumulated while we were away having crib.

10. He had a naked light on his head?—Yes, and he ignited the gas as he went back to the cut.

11. What happened?—He burned his face and singed his head. He dodged back, and saved himself to a certain extent, and we took him back and rubbed his face and forehead with oil. He was not burned so severely as to be unable to continue his work.

12. You swear that was during the time Mr. Fletcher was manager?—Yes, about two years ago; Mr. Fletcher was manager then.

13. *Mr. Tunks.*] Can you explain where that place was?—In No. 7 north.

14. That is a fairly large district?—We were driving a heading up off the travelling-road that runs from the little dip to No. 7 north. It is called the No. 7 north section.

15. How long before you left the mine did that happen?—About eighteen months; it was about two years ago now.

16. It was eighteen months prior to the strike?—Yes. It would be from two to two and a half years ago. William Dennis and I were working cross mates with Harry Smith and Edward Moore. The headings were stopped at No. 5. [Position explained on plan by Mr. Fletcher.]

17. And you put some oil on your mate's face, and he went on with his work?—Yes.

18. Where is Dennis now?—I do not know, but I think he is in Hamilton.

19. He practically lost no time or work at all?—He lost no work, but his face was sore for days after that.

20. *Mr. Dowgray.*] Was it in the heading that was stopped?—Yes, but he was burned before the heading was stopped.

21. Are you positive it was during Mr. Fletcher's time as manager?—I would not swear to that, but if I had a little more time to consider I would be able to fix the date more definitely.

"I wish to correct my evidence given to the Commission in Huntly. After consideration I wish to state that the explosion of gas which burnt my mate W. Dennis occurred while Mr. E. Wight was manager, not Mr. Fletcher. After considering it over and bringing it to mind, I find it would be about four years back.—ALBERT JENKINS, 23/10/14."

DAVID MOLESWORTH, jun., sworn and examined. (No. 17.)

1. *Mr. Wilford.*] You were working in Ralph's Mine, were you not?—Yes.

2. How long?—About fifteen years, I think.

3. And I think you were vice-president of the old union?—Yes, of the Waikato Miners' Union, the union previous to this executive being formed.

4. Did you resign from that union?—No, my term expired, and I did not stand for re-election.

5. When you were in the mine was Mr. Wear working there?—Yes.

6. Who was your working-mate?—Robert Neil.

7. Did a gas-ignition take place on account of the use of a naked light while you were working with Neil?—It did.

8. Where was that?—In No. 7 north.

9. How many years ago was that?—It would be about three years ago.

10. Do you know who the manager was at the time?—Mr. Fletcher.

11. Will you tell us how the ignition took place?—On the morning when we were going to our work we stopped back a bit from the face to take our clothes off, and when we were ready to go to work my mate took his lamp up in his hand and walked towards the face.

12. How was he carrying it?—In his hand. When he got to the face he lifted his lamp up to put it on his head, and it ignited the gas.

13. Then it was safe in his hand, but when he got it to the height of his head it lit the gas?—Yes.

14. Did the flame traverse any distance, or shoot in any direction?—I was back about half a chain behind him. It came right back within a yard of me.

15. That would be nearly a 20-yard flame?—No, about 10 yards of a flame.

16. Did it burn either of you?—No, it only singed my mate's hair and scorched his face a little bit.

17. Did you report that to Mr. Wear?—Yes.

18. Mr. Wear said you did not?—Well, we did.

19. Who was the deputy at the time?—Mr. Darby.

20. Did Mr. Wear send for Mr. Darby?—I do not know whether he sent for him or not, but a little later they both came back; Mr. Wear had a safety-lamp, and we had a little dispute for a while.

21. Was anything said in regard to reporting the matter ?—Yes, I asked Mr. Darby if he had reported this. He said the place had been examined, and I said, "If you examined the place did you report finding gas," and he said, "No, we never found any gas. I was in here this morning, and the date is on the place." It was there, too—I saw it.

22. What was the height of that place ?—About 6 ft. 6 in. or 7 ft.

23. Not over 7 ft. ?—No.

24. And there was no doubt the gas was ignited that time from the height of your mate's head ?—Yes.

25. *Mr. Tunks.*] How long ago did you say this was ?—I could not swear to it, but somewhere between three and four years ago—about three years and a half.

26. Did either you or your mate lose any time over it ?—No.

27. Can you describe the place so that it can be identified as to where the bord was ?—It was a heading which we were driving from No. 7 north to the little dip. It was very nearly through.

28. Was it eventually taken through ?—Yes.

29. You said that after Wear came back with the safety-lamp you had a little dispute for a while ? Yes.

30. What were you disputing about ?—I wanted to see the report-book.

31. The dispute was as to whether he had reported gas or not ?—Yes, and he said to me that I had no right to look at the book.

32. Had you ever experienced gas before ?—Yes, under just similar conditions.

33. You knew what was a gas-flame ?—Yes.

34. Had you seen one before ?—Never before that.

35. Was this a wet place or a dry place ?—It was fairly dry.

36. Had you any further difficulty with that place ?—No, they brought in some more brattice and put it up.

37. Who was in the place before you cavilled into it ?—I think it was Rowe and Trimble.

38. And do you remember who was in after you ?—I could not remember.

39. Deputy Darby is now dead, I believe ?—Yes.

40. What position did Mr. Wear occupy at that time ?—He was a shot-firer.

41. *Mr. Dowgray.*] You stated that you saw gas lit up before; very frequently ?—Yes, just small quantities lighting up—half a dozen perhaps. Once you started to work it was all right.

42. If you had been out half an hour for lunch ?—Yes.

43. In that same place ?—Yes, and in other places.

44. *Mr. Brown.*] How far was the brattice back from the face on this particular morning when you saw the long flame ?—It must have been back about twenty yards.

45. Then there could not have been very much ventilation there on that particular morning ?—I think that Mr. Wear made a remark that they were short of brattice at that time.

JAMES FULTON, Farm Labourer (ex-Miner), sworn and examined. (No. 18.)

1. *Mr. Wilford.*] For how long were you mining, Mr. Fulton ?—For about twenty-seven years.

2. I think you were a check inspector for some time ?—Yes.

3. How long have you worked in Ralph's Mine ?—About seven years, and in the Extended Mine about two years.

4. And how many years have you worked under Mr. Fletcher ?—About a year and a half to two years, as near as I can say.

5. Can you give me any instances of gas-ignitions ?—Yes.

6. Will you please state them, and also where they occurred ?—On one occasion when I was working in a heading in a little dip, upon going back after lunch, Mr. John Skellern, the shot-firer come in: he preceded us to the face, and when he went into the cut he lit up gas.

7. Was any one injured on that occasion ?—No.

8. Do you remember anything occurring in Old No. 3 ?—Yes; for a good part of a quarter my mate and I could never get to the face in the morning until more brattice was put in and the gas got out.

9. Each morning ?—Yes, each morning.

10. Who was the deputy on that occasion ?—William Smith.

11 Who was your mate ?—Frank Raynor.

12. Do you mean that for the best part of a quarter there were accumulations every morning ?—Yes, we had to sit down and wait until the face was clear.

13. Morning after morning ?—Yes.

14. What was the general width of the travelling-road ?—It is about the ordinary width of a bord, about 14 ft. wide in most places.

15. Were the travelling-roads dusty ?—Yes, frequently.

16. To what width—the whole width of the road ?—Yes, the whole width of the road.

17. Were the roads watered ?—Yes, occasionally.

18. To what width ?—Well, to about 2 ft., or perhaps a yard.

19. In the centre or the side ?—In the centre.

20. While each side was left unwatered ?—Dry.

21. Was that the method that was adopted by the management for watering these dusty roads ?—Yes.

22. Did you ever see any places alight there ? Did you ever find heat or fire ?—On one occasion under the late William Evans; after leaving a place on a Friday night with, perhaps, fourteen or fifteen skips of coal lying loose, shot down, when we went to work on the following Monday morning the coals were all very much heated. We, of course, wheeled them out immediately.

23. Was there appreciable heating—such heat as you could feel ?—Yes, I drew Mr. Evans's attention to it.

24. *Mr. Tunks.*] Who was your working-mate in the heading in the little dip ?—Charles Allen.

25. How long ago was this ?—I can hardly tell; perhaps about three and a half to four years ago.

26. That was before Mr. Fletcher was manager ?—I cannot be certain of that.

27. Can you explain the place so that Mr. Fletcher can identify it ?—It was going away from the winch-level on the right side of the dip.

28. How far were you in from the winch dip ?—At the bottom, somewhere near where they used to unhook the skips from the chain. It has all been worked out since then.

29. No one was injured on that occasion ?—That is so.

30. No one lost any time ?—No.

31. And you went on with your work ?—Yes.

32. In this No. 3 you say that you found gas every morning practically for the best part of a quarter, but that proper attention was given to it every morning ?—If that had not been done somebody would have come to grief.

33. And the gas was cleared away ?—Yes, it was generally.

34. You lost no time ?—Yes, we did. Sometimes we lost two hours, and the management did not give us a penny for it.

35. How long ago was that ?—Quite a while ago.

36. Before Mr. Fletcher's time ?—Yes.

37. Can you give us a rough idea: was it five, or six, or seven years ago ?—It is very difficult for me to say.

38. How long is it since you left Ralph's Mine ?—Two years.

39. Your remarks as to the watering of the mine have references to the practice in vogue two years ago ?—Yes.

40. You do not know what has been done since then ?—Only what I am told.

41. Who was the deputy in charge when you came on this warm coal—about fourteen or fifteen skips ?—William Smith.

42. The man who is dead ?—Yes.

43. And Evans was your mate ?—No; he was under-manager at that time.

44. *Mr. Newton.*] For how long were you a check inspector, Mr. Fulton ?—I was on that job, on and off, for about twelve months.

45. And during that time how many inspections did you make ?—Not very many; perhaps one or two, because I did not agree with it.

46. It was not customary, then, to make any periodical inspections ? — No, not periodical inspections.

47. Did you have any special qualifications as a check inspector ?—No.

48. Would you consider that any special qualifications are necessary ?—Yes; I quite believe that every man, before he is appointed a check inspector, should pass a simple examination, so that he would be able to test for gas, and that sort of thing. I quite believe in that.

49. *Mr. Macassey.*] You know Inspector Bennie ?—Yes.

50. I think you saw him on the occasions of his inspections of Ralph's Mine ?—Yes.

51. And I think it was his custom to go into the working-places and chat with the men ?—Yes.

52. Did you ever complain to him ?—We complained to the management.

53. Did you ever complain to Mr. Bennie ?—I would have to go through the books to find that out. We simply made our report as we came out of the mine.

54. Did you ever complain to Mr. Bennie ?—Through the report we made to the manager—it was for Mr. Bennie.

55. Have you ever complained to Mr. Bennie personally ?—No.

56. *Mr. Brown.*] In that place where the coal heated, can you remember whether it was soft coal ?—It was mixed. It was like coal coming off a fault—soft on one side and hard on the other.

57. Was there any fireclay in it ?—No.

58. It was not a clean coal ?—You could not call it clean coal.

59. With reference to your check inspections, you reported the truth and represented the conditions as you found them.

EDWARD SEPTIMUS WIGHT, Mine-manager, sworn and examined. (No. 19).

Witness reads evidence given by him at Coroner's inquest, as follows:—

"EDWARD SEPTIMUS WIGHT, sworn, saith: I am managing director of the Pukemiro Coal Company. I was manager of Ralph's Mine up to December, 1910, for about ten years. I never found gas in any quantity either in the working-places or in the old workings. I have no recollection of finding gas in the old workings at all. The mine in my time was always working with naked lights. It never struck me that it was a dangerous mine to work with naked lights. It was a dry mine, but not dusty. On one occasion there was an explosion at which one man was burnt. I have had experience with safety-lamps. I think when a man gets used to them he should be able to see as well as with a naked light. I have not been down the mine since they were able to make an examination.

"By Mr. Napier: I always regarded it as a safe mine.

"By Mr. Tunks: I came to the conclusion that the explosion occurred through an explosion of gas released by some seismic disturbance. Some authorities in England lay great stress upon the result of seismic disturbance. It would happen without any warning.

"By Police: The White Island explosion took place on the 11th, as far as I can ascertain. I put in extracts from papers read at the Institute of Mining Engineers in England. I also put in a list of barometric readings taken at Auckland reduced to sea-level taken from the 1st to 15th September, 1914. [Extracts put in as Extract R.] I had charge of a seismometer at Marsden Colliery. A record of an earth-disturbance there coincided with an explosion in a mine in Durham.

"By Mr. Bennie: During the time I was manager of the Ralph's Mine I did not observe that the walls and timbers were acting as receptacles for fine coaldust of a dangerous nature. I never thought it necessary to water the walls of the drive. The conditions of mine with regard to dust might change materially in four years—that is, since I left. The walls are capable of carrying an accumulation of fine dust. Generally speaking, I would describe the walls as perpendicular. I would find fault with the miners if I found they were exceeding the width of the bord either at the top or bottom.

"By Mr. Napier: During my time the walls were practically vertical all the time. There was not a dangerous accumulation of dust in the mine at any time while I was there or during my period of four years.

"By Mr. Northcroft: There would be irregularities in the walls, which would harbour dust.

"By Mr. Tunks: Spraying is now out of date. In English mines the coaldust is mixed with stonedust. The reason that water is not used is that it has detrimental effects in that where the floor is soft or the sides are soft it causes movements in them."

1. *Mr. Wilford.*] Did you sink Ralph's shaft?—No; not the winding shaft. I enlarged the upcast shaft.

2. Did you leave adequate shaft-pillars?—Yes.

3. Are you sure?—Yes.

4. How long was that ago?—December, 1910.

5. Do you know whether they have been reduced in size?—I cannot say.

6. Of course, the coal there round those pillars may be very easily won?—It would be; but it would be a most unpractical thing for a manager to do.

7. Mr. Reed and Mr. Bishop say they are unsafe; you do not know whether they are in the same condition now as when you left them?—I have not made an examination to enable me to certify to that.

8. Do these shaft-pillars weep, or part of them come away?—Yes; in course of time, all coal frets a little.

9. Do they fret?—Yes.

10. When you were manager of the Taupiri Mine, did you oppose the sinking of an additional shaft across the river as a means of exit?—I did.

11. Were you wrong?—No; on the grounds on which the claim was made.

12. You made very strong opposition to it?—Yes.

13. It was by the additional shaft at Taupiri West that eleven men escaped in the recent disaster?—Yes.

14. And if there had not been that shaft there would have been eleven more casualities?—I would not say.

15. Did the Mines Department compel the connection to be made?—No, not that I am aware of.

16. Will you deny that it was the Mines Department that insisted upon this second outlet?—I would not deny it.

17. If Mr. Bennie says it was, will you deny it?—I would not deny it. It was brought about by the company acquiring the adjacent property.

18. It became a valuable escape-hole in this connection?—It seems so.

19. *Mr. Tunks.*] This question of the shaft was gone into at the time of the discussion about the second shaft?—You mean the third shaft.

20. The safety of the pillars and the overlying strata was very fully considered?—Yes, there was elaborate evidence on the subject.

21. Expert evidence?—Yes, scientific evidence.

22. It was very fully considered, Mr. Wight, and the evidence was that the shaft-pillars were ample for all requirements?—That is so.

23. So far as you have observed anything, is there anything to suggest to you that the condition of the shaft-pillars has altered?—Nothing whatever.

24. We have had several instances of burns being reported. Do you remember a man called Gumming working in No. 7?—Yes, I think so.

25. Do you remember his being burned at any time by igniting gas?—I do not.

26. Or Charles Allen or James Fulton?—No.

27. Do you remember any occasion at old No. 3 where a place was worked by Fulton and Raynor which for a great part of a quarter could not be approached for gas until it had been cleared out?—I cannot call it to mind.

28. Did it ever occur to you at any time to make any test of the dust in Ralph's Mine?—No.

29. You had no knowledge that it was a particularly explosive dust?—No.

30. It was not the custom in your time to water the mine?—No.

31. Did you ever consider it necessary to make a practice of reporting every time you found gas in the mine, or even every time an ignition was reported to you?—No; it was not the custom. I do not know of any rules bearing upon it.

32. And did you necessarily report if a man were, as you considered, slightly burned by gas?—Not slightly. I had one instance of a man slightly, but not reported.

33. Have you considered the Coal-mines Amendment Bill?—Yes.

34. May I draw you attention to clause 6—official inquiries in case of accident. You are aware that it is proposed to set up a Court to deal with people who hold certificates, a Court which is to consist of a Warden sitting with two Assessors appointed by him, one of whom shall be the holder of a first-class mine-manager's certificate, and the other an experienced miner working in some mine other than that in which the accident occurred.

35. That Court has the right to disqualify a person by cancelling his certificate. Would you be satisfied that a tribunal so constituted should have the power to take away your certificate?—I think that the miner should have some further qualifications.

36. It means that the Assessor, who is a first-class mine-manager, might disagree with the other two members of the Court, and they might deprive you of your certificate. Would such a Court satisfy you?—If the miner were a man with some qualifications and standing, I think I would be prepared to abide by the decision of the Court.

37. Do you think that the miner should have some definite qualification?—Yes, he should be able to produce evidence of his *bona fides* as an experienced miner. We have had men come here and say they were experienced miners on the coal, and it has afterwards come out that they had never been underground before. A man of that description might be put on such a tribunal—some loquacious individual.

38. Have you considered the question of the number of men to be employed in a ventilating district as provided by subclause (*d*) of clause 7?—Yes.

39. It says, "The total number of men ordinarily employed in any ventilating district shall not without the consent in writing of the Inspector exceed fifty at any one time, and in no case shall the number exceed seventy." Have you anything to say as to that?—I consider the minimum should be seventy.

40. You consider that fifty is too small?—Yes, you would probably have to cut up your air-currents, and you would not get sufficient volume to carry away your smoke readily.

41. Now, regarding paragraph B of subclause (*j*) of clause 46B, you will notice that it is proposed that the workmen's inspections may take place once in every fortnight?—I think once a month is quite frequent enough for a general examination of a mine. They have the right, if any special circumstances arises, to make extra inspections.

42. Regarding paragraph (*e*) of the same subclause, you see the workmen's inspectors shall report within twenty-four hours of the making of their inspection?—They should be required to report at once—it should be done immediately they leave the mine, in the same way as the officials' reports have to be written immediately the examination is completed.

43. You think the check inspectors should not be allowed any time to discuss their inspection before reporting?—That is so.

44. Clause 8 (1) (*a*) provides for the amendment of Special Rule 4 under the Act by adding the words "No timber shall be withdrawn except by lever and chain, or by blasting"; in your opinion is that a proper provision?—If made to apply to pillar-workings it is a desirable thing.

45. Is it practicable?—Is there not a difficulty in regard to taking away your timbers?—As far as I know, it is taken from the English Act; if that is so, and they work to it there, I have no objection to it.

46. Under clause 9 of the Bill there is to be set up a committee on additional rules, to consist of the Inspector of Mines, the mine-manager, and a representative of the workmen: do you think the Inspector should act on that committee and be the chairman of it?—No, I do not agree with the setting-up of the committee for that purpose at all.

47. You do not think there should be any such committee?—That is my idea. I think it is making the manager subservient to the workers. It is depriving him of all power, and yet he has to take the responsibility under the Act.

48. Supposing the committee is set up, what do you say about the Inspector being the chairman of it and a member of it: do you think that is a proper position to put the Inspector in?—It is making him shoulder the responsibility of the working of the mine instead of the manager. I do not think it is a proper position to put him in. The Inspector should only be required to see that the Act is observed.

49. Will you now turn to the schedule to the Bill. Rule No. 3 says, "A backstay or trailer shall be attached to each ascending tub, or set of tubs, on every inclined haulage-road where mechanical haulage other than endless rope and chain is used." Does that strike you as practicable? It is the empty tub that is to have the backstay: how would that apply in a jig?—I think it is a rather useless provision on a face jig.

50. Rule 57A says, "Only wire ropes shall be used for haulage purposes on jigs, except on the face section, where chains may be used. Anchor chains shall be used on all face jigs"?—I do not understand that quite. If it is to secure the chain until the second skip is attached to it it is reasonable.

51. But the trailer?—Well, the trailer on the face jig is a useless provision.

52. *Mr. Brown.*] Section 3 does not specially mention jigs, but still it is quite possible it is meant to refer to jigs?—I do not see any objection to using a trailer on a set of skips of that description. I take it that it applies to cases where you are running empties in by gravity. I do not think it is an unreasonable provision at all.

53. There has been a suggestion made in regard to the qualifications of Inspectors of Mines—that no man should be appointed an Inspector of Coal-mines who has not qualified for a mine-manager's certificate by examination: do you agree with that statement?—Yes, I do. I think all Inspectors should be men of the greatest eminence in the coal-mining industry in the country, so that we can look up to them for advice.

54. And with wide experience as colliery managers ?—Yes.

55. Have you examined clause 4 of the Bill ?—Yes.

56. In regard to subclause (2), are you satisfied that the appointment of the Chief Inspector of Mines should be made simply by statute, without any opportunity being given by advertisement for applications to be made for the position ?—No, I think the Chief Inspector of Mines should be a man of at least five years' practical experience as a colliery manager.

57. In any case, do you think that it is a position of such importance that applications should be invited in order to insure that the best man obtainable should be appointed ?—Most certainly.

58. The position will be one of very great power ?—Yes, and I think a man should be well remunerated, and the best man obtainable should be appointed.

59. Have you any other comment to make upon the Bill ?—No, I have not gone through it; but there is one matter I would like to refer to, and that is a contradiction between the Act and one of the special rules. The Act gives permission for a shot to be unrammed while the special rule says distinctly that a shot shall not be unrammed. I am speaking now of the present Act, and not of the Bill which it is proposed to pass.

60. Do you know the explosive known as monobel ?—Not very well, but I have used it.

61. *Mr. Napier.*] How long were you manager of Ralph's Mine ?—Ten years and a half.

62. During your term of office did you strip the shaft-pillars or in any way weaken them ?—No.

63. So that the shaft when you left the mine was in practically the same condition as when you began ?—It was in better condition, because I built several brick walls to retain the pillars.

64. Then it was really stronger when you left the mine than when you entered it ?—Yes.

65. In the ten years and a half you were there was there any appreciable fretting of the pillars ?—Not very appreciable. I would not call it large for ten and a half years' work.

66. If the fretting continued at the same rate at which it went on while you were in charge, it would probably take a hundred years before there was very much difference in the size of the pillars ?—Not a hundred years; twenty or twenty-five years, perhaps. We made experiments with regard to the strength of the coal.

67. Can you tell us from memory what are the sizes of the pillars, approximately ?—24 ft. wide and 25 to 30 yards long.

68. That would be from 80 ft. to 90 ft. by 24 ft. ?—Yes, that was what they were laid out at.

69. Can you tell us what the underlying stratum is ?—There is usually 4 ft. to 6 ft. of fireclay.

70. Immediately underneath the coal ?—Yes.

71. And underneath the fireclay ?—It gradually hardens into the stone.

72. Have you any doubt that it is a good foundation which the coal rests upon ?—No, it is very good.

73. You have had English experience in coal-mines ?—Yes, I had seven or eight years' English experience, and obtained my certificate in England.

74. As compared with English mines, how would you describe the condition of this mine so far as dust is concerned ?—I would describe it as a mine comparatively free from dust.

75. As compared with English mines ?—Yes.

76. Have you ever had occasion to consider section 62 of the Act: "The mine-manager shall forthwith after the occurrence of any accident attended with serious injury to any person give notice thereof by telegraph to the Minister and to the Inspector, and shall also at the same time send written notice thereof to the Inspector and to the workmen's inspector." As an experienced manager, what would you regard as an accident attended with serious injury, within the meaning of that section ?—It would apply to a case where a man had a leg broken, but not where it was only slight bruises or cuts; if the injury involved a broken bone.

77. If there was an ignition of gas in the face after the lunch-hour, and a man was slightly burned, and he was able to go on with his work, would that be reported to the Inspector ?—No.

78. If a man were off a few days from work, would you report that to the Inspector ?—If it were going to incapacitate him for a week I would, and yet that argument hardly holds good, because a man is sometimes off work for a fortnight, justifiably, with a cut finger.

79. What is your opinion as to what is practically understood by the meaning of subsection (47) of section 40: "After inflammable gas has been found in any mine it shall be cleared by ventilation, and a barometer and thermometer shall be placed above ground in a conspicuous position near the entrance to the mine." Is that the usual practice—to clear the place by ventilation ?—Yes.

80. And that is considered sufficient ?—To make the place safe and fit for work.

81. And when it is cleared by ventilation the men resume their work ?—Exactly.

82. Does not that imply that it is a common thing to find inflammable gas in mines, seeing that the Act provides for the diffusion of the gas ?—It may happen; I do not know that it is a common thing—not a daily occurrence.

83. I wanted to try and ascertain what was the prevailing opinion among mine-managers as to the position occupied by the Mines Department in relation to the coal-mines of New Zealand. Section 41 of the Coal-mines Act, 1908, says: "The special rules set forth in the Second Schedule to this Act shall be the special rules for the conduct and guidance of persons acting or employed in or about every mine to ensure the health and safety of such persons, and the owner or agent of every mine shall cause a copy of such special rules to be hung up in some conspicuous place in the mine." Would you say that if a mine-manager carried out his duties as laid down in those special rules he would be doing all that was required of him ?—I certainly would.

84. The Act says that the special rules are for the conduct and guidance of the persons working in the mine ?—Yes.

85. Would you consider it necessary in the face of that section of the Act that the manager should have to consider his conscience for standards of duty other than the Act in carrying out his duties ?—No, he simply has to comply with the Act.

86. You think if he complies with the Act and special rules he is doing his duty ?—Yes, I think so.

87. *The Chairman.*] You would not consider yourself bound by the rules if you had some better means of getting over a sudden emergency ? You would do the best you could, rules or no rules ?—Yes, most decidedly.

88. *Mr. Dowgray.*] But the manager's conscience plays some part in it ?—Yes, of course.

89. *Mr. Napier.*] In the new Bill one of the principal officers of the Department is appointed by statute : do you not think that the Government of the country or the Public Service Commissioners ought to have the power to appoint the best man to positions under the Act ?—Yes.

90. The best man that can be got, even from Europe, at such salaries as we can pay : do you consider that one man in the Service should get the position ?—No, not any more than was done in regard to the appointment of the General Manager of Railways.

91. Do you not think that all Inspectors of Mines ought to be experienced, cultured, and level-headed men with good judgment ?—I do.

92. You would not agree that they ought to be of the type mentioned by St. Paul : "A reed shaken by the wind." He ought to be a man of some stability of character ?—Yes, a man to whom we can look for assistance.

93. It has been suggested in the course of this inquiry that the Inspectors, the Inspecting Engineer, and other officers of the Department should not communicate any advice to mine-managers to help them in the conduct of their work : do you agree with that ?—I think it would be a very good thing if we had men to advise us in time of trouble.

94. You said that you looked to the Mining Inspector for advice ?—Yes.

95. That is a fact ?—Yes.

96. And it has been customary for them to give advice ?—Yes ; I have on occasions had advice from the Inspector.

97. And do you not think that the officers of the Department ought to be in a highly competent position to advise mine-managers as to the best means of carrying on their work, just as the Agriculture Department advises agricultural people ?—Yes, I think it would be a good thing ; and the Department should carry on experiments for the safe working of mines, as they do in England.

98. Yes, the same as other Departments of the State assist people interested in the various industries ?—Yes.

99. You do not think the Mines Department should content itself with perfunctorily seeing that the law is carried out ?—I think they should combine the two functions—to tender advice and see that the Act is carried out.

100. *Mr. Tunks.*] In regard to the sinking of the third shaft, that was undertaken because it was suggested, I think, that there was a danger of the river breaking into the mine ?—Yes, that was the sole cause.

101. The question of escape from an explosion was not a factor at all ?—No ; I was asked by Mr. Justice Denniston, was there any circumstance under which I could imagine a third shaft would be an advantage. I said, "Yes, in the event of an explosion."

102. That reason was not suggested by the Department as a factor in that case ?—No, it was merely the water coming in.

103. *Mr. Macassey.*] In regard to ladders in the air-shaft, were they put in before your time ?—No, I put them in.

104. I think Mr. Reed or Mr. Bennie suggested that wire netting should have been put over those ladders ?—Mr. Bennie wanted me to partition the shaft. I argued the matter with him and pointed out that doing so would impede the ventilation. We had a very long discussion over that matter, and came to the conclusion, on my suggestion, that netting should be placed over the ladders.

105. Did Mr. Reed suggest that to you ?—No, never.

106. *Mr. Dowgray.*] You come from the County of Durham ?—I do.

107. How long is it since you left ?—I came away in 1887.

108. Then you will not be an authority on what would be now classed in England as a dusty mine. Was dust seriously considered in 1887 ?—It was just then becoming a matter of great notice. Professor Galway was the first to move in the matter.

109. You would not consider yourself, as an authority, in a position to compare this mine with dusty mines in the North of England ?—I must say that this mine was not as dusty as mines I have worked in in the North of England and in Wales. You know how your nostrils and your spittle becomes affected with it. We do not get the same effect here that they do in the North of England and in Wales.

110. These mines which you are referring to would not be dusty mines ?—Yes.

111. You could not compare them ? Practically all the mines in England are admitted to be dusty mines.

112. Did I understand you to say that you were in charge of the Marsden Colliery, Durham ?—No ; I was manager's assistant.

113. In your evidence before the Coroner you were endeavouring to show some connection between the White Island eruption and the disaster here ?—You hardly put it correctly. What I meant to imply was that there had been an earth tremor which had liberated an extraordinary quantity of gas in this mine, and that that theory was borne out by the fact of that eruption at White Island.

114. Was the tremor felt to any degree in Huntly ?—I cannot say that it was; but it is not necessary for a tremor to be felt by a person. It may be a small one, only recorded by a seismometer.

115. There have been some very severe tremors in this Island this week, and yet they have not had any effect on this mine ?—I did not mean to contend that every tremor is going to liberate gas. The circumstances may be such that there is a quanttiy of gas ready to be liberated, not that every tremor will liberate gas. Professor Milne in reporting to the Government in Japan draws a very close connection between earth pulsations and the issue of mine-gas ; this also applies to Professor Gregory in England. I still think that there was an extraordinary exudation of gas that morning.

116. What disaster occurred in Durham ?—The one at the Clemore Colliery in 1886, I think.

117. Is it not a fact, in connection with this third shaft, that the Government only granted this company the additional lease on condition that the company put down another shaft as previously advocated by the Government ?—I am not prepared to swear to that. Perhaps there was some condition in it ; I think there was some such condition.

118. You stated that your pillars were 24 ft. wide and 25 yards long : is it not a fact that these pillars have been split since that time ?—No, it is not a fact.

119. Are they the same as them ? If such pillars, even though they were 24 ft. wide, showed any visible signs of fretting in ten years, does the situation not become more dangerous ?—We proved at the inquiry there was a very large margin of safety in those pillars.

120. Even with the 4 ft. of fireclay ?—It is a good foundation ; naturally the pillar crushes into it.

121. Would not a fireclay bottom ease the fretting to some extent ?—I do not think it would effect the fretting at all ; the fretting has nothing whatever to do with the floor. It is simply a matter of giving off moisture in the coal. It is natural disintegration. The fretting of the pillar has nothing to do with the weight.

122. Might not these pillars be fretting by weight ?—No ; there is a sufficient margin of satety in them.

123. You say that in your opinion an Inspector of Mines should have five years' colliery-manager's experience before he becomes an Inspector of Mines ?—I think it would be a very good condition.

124. Do you agree that the Inspectors of Mines in Great Britain are most efficient men—that they are looked upon as being the best men in their particular line ?—Yes, I must admit that.

125. Do you know of any Inspector of Mines in Great Britain who has had five years' experience as a coal-mine manager ?—Unfortunately, I do not know any of them at the present time.

126. Do you know any of them ? Did you ever hear at all of any ?—Yes ; but it is twenty-seven years since I left England, and one gets out of touch. Dr. Atkinson, of Wales, is the only man I can call to mind as an inspector.

127. Was there a superior examination for Inspectors above the ordinary mine-manager's examination ?—I think not.

128. Are you aware that they have a different examination to pass ?—No, I do not know of it.

129. In Great Britain, if they found their system is efficient, would you agree that it would be equally applicable here ?—I think so in some respects ; but they are carrying on mining there on a much larger scale. They can afford to have more men, and I think they have a second-grade inspector. He is their practical man. I think that is the case. He is an Assistant Inspector.

130. In connection with the proposal to allow workmen's inspectors to make their inspection once a fortnight, you said that once a month was sufficient ?—I said it was quite sufficient for a workman's general examination of a mine to be made once a month.

131. Is there anything that a manager wishes to hide from the workmen ?—I have never found it so.

132. Why should you wish to confine the inspection to once a month ?—These inspections are a bit of a nuisance.

133. In which direction ?—They take up the time of your officials.

134. Have your officials not to go round, anyway ?—But these men want to go round the old workings and so on every fortnight.

135. Would it not be a saving to the company if the workmen's Inspectors made their inspection after the company's men ?—You get reasonable check inspectors, but sometimes they are most unreasonable.

136. If there is nothing to hide ?—My policy is, if there is a danger I want to know it.

137. Then you want the most efficient check inspection you can get ?—Yes, but for your purposes once a month is quite frequent enough.

138. That is your only objection—that it might take up too much time of the officials ?—Yes, that is the principal objection. There is one other thing, as to whether these men should have the right to go into old workings which have not been examined by the officials of the company.

139. You admit that there are workings which are not examined every day by the officials of the company ?—Not every day.

140. You wish us to infer that you want a prior inspection before the workmen's inspectors go in ?—Yes, I think so.

141. For what reason ?—To find out whether they are to be classed as inspectors or workmen.

142. The clause lays it down that you are to accompany them ?—You "may" accompany them, it says. Supposing that the place has not been examined to-day, what is the position then ? Have those men the opportunity to go in before it is examined by the company's officials ? But the check inspectors have said that they must be allowed to go in whether the place has been examined or not.

143. As to the additional rules committee, you do not think it is necessary at all ?—No, I do not.

144. You think that all the mines in New Zealand are similar in character, and that the Act could be so framed that it would be applicable to them all ; or do you think that the manager should be allowed the privilege of framing special rules to suit himself ?—No, in accordance with the present Act, he has the right to frame additional rules to be submitted to the Inspector. I have tried that, but have not had the co-operation of the Inspector of Mines to begin with.

145. *Mr. Brown.*] Have you had much experience in working high pillars?—Only in the Huntly mines.

146. Do you think that by reducing the lift of a pillar to 10 ft. it would tend to the safety of working the pillars?—Not very materially.

147. Is it not going to add additional risk to the present method?—In some instances it may, where you have got to leave coal overhead. You might have to make a false roof at 10 ft., which might not be convenient. It would be safer to take the lift to 11 ft. or 12 ft. if a natural parting existed.

148. Assume a place 14 ft. high with soft fireclay on top between the coal and the main roof, do you think you could hold that extra coal safely on timber?—Not for any length of time.

149. You think it would be a dangerous practice in some cases?—I think it would be a sheer waste of coal to no purpose.

150. As regards clause 8, subclause (1), paragraph A, which says that "No timber shall be withdrawn except by lever and chain, or by blasting," this appears to have a very broad application in that it applies to any part of a mine. Assume a place with props sticking up through the bars 6 ft. or 7 ft., how are you going to take those props out with a lever and chain?—It should not apply to instances like that; it should be confined to pillar-workings.

151. What would be the result of blowing it out?—You would bring down another fall.

152. Then it is not a practical proposition?—It should only apply to pillar-workings.

153. This Bill, I understand, is framed for the purpose of providing additional safety in mines. Can you tell me whether blasting is permitted in intake airways such as haulage-roads in Great Britain?—It is only done by special permission, when all the men are out of the mine, in a dusty mine.

154. Have not serious explosions taken place in the intake airways of some big mines of England?—Yes, I think some of them are attributable to that.

155. Can you name one?—Yes, the explosion at the Mardy Mine in South Wales was one, and that at Altofts was another.

156. Then blasting in a dry and dusty road, in an intake airway, is decidedly dangerous?—Yes, in a dry and dusty mine.

FRED KNAPPER, Miner, sworn and examined. (No. 20.)

1. *Mr. Wilford.*] You have been a miner for how long?—For fifteen years.

2. You have had experience of deputies and check inspectors?—I have never acted as one.

3. You have had experience of them?—Yes.

4. In your opinion would it be well if all check inspectors were first of all elected by the miners, paid by the Government, and put under the Public Service Commissioner?—I think it would.

5. That would prevent check inspectors from being appointed by the management?—Yes.

6. And being under their thumb all the while?—Yes.

7. *Mr. Napier.*] Have you ever known check inspectors to be appointed by the management?—No, I do not think so.

8. Why do you want the law changed for that purpose?—I believe that if the existing law were amended in that direction it would be beneficial both for the men and the employers.

9. Do you not know that under the present law the check inspectors are appointed by the men?—I do not know whether it is true or not, but I have heard that men have been appointed who are not experienced enough.

10. You really do not know anything about the method of appointment of check inspectors?—Yes, I do.

11. But never by the management?—No, I have never known them to be appointed by the management.

12. Then what is the idea of your present proposal?—It would make them independent of the management.

13. *Mr. Tunks.*] Do you not think that the check inspectors should have some qualifications?—I do; they should be efficient as regards testing for gas.

14. They should pass some examination to prove that they are capable of making a satisfactory examination. You are aware that any person can be appointed. You do not think my inspection, for instance, would be worth much?—That is so.

15. *The Chairman.*] You think they should be appointed by the union?—Yes, sir.

16. And become members of the Public Service under the Public Service Commissioner?—Yes, and paid by the State, and, if necessary, trained by the State.

17. Who would dismiss them?—The people who paid them could dismiss them.

JOHN CAMPBELL MACDIARMID, Medical Practitioner, sworn and examined. (No. 21.)

Witness read the evidence given by him before the Coroner, as follows:—

"John Campbell MacDiarmid: I am a duly qualified medical practitioner, practising at Huntly. I have examined all the bodies that have been recovered from the Huntly Mine. I produce a statement showing the cause of death in each case [Exhibit Q]. In addition to those killed there were some severely injured. Three—Peckham, Mottram, and O'Brien—were severely injured. The bodies which were most severely injured were as follows: Nos. 22, 28, 29, 30, 31, and 32. These numbers are referred to on the plan [Exhibit A]. Nos. 36, 40, and 43 were also severely injured. The ones more injured than the others were Nos. 22, 30, 32, 31, 36, and 43. Nos. 30, 31, and 36 were probably the most injured of all. No. 43 was the last body found.

By Mr. Tunks: I went down in the first rescue party. We had a narrow escape ourselves.

1. *Mr. Wilford.*] I shall be glad, doctor, if you will describe the injuries to William Kelly, who was injured on 9th July, 1914. They are put down by Mr. Fletcher, the mine-manager, as "Kelly was singed"?—I put in the statement about that. Kelly had burns to his head and face and to the upper part of the thorax. On the head and face they were of the first degree; on the left ear and over a point over the right clavicle they were of the second degree. The left side of his moustache was completely burnt off, and his hair and eyebrows scorched and singed. I visited him on five or six occasions at his house, and he was off work from the 9th July to the 24th July.

2. Do you know whether he was burned previously, or on any other occasions?—I could not say absolutely—not to my recollection.

3. Did you know where Martin's coat was found?—I did not actually see the place.

4. Did you see the boot that was discovered near Martin?—No.

5. Would you say that the burns to Kelly were merely superficial?—There was actual exfoliation of the skin in two places over his ear. Over his left ear there were burns of the second degree.

6. In regard to the other men whose bodies you saw, did you know which was Martin's body?—Yes.

7. You remember bodies Nos. 36 and 43; did it appear to you that there was any greater force on any of the bodies of the deceased than there was on Martin?—There were two bodies which were practically decapitated, Nos. 30 and 31, by the force which struck them. I consider the force which struck them must have been tremendous.

8. And a greater force than that which struck Martin?—Most probably.

9. That would agree with Redmayne's theory that the force at the point of origin would be less than that further on in the course of the explosion?—It would.

10. *Mr. Tunks.*] In regard to the bodies Nos. 30 and 31, which you refer to, the injuries to the head were practically the only injuries?—Yes, they were killed outright.

11. But if they had been struck lower down their injuries might have been the same as those of Martin?—It was an enormous force. The heads were practically shaven off.

12. I understand that Martin's body has fractures?—Yes, fractures to his legs and skull.

13. With a piece of coal driven deep into the head?—Not very deep, but partly driven into the skull.

14. So that though the force apparently was greater further on, Martin experienced great force?—Yes.

15. And there was also an extraordinary wound in the abdomen?—Yes, but there was another body which had a similar wound. I would not say that the force which struck Martin was as great as that which struck Nos. 30 and 31.

16. I think a burn of the first degree is not a very serious matter?—Not as a rule.

17. And I think Kelly was able to get out and about within a day or two of his accident?—I do not know that.

18. When you visited his house you found that he was out and about?—I know he went to the Dog Show, but without my permission.

19. Did he suffer anything as the result of going to the show?—I do not think so.

20. *The Chairman.*] How soon after an accident do you see the men who are injured?—I saw the first body which was found in the mine.

21. But in regard to Kelly?—I see them, if the injuries are severe, at the pithead, or otherwise at their homes.

22. In regard to Kelly, when would you see him?—I saw him in the morning. He came home from work early in the forenoon, and I saw him as soon as he arrived. A message was sent to me, and I called at his house.

23. Do you communicate with the manager as to the extent of the injuries received by the men?—As a rule, if a man is seriously injured. The manager very often rings me up.

24. In regard to Kelly's case, what would be the first intimation as to the extent of the injuries which the manager would receive?—The first intimation he received was when I met him on the street.

25. If not satisfied by his own observation, could he learn from you the nature of the injuries?—Certainly.

26. In regard to Kelly's case, section 62 of the Coal-mines Act requires a mine-manager to report "any accident attended with serious injury." Would such injuries as Kelly received, in your opinion, come within that description, and be such as ought to be reported under that section?—I do not regard Kelly's injury as a very serious one.

27. But the Act says "accident attended with serious injury"; would that be a serious injury? I think every injury caused by an ignition of gas is a serious injury, speaking as a colliery surgeon.

28. And you think this injury was caused by a gas-ignition?—Kelly told me so.

29. Do you know about the injuries to Conn and Willcox?—Yes.

30. Were those serious injuries?—No, they were not serious. They necessitated the man staying away from work. Conn was away from the 16th February to the 4th March, 1912. He had burns on the arms, neck, and face. Willcox was suffering from burns to the face and hands, due to ignitions of gas. I would not regard them as burns endangering life.

31. Do you know whether they were caused by gas?—Conn told me so, and the other men also. He came straight from the pit or was brought to me after the thing happened.

32. *Mr. Brown.*] What would you regard as being a serious accident?—An accident involving risk to human life.

33. Such as total partial incapacitation by a broken limb?—What do you mean by total partial incapacitation?

34. That is a term used in the Workers' Compensation Act; if it were an arm the man would lose part of the use of that arm?—I would regard a fractured limb, or an injury which involved the loss of the use of that limb, as a serious accident.

35. *Mr. Napier.*] I understood you to say that you regarded any burns inflicted by an ignition of gas as a serious injury?—Yes.

36. Is there a difference between a burn inflicted by gas and one sustained any other way?—It is in regard to the position of the burn which I am referring to. Most of the burns I have seen caused by gas have been about the head and face.

37. Supposing burns were sustained on the head and face by other means than gas, those burns being of a similar character, would you describe those as serious injuries?—It would depend upon their extent and severity.

38. Supposing they are of the same character and extent?—I say that all burns due to gas are serious.

39. Then you say that burns due to gas are more serious than burns of the same character and in the same position which are due to other causes?—I do.

40. Why?—Because the gas has an explosive effect. It not only burns the skin, but it may attack the deeper tissues.

41. Supposing two persons were brought to you in your surgery, one having burns sustained by means other than gas, and the other burns sustained by gas, the extent and position of the burns being the same, do you say that the burns sustained from gas are more dangerous and more serious than the burns of similar character sustained by other means?—I do, because when the gas ignites there is a certain amount of momentum. In some cases there is not a trace of hair on the head, and some of these cases undoubtedly have their sight almost destroyed.

42. I am instancing two cases of similar burns—one by gas and one by other means?—They are not similar burns if they are caused by different processes.

43. Do you say that burns sustained by gas cannot be sustained by any other means?—The difference is that the gas explodes.

44. Supposing that the two persons were burned on the head and thorax, and the burns from gas are the same as those caused by other means?—I say they cannot be equal. In the case of burns by gas we are dealing with an injury which is inflicted in a very short space of time by an explosive process.

45. What are the different effects left by gas-burns and those inflicted by other means than gas: can you describe them to us?—The burns that are produced by gas are certain to damage the deeper tissues in addition to the injury inflicted by the flame at the same time.

46. Supposing two persons are brought into your surgery suffering from burns and you do not know how they have been sustained, could you distinguish between the burns from gas and those inflicted by other means?—Yes.

47. What is the difference in the effects?—Gas, as a rule, causes minute portions of coaldust to be driven into the skin.

48. Then, the only reason that burns by gas are more serious than burns inflicted by other means is that coaldust is driven into the skin?—No, sir; because the coaldust is driven into the skin with explosive violence. The flame is greater than an ordinary flame when it is an explosive flame. If the flame is of sufficient velocity it might destroy portions of the tissue. Any colliery surgeon would say the same thing.

49. But you told us that the reason why a gas-burn is more serious is that coaldust is forced into the tissue?—Yes.

50. Was that the case in respect of Kelly?—Yes, I believe so. There was pigmentation.

51. You suggest there was an explosion of coaldust in Kelly's case?—I did not.

52. I assume that the burns were of a similar character and extent; if that is so, I want you to try and explain it to us?—They are not equally serious; there was pigmentation of the skin in one case.

53. You did not hear or understand that there was an explosion of coaldust in Kelly's case?—In every mine there is a lot of dust in the atmosphere.

54. If those burns had been sustained by any means other than gas—— ?—If they were the same in extent and depth.

55. Then there is really no distinction between the burns?—There is a distinction, as I have already said.

56. But if they are of the same extent and character?—There are always minute particles of carbon driven into the skin in the gas-burns I have seen.

WELLINGTON, FRIDAY, 23RD OCTOBER, 1914.

PERCY GATES MORGAN, Director of Geological Survey of New Zealand, sworn and examined. (No. 22.)

1. *The Chairman.*] What is your position, Mr. Morgan?—I am Director of the Geological Survey of New Zealand. I was formerly Director of the Waihi School of Mines. Previous to that I was engaged for five years in coal-mining. I am Chairman of the Board of Examiners under the Mining and Coal-mines Acts, a member of the Australasian Institute of Mining Engineers, a Fellow of the Geological Society, a member of the Seismological Society of America, and of other scientific societies.

2. I understand you have a statement to make?—Yes, I have prepared a statement regarding the Huntly disaster. It is as follows: I visited Ralph's Mine on Tuesday, 29th September, in company with Professor H. B. Dixon, Mr. F. Reed, Mr. J. Bishop, Mr. W. Wood, Mr. G. Langford, and others, and again on Friday, the 2nd October, in company with Messrs. Reed and Alexander Penman. The evidences of explosion in the main haulage-road consisted of broken coal-tubs, timber plentifully marked by small pieces of coal or stone and rounded on some edges, falls of roof, &c. At one place an opening

had been blown into a bord at a higher level. The timber thrown down by the explosion had been replaced, and the road had been to a great extent cleared of debris, so that it was difficult to form an opinion concerning the degree of violence, but on the whole it seemed to me that the explosion was not so violent as might have been expected. The facts that in places the haulage-road is wet, and that one portion is driven through the shaly clay underlying the coal would help to explain this. In No. 5 section fine coal was piled against the sides of the bords and other workings. In places the floor was swept clean, except for small lumps of coal here and there, timber was overthrown, and falls on the roof had taken place. At one spot a coal-tub had been smashed to pieces, and at another rails were torn up. On the other hand, some timber remained in place, and at one face a full tub of coal remained practically undisturbed, although only a few feet away the evidence of the explosion was very strong. At a fall in No. 5 bord, stated to be in part an old fall, firedamp was present in some quantity both on 29th September and 2nd October. On the latter date brattice had been brought close to the south end of the fall, and a good current of air was passing. It may therefore be inferred that firedamp was being emitted in considerable quantity from the roof at the time of my visits. In the adjoining bord, No. 6, which is connected with No. 5 by cut-throughs or stentons, was found the body of John Martin (No. 43). I was present on the 2nd October when his coat was found by Mr. Alexander Penman. The spot is not where marked on a map I have seen, but slightly to the westward of the stenton nearest the falls in Nos. 6 and 5 bords. I may here state that I saw a pair of rails protruding from the north end of the fall in No. 5 bord for about 10 ft. These rails have been mentioned by other witnesses at the inquiry, and it has been suggested that Martin was about to enter No. 5 bord in order to lift them when his naked light ignited an explosive mixture of firedamp and air. I quite concur with the opinions already expressed that there was a considerable emission of firedamp from the fall in No. 5 bord previous to the explosion—that this, mixed with air, was ignited by Martin, and that the resulting gas-explosion was continued as a coaldust explosion to the haulage-road, whence it reached past No. 6 cabin in one direction and to the top of the main shaft in the other. It is certainly impossible to determine the amount of explosive mixture ignited by Martin, nor is this matter of great importance. Since, however, varying opinions have been expressed, I may be allowed to discuss the question. It seems to me probable that there was a comparatively large body of firedamp in No. 5 bord at the time of the explosion. Some of this would be too pure to explode, whilst some, largely by diffusion, would have formed an explosive mixture with the air present. At the moment of the explosion some firedamp, though not necessarily in large quantities, must have entered Nos. 4 and 6 bords from No. 5 bord. If, however, Martin ignited the firedamp at the point where his body was found, there must have been a large amount of the gas present in No. 6 bord, filling it to the door at the south end. In this case Martin could not have entered the bord by means of the door, for on passing through he would have ignited the gas, unless his light was blown out, and unless he had made no attempt to relight it till he had walked some distance. On the other hand, since much the easier route to Nos. 5 and 6 bords was through the door, it is worth while pointing out that the section of No. 6 bord is such that a moderate amount of firedamp could enter from No. 5 bord and accumulate where the roof is high a chain or two north of the door. Thus Martin could have passed through the door, lighted his lamp, if it was blown out, and walked for a chain or more with the lamp in his hand. Then, perhaps on raising the lamp to his head, he ignited the explosive mixture. Again, he may have been entering the stenton near which his body was found, and there encountered an explosive mixture just beginning to issue from No. 5 bord; but this view would require a degree of coincidence, which it is hardly reasonable to assume. The injuries sustained by Martin are consistent with the opinion that he was hurled a chain or more by the initial explosion, but not so much so with the opinion that he was struck down where he stood. General appearances in bords Nos. 4, 5, and 6 indicate that the explosion was not of intense violence in this locality—the seat of the initial explosion. This is in accord with experience in other parts of the world. It seems to me to indicate also that the quantity of air and firedamp mixture that exploded was not large. This is not to say, however, that there was not possibly a great deal of firedamp present. I believe there was a considerable body of firedamp in No. 5 bord, but much of this was mixed with less air than was required for an explosion. There was, of course, also some firedamp diluted with air below the explosive limit. Evidence has been given showing that there was a very large accumulation of firedamp in No. 5 section of Ralph's Mine six days after the explosion. This alone shows that this portion of the mine must be regarded as "gassy" or "fiery," and probably comparable with the Kaitangata Mine in that respect. Hence, for the present at any rate, safety-lamps are absolutely necessary. It ought to be pointed out that bords Nos. 4, 5, and 6 are on or near the summit of a small dome or short anticline, a structure known to all with oilfield experience as favouring the accumulation of gas in the strata. It is therefore probable that the strata immediately over these bords contained a large amount of inflammable gas under pressure, and that this was liberated previous to and after the explosion by cracks or fissures communicating with the fall in No. 5 bord. Whether this view is correct or not for the particular case under consideration, it is evident that any similar domes or anticline in the Waikato coal-mines ought to be regarded as potentially dangerous unless the contrary is proved. The suggestion has been made that the Huntly disaster had a connection with the eruption at White Island on or about the 11th September. Though unfortunately attended by loss of life, this eruption was quite local in its effects, and did not give rise to tremors perceptible on the mainland. I have a letter from Mr. Matthew Paul, Inspector of Mines, a part of which reads as follows: "With regard to the suggestion that the men were overwhelmed with a landslip from the cliff near their quarters, I might state that the cliff referred to is standing intact; further, that there is no deposit for several chains from its base. The houses were built well clear of this cliff, but, unfortunately, in a direct line with the new blowhole, and the debris seems to have been thrown out towards the south-east bay, carrying everything with

it. Formerly the landing at this bay was all rough slippery boulders, which not only made landing difficult but also dangerous on account of the heavy surf. Now all these boulders have disappeared, leaving a nice sandy beach. I estimate that millions of tons were thrown out; even now the crater-bed, which covers an area of 40 acres, is covered to an average depth of 20 ft., and taking 14 cubic feet to the ton gives one some idea of the magnitude of the eruption, not dealing with what has gone out to sea, changing the bay, as already described." The hypothesis supported by John Milne and others, that there is a connection between seismic disturbances and colliery disasters, remains unproved and has found little acceptance. "La Science Séismologique," 1907, by Comte de Montessus de Ballore, refers to this subject on pp. 272 *et seq.* My translation of one paragraph is as follows: "The search for a possible correlation, at all events a hoped-for correlation, between seismic phenomena and firedamp explosions in coal-mines has given rise to researches which were so much the more ardent, since it was a question of foreseeing a great disaster, and since seismic movement propagated in terrestrial strata seemed *a priori* capable not only of facilitating the disengagement of gases included in beds of combustible mineral, but also of affording a means of predicting such a disengagement. Thus the problem is one of great interest; but, unfortunately, it is very necessary to recognize that success has not attended these efforts, and earthquakes in no way serve in the prediction of these dangerous explosions." If any connection does exist, it is a remote one, such as that between sunspots and a good or bad harvest. The following suggestions for the prevention of similar disasters for the most part do not cover any fresh ground: (*a*) Strict and frequent inspection of old or partly abandoned workings; (*b*) increased ventilation; (*c*) watering dusty roads and places; (*d*) use of inert dust; (*e*) use of "permitted explosives" only; (*f*) use of safety-lamps—oil or electric. For information concerning the use of watering and of inert dust an article in the *Colliery Engineer*, July, 1914, pp. 739–44, by George S. Rice (Chief Mining Engineer, U.S. Bureau of Mines) may be mentioned. According to Mr. Rice, watering is very effective, and is by no means out of date. I would further advocate: (1) Experimental tests of coaldusts from all New Zealand mines; (2) frequent analyses of mine-air, especially in returns; (3) one or more rescue-apparatus stations (this was recommended in 1913, and again in 1914, by the Boards of Examiners under the Mining Act and Coal-mines Act; (4) increased opportunity of technical education for all classes of miners.

3. *Mr. Wilford.*] Have you submitted this report which you have now produced to the Commission to the Minister of Mines?—No, I have this morning enclosed a copy of it in an envelope addressed to the Under-Secretary for Mines.

4. Had the Under-Secretary seen it before it was presented to this Commission?—I have not the slightest idea.

5. Have you forwarded it to the Under-Secretary for the Minister?—I simply addressed it to the Under-Secretary, to do with it as he wishes.

6. Then, the Minister will be able to get it?—Yes.

7. Have you a mine-manager's certificate?—No.

8. Are you eligible to sit for a mine-manager's certificate?—Yes.

9. When were you last occupied in coal-mining?—In 1895.

10. Where?—At Walton Park, Green Island, near Dunedin.

11. How old were you then?—About twenty-seven.

12. Were you then undergoing your course at the University?—It was after the end of my course.

13. Were you working in the mines as part of the course required by the University?—No. The time required for my course was twelve months, but I put practically five years in the mines. I was earning my living as a miner.

14. In what capacity were you working in the mine?—In many capacities.

15. Hewing at the face?—Yes.

16. And trucking?—No, except that we did our own trucking from the face.

17. Did you ever see firedamp in a mine before you visited Huntly?—Yes.

18. Where?—In the Brunner Mine, Sydney Harbour Collieries, and elsewhere—I cannot remember all the occasions. I have seen gas hundreds of times in the laboratory.

19. You say in your report, "It may therefore be inferred that firedamp was being emitted in considerable quantity from the roof of the fall." Did you estimate the quantity of firedamp which would probably be present in the bord in which Martin met his death when you visited the place?—I could not estimate it, because it was above the fall.

20. At the time of your visit, would there be hundreds of thousands of cubic feet?—No.

21. Was there 50,000 cubic feet?—No.

22. What would it be?—Whatever area of free space there was above the fall: 300 or 400 cubic feet, or more. That was on my second visit.

23. Have you had much success in estimating in the course of your professional career? Do you remember estimating in a geological report which you made that there were 636,000,000 tons of coal in the Grey Valley?—Yes.

24. Do you adhere to that?—Certainly. As stated in my report, however, the estimate was made on as optimistic a basis as was justifiable.

25. Do you know that there is a Royal Commission being set up to make inquiries into the matter, because it is found that there is not that much coal there?—I do not know it.

26. Do you know that that has been recommended?—No, I do not know that.

27. Do you remember making an estimate in regard to the Kotuku Oilfields?—No.

28. Did you show them where to bore for oil?—No.

29. Did you have something to do with it?—I made a report on the subject and recommended where three prospecting bores should be put down.

30. You indicated the sites?—Yes.

31. Was there any oil found there: were you wrong?—No, I was not wrong.

32. But there is no work going on there now?—That may be. I made a report which stated all the facts, and allowed any one to draw his own conclusions. It was open for any one to conclude that it was not worth while putting down prospecting bores.

33. In regard to your anticline theory, it assumes that there was gas at the apex?—Yes, that is the general theory.

34. Then, in spite of that theory, the gas which caused the disaster at Huntly was on the leg of the anticline?—No.

35. It was not at the apex, was it?—Why not? [Plan and section of bords Nos. 4, 5, and 6 discussed.]

36. In this bord No. 6, that would surely be called the leg of the anticline and not the apex?—Do you not see the section, which shows the gas at the top of the slope?

37. It is not on the apex where Martin was burned? You would not say that he was right at the apex at the time of the explosion?—I did not say where he was.

38. If the mixture had been too rich it would not have exploded?—No, but Martin's light would have gone out.

39. If he had passed through that door it is not possible that he could have proceeded down the bord with his lamp still alight?—No, because it would have gone out if the firedamp mixture had been too rich.

40. Do you agree with Sir R. A. S. Redmayne's theory, that at the point of origin an explosion is less violent than it is later on?—I think that the gas-explosion was a good deal less violent than the coaldust explosion which followed.

41. The explosion at the point where Martin was was less violent than that which followed the explosion of the coaldust?—Yes.

42. It was increased by the coaldust as it travelled?—I should think so.

43. Do you know anything about the explosives which are used in mines?—No, practically nothing except what I have read of them.

44. Do you know that according to official British statistics for 1912 there were three accidents caused through the use of monobel?—I do not know that.

45. You would not deny it?—No, if it is in the British statistics I would freely admit it. May I say that I consider all explosives dangerous in a coal-mine.

46. *The Chairman.*] You mean that it is impossible to get an explosive which is absolutely safe?—Certainly.

47. *Mr. Wilford.*] Are you aware that during 1912 monobel was condemned in England, and monobel No. 1 was put on the permitted list?—I do not know the date, but I am aware that that is so.

48. *Mr. Dowgray.*] You said that there was no safe explosive?—I think that is a matter of common knowledge.

49. *Mr. Wilford.*] It is agreed, I think, that a non-flame-producing explosive is less dangerous than a flame-producing one, and that if you can get a non-flame-producing explosive that is the one you should use?—That is so.

50. Do you know that in 1911 there were 34,000 lb. of monobel imported into this country; and in 1912, after it was taken off the permitted list in the Old Country, there were 42,000 lb. imported into this country?—I have heard that from Mr. Reed.

51. Can you tell me whether a serious explosion at Barnsley Main Colliery was caused by the use of monobel?—I have heard that that is so.

52. From your experience of the Taupiri Mine, are you satisfied that it is safe for that mine to be worked without safety-lamps?—I would not like to be responsible for working it without safety-lamps.

53. If you had the authority to prevent the company from working the mine without safety-lamps would you do so?—Possibly not.

54. You would not: would you stop them from working unless they used safety-lamps?—You mean, if the whole responsibility rested upon me? I can hardly say what I would do in that case, but if I wished to be on the safe side I would certainly order the use of safety-lamps.

55. Would a safety-lamp have saved Martin's life?—Probably.

56. Is there any doubt about it?—Certainly, but there is not a great amount of doubt about it. That safety-lamp which was carried by Mr. Reed might have caused an explosion. It is possible for the gauge of some classes of safety-lamps to get red hot. Humanly speaking, what you wish me to say is correct—namely, that there would have been no explosion if Martin had had a safety-lamp and had used it intelligently.

57. If a deputy had inspected that bord before Martin went in, must he have discovered gas there—say, half an hour before?—He would almost certainly have done so.

58. *Mr. Tunks.*] On the question of explosives, do you know that monobel is responsible for only three accidents out of 23,000,000 shots?—No.

59. Do you know that monobel was allowed to be used in Great Britain for twelve months after it was taken off the permitted list, in order that the change could be made in the use of explosives and the manufacture of it adjusted?—No, I do not know that it was such a long time as that, but I am quite willing to accept the statement that twelve months was given.

60. Now, in your statement you refer to a coincidence which it is hardly reasonable to assume—that Martin may have been entering the stenton near which his body was found, and there encountered an explosive mixture just beginning to issue from No. 5 bord. Why should there not be such a coincidence as that—that there should be a sudden emission of gas just at that time? You see the fall which probably produced that gas had to take place some time?—Yes.

61. Why should the emission of gas not have taken place just before Martin entered: there is no reason why that should not have happened?—It is more likely that it began some little time before.

62. Why is it more likely to have taken place some little time before?—If Wear was there on the Wednesday, three days before, and even if there was little or no gas there then, the odds are very small that the emission took place just before Martin entered the place.

63. Wear says there was no gas there then?—Yes. It is far more likely that the emission of gas commenced in the sixty-odd hours preceding the Saturday morning of the fatality than in the short interval of one or two hours at the most just before Martin arrived. It is a question of probabilities.

64. Supposing it is shown that the under-manager traversed that part on the day before the explosion (Friday) with a naked light, does not that increase the probability of the emission of gas having occurred just prior to the accident?—Yes, that would make the probabilities more equal.

65. And therefore the coincidence more likely?—Yes.

66. You are not prepared to say that it was impossible for the fall to have taken place and the emission of gas to have occurred within, say, an hour before the accident happened?—No, I would not say it was impossible; the odds are against that, however.

67. The odds were against Brocklebank getting out alive if there had not been a broken air-pipe protecting him just where he was?—Exactly.

68. What were the odds against the air-pipe being broken just where he wanted it? They were pretty heavy?—Yes.

69. You have said that it seems to you probable that there was a comparatively large body of firedamp in No. 5 bord at the time of the explosion.—Yes.

70. You agree with Professor Dixon's evidence upon that point?—I agree, so far as I can remember what he said.

71. You said that "evidence had been given showing that there was a very large accumulation of firedamp in No. 5 section of Ralph s Mine six days after the explosion. This alone shows that this portion of the mine must be regarded as 'gassy' or 'fiery,' and probably comparable with Kaitangata Mine in that respect." You are assuming that there was a large accumulation of firedamp; you are not testifying that there was?—No, I judge that from what I was told by Mr. Bennie, Mr. Reed, and others.

72. You say that this indicates that the mine at that point must be regarded as fiery since the explosion?—Strictly speaking, it was proved only that it was gassy at that particular time. I know nothing about the state of the mine before the explosion.

73. But the fact that this large amount of gas was found after the explosion does not necessarily indicate that it was gassy before the explosion?—No, not necessarily.

74. You state that "it is therefore probable that the strata immediately over these bords contained a large amount of inflammable gas under pressure." If that is correct, as to the presence of gas in the strata, would not a very slight seismic disturbance be enough to liberate that gas?—I do not think so.

75. Might not that have caused the fall?—No, I do not think so.

76. What would cause the fall?—The nature of the strata and the force of gravity, which would be the principal factor.

77. Would it not come to a climax at a particular moment?—No, the force of gravity is uniform. You see, this was an old fall, and "once a fall, always a fall." The final cause may have been simply the action of the atmosphere on the shale or other material forming the roof causing it to flake.

78. There having been a fall there before, would it not be more likely to yield to contraction of the earth or a tremor than if there had been no fall?—If there had been a perceptible tremor.

79. What do you mean by a perceptible tremor?—One that can be felt by a trained observer without an instrument. I do not mean micro-seisms or minute tremors, but one that is perceptible to the senses.

80. If the force of gravity is uniform, might not a contraction of the earth or a tremor which is not perceptible to the observer be sufficient to have some effect on the strata?—Only a very minute effect.

81. Why should gravity have a greater effect than actual movement of the earth?—I certainly think that the force of gravity would have a greater effect than a minor tremor. Minute tremors are numerous: in fact, the crust of the earth is always more or less in a state of tremor.

82. You cannot distinguish between the result of these constant tremors and that of the force of gravity?—I think so.

83. May not a tremor be sufficient to disturb the balance?—It might be a contributing factor.

84. It is not such a thing as to call for derisive comment such as you quoted from M. de Montessus de Ballore?—It is considered to be too remote a cause.

85. You are dealing with a scientific matter which at present may be considered impossible, but which in a decade may be regarded as an accomplished fact. Not long ago people would have been laughed at for suggesting the carrying-on of warfare from air-ships. It is possible that a little more scientific knowledge may show an intimate connection between these two things?—Not an intimate relation, but perhaps a perceptible connection.

86. A greater relation than you are prepared to admit at the present time?—Yes, may be.

87. Our French friend whom you quoted may then have to laugh on the other side of his mouth?—He admits that perhaps more delicate instruments may indicate these delicate minute tremors, and therefore that some day a connection may be traced between them and firedamp emissions.

88. And Milne admits the hypothesis that there is a connection between seismic disturbances and colliery disasters?—Yes, but I do not know what his exact views were at the time of his death.

89. *The Chairman.*] How long is it since he died ?—Two or three years ago; but he wrote upon the subject about twenty years ago. The earliest discussions were thirty or more years ago.

90. *Mr. Tunks.*] The subject has been taken up at a much later date than that ?—Yes, there was extensive discussion about ten or twelve years ago; but there has not been much lately, so far as I know.

91. You will admit that the eruption at White Island and the disaster do coincide ?—They were probably within two days of one another—possibly within thirty hours.

92. *Mr. Wilford.*] Were you aware that in the recent exposure at Home, made by Mr. Philip Snowden, it was shown that seventy-six shareholders of Nobel's were Germans, and amongst these were three German banks and five German Army officers ?—I did not know that. I knew there were many German shareholders.

93. *The Chairman.*] Has the weight of the atmosphere indicated by the barometer anything to do, in your opinion, with these falls in the mine ? Is there any connection between the two ?—I do not think that barometric variations are important in causing firedamp to issue from the coal, but if there are any old workings containing firedamp a sudden fall would favour the issue of gas into the new workings. Again, a sudden rise would affect the earth's crust more than minute seismic tremors.

94. We have had a table put in showing the barometer at over 30 in. ?—Yes, and according to Mr. Bates there was a sudden rise of the barometer; that might have had some little influence.

95. Any sudden change ?—Yes.

96. *Mr. Brown.*] That is an acknowledged fact by most mining men ?—Yes; and therefore all collieries have to keep a barometer at the mine-mouth.

97. *Mr. Dowgray.*] When you visited the mine on the 29th September did you discover a great quantity of gas ?—The only gas which I thought serious was at the fall in No. 5 bord. Mr. Reed got several tests of from 1 to 2 per cent. in his lamp, but I did not see them very clearly except in one case where I thought I saw a slight cap.

98. A 2-per-cent. cap ?—No, probably below that.

99. In what part was that ?—That was in No. 5 section, at the place where a full truck of coal was standing near a face. A little way off the floor was swept clean. Mr. Reed called out that he had got a cap, and we all went in, but it could not be got again, I think, because the air had been too much disturbed by the number of people who went in there.

100. You stated that the presence of a large quantity of gas after the explosion was no indication that the mine was a gassy mine ?—I said it was no proof that the mine was gassy before the explosion.

101. Does it not prove to you that the strata contained an extraordinary amount of gas ?—Not extraordinary by any means, but a large amount—not, of course, anything approaching the quantity which is found in Pennsylvania and elsewhere in oilfields. The strata at Huntly do not necessarily contain much gas compared with the quantity found in oil-bearing countries.

102. But they certainly contain more gas than is found in most of the coalfields of New Zealand ?—Yes, so far as I know. Of course, most of the coal-mines here are worked almost on the surface, and this gives the gas a better chance of escaping than if they were worked at depth and from shafts. For example, the Denniston and Millerton mines are not gassy.

103. The State mine is not worked near the surface ?—Point Elizabeth ? Well, there is firedamp there. One section is worked with safety-lamps, or at least it was when I was there in 1910.

104. *Mr. Brown.*] Mr. Wilford was questioning you about monobel; can you name the mine where the accident occurred through the use of monobel ?—The Barnsley Main Colliery, in England.

105. Would you be surprised to learn that it occurred in the intake airway ?—No.

106. If three shots were bored into the strata and one or two did most of the work, what would happen with the other ?—You would probably have a blow-out shot.

107. And flame ?—Yes, a flame would be produced.

108. And most explosives, you think, would do the same thing ?—Yes, all ordinary explosives are more or less flame-producing.

109. And more so if they have not got sufficient work to do ?—Yes, there is always a flame if they are exploded in the open.

JOHN MCGILL, Deputy, sworn and examined. (No. 23.)

1. *Mr. Tunks.*] You are a deputy in Ralph's Mine ?—Yes.

2. I understand that during the week prior to the accident you had had instructions to get rails out ?—Yes.

3. Who were those instructions from ?—Mr. Gowans, the under-manager.

4. Where were you to get the rails from ?—The winch-level.

5. That is in what district ?—The little dip section: you have to go through No. 5 to get there.

6. Were you able to get the rails out for Mr. Gowans ?—No.

7. Did you know that anybody else had been told off to get them out on the Saturday ?—No.

8. When did you last see Mr. Gowans ?—Friday afternoon.

9. At about what time ?—About 3.30.

10. Where did you see him ?—At the foot of the ladder.

11. That is where you generally got your instructions from him ?—Yes.

12. I want you to state in your own words what took place when you met Mr. Gowans ?—He asked me if I had two men to spare during the week to try and get some rails out for Mr. Smith's section: he said they were short of rails. On the Friday afternoon he had come through to Bond's dip and from Bond's dip through No. 5 section he had come the return airway.

13. *Mr. Wilford.*] How did you know he came through that way ?—He told me then, and requested me to try and get the rails out; but, unfortunately, I had to send one of the men whom I had intended to send to get the rails with a miner because he could not work on his own. The man whom I sent with the miner was John Robinson, who lost his life.

14. *Mr. Tunks.*] What sort of light was he (Mr. Gowans) carrying ?—An ascetylene-lamp.

15. Had he come through that door ?—There was no other way out.

16. You know that part yourself ?—Yes.

17. And you were right up close to the door, were you not ?—Within 10 yards from the cut-through, every night in the week.

18. But you did not go through the door ?—No.

19. I should like to know whether, if these rails had been got out from No. 5 during the week, while you were in charge, you would have considered it necessary to make an inspection or examination of that part ?—Yes.

20. It would have been part of your duty as deputy to do so ?—Yes.

21. I consider it would be equally Mr. Smith's duty to do so ?—Yes, and I am of opinion that Mr. Smith was on his way to do so.

22. Why ?—His coat was got out on the main road, and he was in No. 5 section, so that he had no other object to take him through where those men were going.

23. *Mr. Wilford.*] That is to say, you are of opinion that Martin got into No. 5 bord before Smith had time to inspect it ?—Yes, Martin had got ahead of Mr. Smith. There is no question about that.

24. Was Mr. Smith the man whose duty it was that morning to inspect prior to the men going in ?—Yes, unless he told his deputy to do it.

25. Either he or his deputy, if he told him ?—Yes.

26. Then, if Mr. Smith was the man who had to inspect prior to the men going in, he failed to make his examination before the men got in ?—Martin had got ahead of him.

27. Then Smith failed to inspect before Martin got in ?—Yes.

28. Then he allowed Martin to get in before he had inspected ?—No.

29. Martin got in ahead of him ?—Mr. Smith gives the instructions in the cabin, and they go down. They are supposed to wait at No. 5. He would go in ahead of them, as any of the deputies would do. The deputy would examine the place and come back through the door.

30. Do you know whether Smith had a safety-lamp that morning ?—We cannot say.

31. Was Smith's body identified ?—I think so.

32. Was there any safety-lamp found near where Smith's body was ?—We have not cleaned up that place yet.

33. Are you clearly and certainly of opinion that Smith could not have got in front of Martin ?—Yes.

34. You feel positive of that ?—I am certain that Martin had got ahead of Mr. Smith.

35. Do you know the door that opens into No. 6 bord, at which point Martin's body was found ?—Yes.

36. Had that door a lock on it ?—No.

37. Are you positive there was no lock upon that door ?—Yes.

38. Did that door open into a bord which was not frequently used by the men ?—That door opened into No. 5 section.

39. Did that door open into bord No. 6, which was not frequently used ?—No. 6 is the bord straight down from that door.

40. Is it the way to get into No. 6 if you come up the jig ?—Yes.

41. You give your positive oath that there was no lock upon that door ?—Yes.

42. You know that one is required by the Act ?—Yes.

43. Why was not one put on ?—That is not in my line at all.

44. You heard Mr. Fletcher give evidence ?—I was there, yes.

45. You heard him admit that there was no lock on that door ?—Yes.

46. And that he knew that the Act said the door must be locked ?—Yes.

47. Now, in regard to this conversation you had with Mr. Gowans on the Friday afternoon at 3 o'clock, did you give evidence at the inquest ?—Yes.

48. Covering, I think, over a page of typewritten matter ?—Yes.

49. Were you asked one single question upon the subject you are now giving evidence upon ?—No.

50. How long is it since you gave evidence ?—I gave evidence about the 24th September.

51. Have you ever made that statement that you made this afternoon, between the time you gave evidence on the 24th September and to-day, the 23rd October ?—Yes.

52. Where ?—In the mine.

53. When ?—On the 21st of this month, to Mr. Fletcher.

54. Did you tell him about it ?—Yes.

55. And no questions were asked you on the subject by anybody at the inquest ?—No.

56. Your opinion is that Martin was going to get rails that morning ?—Yes.

57. And you confirm the suggestion that was made by me in the course of my address to the Commission, that Martin was undoubtedly on his way for rails ?—Yes.

58. Have you ever seen gas in Ralph's Mine ?—Yes.

59. Frequently ?—Very nearly every time that it was reported in the old workings report-book. It was my duty to go in and clear it.

60. Do you think you cleared it fifty times ?—No.

61. About twenty—in the old workings ?—Three times in No. 7. I have cleared gas out of the old workings five times.

62. How many times have you known the presence of gas there: when you have not cleared it out somebody else has ?—I only know when I have cleared it—five times.
63. Have those been cases where the gas has bled out of the coal ?—Yes.
64. Not from a fall, but from bleeding ?—All from falls.
65. And then bleeding afterwards ?—Yes.
66. Have you seen gas in the face where men are working ?—Never in Ralph's.
67. In the Extended Mine ?—I was never in the Extended.
68. Have you ever seen a gas-accumulation where a bore has been made ?—Yes.
69. Have you seen cases where the men have been able to light up the accumulation of gas when a bore has been made and left for a time ?—Yes, very often; but not in Ralph's.
70. Where, then ?—Millerton.
71. You know Molesworth ?—Yes.
72. He told us that on one occasion they bored a hole and left it to go for crib, and when they returned he lit the gas with his lamp ?—I quite believe that.
73. How many times have you known of men being burned in Ralph's ?—Once.
74. Who ?—Kelly.
75. That was on the 9th July ?—I would not be certain of the date.
76. That was just prior to the accident ?—Yes.
77. Was he badly burned ?—I did not see him. I do not think so—he was only a few days off work.
78. Do you know whether he had been burned previously ?—Not to my knowledge.
79. Were you down the mine the morning of the explosion ?—No.
80. Then you know nothing of the conditions of the travelling-roads on the morning of the explosion ?—No.
81. Do you think Martin entered by the door into No. 6 bord, or some other way ?—He went by the door: I am sure of it, because my lad was one of the three who were going to meet him.
82. Did your lad go down that morning ?—Yes.
83. If the door had been locked that morning Martin could not have been killed ?—Well, I will not say anything about that.
84. You are on your oath: is that not so ?—Yes, it is so.
85. *Mr. Tunks.*] Is that door used much ?—It is used a lot. This little dip section was knocked off during the strike, and everything was left in it. There was no provision for getting anything out. That was what caused the rails to be left there. There is a long dip that a horse would have to pull them up.
86. I understand that up to the time of the strike that part was being worked ?—Yes.
87. And then that door would be used continually ?—There was no door then: it was not there then.
88. How long ago was it holed through ?—About six months ago.
89. And since then has that door been used regularly ?—Yes.
90. And frequently ?—Yes.
91. In order to get out rails and various other things ?—All the working material came through that door.
92. To whom did you make the statement of your evidence at the inquest: who took your evidence before you went before the Coroner as a witness ?—Detective Cooney.
93. You did not see me before the inquest ?—No; nor since, till to-day.

COUNSEL'S ADDRESSES.

No. 1.—Mr. Napier.

Mr. Napier: Mr. Chairman and Gentlemen,—This inquiry is one the importance of which I think cannot be exaggerated, and I feel sure that upon the results of your deliberations may largely depend the future safe and successful working of the mining industry in New Zealand. I desire to express my sense of the fairness with which the inquiry has been conducted by the Commission, and I have no doubt but that in its subsequent deliberations that fairness, judicial attitude, and impartiality to all the interests represented will be continued. Now, gentlemen, the questions submitted to you by His Excellency the Governor I have shortly summarized, and I propose to very briefly refer to the evidence which has been adduced at the inquiry in so far as it applies to each of these questions. It will be impossible, of course, in the short time at my disposal to do justice to the evidence or to exhaustively consider the details of each point, and therefore I do not propose to do so; but I shall endeavour to submit a short and accurate sketch of the evidence which each important witness has given. The first question is as to the place and nature of the accident; secondly, how the accident was caused: thirdly, what lights were used; fourthly, were the provisions of the Coal-mines Act, 1908, and the general rules, the special rules, and additional rules made in accordance with the provisions of that Act complied with, with special reference to—(*a*) ventilation and lighting, (*b*) the examination of the mine, (*c*) the character of the explosives used, (*d*) the withdrawal of workmen in case of danger, and (*e*) the means of escape in case of accident; fifthly, the nature and character of the working and general management of the mine; sixthly, the efficiency of the inspection of the mine by—(*a*) the Inspector of Mines for the district, and (*b*) the workmen's inspectors; seventhly, suggestions for the prevention of accidents and for the safe working of the mines in the future; eighthly, is the existing law sufficient to give the Inspector of Mines power to order safety-lamps and other appliances

if in his opinion such appliances are necessary; and, ninthly, generally to inquire into any matter or thing arising out of or connected with the several subjects of inquiry hereinbefore mentioned, and to suggest any amendment of the law if the same is considered necessary. These are the questions submitted. It seems to me that the first thing that one must be struck with in reading the evidence is that for practically a quarter of a century this mine which is the subject of inquiry to-day has been carried on and has been usually considered to be a safe mine—in point of fact, to be one of the safest mines in the world—and the Inspector of Mines appointed by the New Zealand Government has called it the second safest mine (the Extended Mine being the safest) in his inspectorate, after that long period of working. In considering that, the next point that one is bound to observe is that after the great explosion which has taken place the mine remains intact, the shaft remains practically uninjured—a testimony, I submit, to the solidity with which it was constructed. The explosion was a violent one, and one would naturally expect that as the result very serious, if not irreparable, injury would have been done to the mine, but such has not been the case. As to the first question, of course, there can be no doubt regarding the place and nature of the accident. There is practically unanimity on this point. The place, according to the evidence, is proved to have been at or near the place where Martin's body was found, and the nature was the ignition of a firedamp mixture causing a dust-explosion. There are no doubts also upon the second question, which is involved in the answer I have given to the first. It is believed by every one that naked lights were used in the mine, except by the deputies. Therefore, that disposes of the first three questions. The fourth question is one upon which there has been some conflict of evidence—as to whether the provisions of the Coal-mines Act and the general and special rules referred to in the Commission were properly and rigorously observed. The first point in this No. 4 question is ventilation, and here we have on the one side a large amount of expert testimony and the testimony of the ordinary miners, and on the other side we have the testimony of one highly placed officer in the Government service. But the main feature in regard to this particular point is that the ventilation was carried on by means of a fan and mechanism, which had been used for many years to the satisfaction of the Government Department. The officer, Mr. Reed, who contends that the ventilation was not sufficient, has only paid very few visits to the mine—indeed, only one during the last three years, until this deplorable occurrence. On the other hand, we have the evidence of the regular Inspector, the responsible officer who constantly visited the mine, and that evidence, coupled with the enormous mass of evidence tendered by the miners at the inquest, all goes to show that the ventilation was practically complete, and was satisfactorily and efficiently carried on for a great many years; and that to-day, as during the last few years, the examining officers and the Inspector believed the extent of the ventilation to be ample. No request was made for any other fan than the present one, but the company have voluntarily ordered a new fan of higher power, which only shows that they proposed to provide more ventilation than the law requires, and to take extra precautions for the safety of the workmen. The next subdivision is as regards the lighting, and upon that we come to the question of the lamps. Now, during the whole life of this mine, extending over a period of nearly twenty-five years, it appears to have been worked with naked lights without accident. I do not want, of course, to interpose, in the short time I have, any authorities, but, gentlemen, you will probably look up some writers on the subject, and I think you will find that in the history of coal-mining it is a very creditable performance for twenty-five years to have elapsed without any serious accident. The naked lights were used under conditions which existed practically unchanged until the accident; and while upon that point I would like to direct your attention to the statements of Mr. Reed, whose evidence I shall have occasion to refer to later on also, and who prophesied this disaster because naked lights were used. Now, there is no evidence before the Commission that the conditions of the mine changed last December or January, when Mr. Reed for the first time became aware of the conditions prevailing. The whole of the evidence, on the contrary, shows that the conditions were practically uniform with those which obtained before. If that be so, and Mr. Reed had known the fact ten years ago of which he became aware last December, then it is fair to assume that he would have made his prophesy ten years ago; and I ask what would have been the value of that prophecy? If the conditions had been radically altered last Christmas, one could have understood his claim to glory, because according to his deportment it was a glory for him to have his prophecy fulfilled. The next sub-item has reference to the explosives. With regard to this matter, the outstanding feature is that the explosives used in the mine were permitted explosives according to the law of New Zealand. The term "permitted explosive" in England has a technical meaning: it has no such meaning according to our law. I am not now referring to the adequacy or otherwise of the law, or how quickly we ought to follow in the footsteps of successive amendments made in England. I am only pointing out that so far as the law of New Zealand is concerned the explosives used were permitted explosives. These were the explosives which are used in most, if not all, of the mines in New Zealand, to the knowledge of the Mines Department for many years. There was no complaint on the part of the Mines Department, or upon that of the miners themselves, or any other person, and that being so no blame can be attached to anybody in connection with the use of the explosives, which are not perhaps as harmless, or, at all events, which may be less likely to cause explosions, than the best explosives in England. Then the next point has reference to the clause regarding the withdrawal of workmen. Now, it is absolutely clear, notwithstanding the virulent denunciations of the Act by Mr. Reed, that the Inspector of Mines had full power to withdraw men from any exceptionally dangerous mine, or any part of a mine. I need not labour it, because you have heard the evidence, and I shall have to hasten my remarks in order to try and get in my main points. The law is quite clear that the workmen could have been withdrawn, and the evidence is most conclusive that the Inspector of Mines, if he had believed that any part of the mine was exceptionally dangerous within the meaning of the section, would have unhesitatingly withdrawn the men. The evidence of the manager is to the effect that if he had been ordered under that section by the Inspector of Mines to withdraw the men, he would

not have waited for an arbitration. It was a monstrous suggestion for Mr. Reed to make that the men would not have been instantly withdrawn. The notice would have been complied with, and the Arbitration Court would have sat and decided the point. That was the procedure under the statute, but it was not exercised; and I submit that the Mines Department must be held to be competent to judge when a case calls for such action. They did not serve any notice requiring the men to be withdrawn from any part of the mine. Now, this officer, Mr. Reed, says that he considers an ignition of gas in a mine to be a sufficient reason for removing the men: he would withdraw them until the arrival of safety-lamps; and yet, though the Department must have known of the condition in the mine, no such order was issued. The next point refers to the means of escape in the mine. That only requires to be stated. There are three shafts, and the means of escape are ample; but it is submitted that no means, however efficient, would have enabled men to escape who were so suddenly overwhelmed by the ignition of firedamp-mixture combined with a coaldust explosion, as were those in the recent disaster. Now, upon this question, there is Mr. Reed on the one side, and five witnesses of great experience and repute on the other—Mr. Bishop, who has a unique experience in coal-mining; Mr. Bennie, the Inspector of Mines, who has been connected with mining for nearly half a century; Mr. Wight, who is the manager of a rival mine, and who was for ten years in this mine; Mr. Fletcher and Mr. Wood, the present managers. I am not going to cast any stone at Mr. Reed, but I feel it my duty to point out that in an important case of this kind it is the duty of the Commission to observe and consider the demeanour of witnesses placed in Mr. Reed's position, and the nature of his statement. You will have seen that his utterances were most reckless and unqualified, and that over and over again he had to withdraw, explain, modify, and apologize for statements that he made in the box. It is true that he adheres to his main contention, but I think it must be plain to the Commission that there were constant, persistent, and momentary evasions, and that it was the work of the greatest difficulty for counsel to get him to answer the simplest question in a straightforward way. In considering his evidence upon the more vital questions involved, and what value ought to be attached to it, I submit that it is incumbent upon the Commission to consider what is the value of his evidence upon the other points of lesser importance. He seems to place reliance upon the fact, and to stake his reputation upon it, that he did suggest, or state, or prophesy last Christmas, and on four or five other occasions since, privately, confidentially, and to the Under-Secretary for Mines, that an explosion was likely to occur in Ralph's Mine. I need not repeat what I have already said, but it is obvious that the conditions in the mine having been unchanged, if he knew previously that those conditions existed he would have said the same thing. There has been no change in the condition of the mine so far as the evidence has shown, so that his prophesy is valueless. It is simply an unfortunate case where a man's prophecy of evil has come true. It often happens in the world, and we do not want to ransack history for instances that prophesies have been verified which were simply the drawing of a bow at a venture. I would like to say before passing from Mr. Reed that I do not mean to cast stones at him, but it may be that the magnitude of this disaster has unnerved him and unbalanced his judgment. I do not impugn his knowledge, but I do impugn his judgment. No judicial officer who listened to Mr. Reed give his evidence in the witness-box could do otherwise than come to the conclusion that he is reckless, and to a greater or lesser degree irresponsible. The next question is the nature and character of the working and management of the mine. Upon this point the evidence is overwhelming that the mine was worked according to the methods ordinarily prevailing in New Zealand, and that the pillars and other means of security for the superstructure were in accordance with the best methods of management. There is not a tittle of evidence to show that the methods of working were in any way defective. The next question is the efficiency of the inspection. The Inspector of Mines is a man of wide experience, and has been forty-seven years engaged in mining pursuits. We are to assume that he is qualified. He has been appointed by the Government of the country, and I submit that a reference to the whole of the evidence in detail shows that he performed his duties in an effective and impartial manner. It is suggested, by innuendo at all events, that he was not sufficiently aggressive—that was Mr. Reed's word. No Inspector of Mines, or other public official, ought to be aggressive. Such an officer is placed in his position to see that the law is carried out and that his duties are performed in a manner satisfactory to the general public and his employers; but the whole of the correspondence, including that of a confidential nature on the file, shows conclusively that Mr. Bennie was constantly alert and alive to the necessity for fulfilling his duties in an efficient and proper manner, and that so far from favouring the persons connected with this mine he was willing to risk the failure of a public prosecution in order that he might increase the general efficiency of the supervision in the mine.

Mr. Macassey: I do not think Mr. Reed said the Inspector was not sufficiently aggressive.

Mr. Napier.] It was something like that. The records show that Mr. Bennie constantly inspected the check inspectors' books which disclosed the workmen's ideas of the mine, and also the books of the deputies. There is no complaint throughout the whole of these years, except those of a trivial character, which were immediately provided for. It is impossible to find in those books a complaint of any importance, and not a scintilla or suggestion that the mine was ever considered dangerous. The next point deals with suggestions for the prevention of accidents and for the future safe working of the mines. I do not propose to deal with that; it is entirely a matter for the Commission, which will no doubt consult works of authority, and obtain the most recent knowledge on the matter. The point is this, that in connection with the working of this mine for twenty-five years no accident took place. The mine was safe, and all the workmen appear to have been working under satisfactory conditions. It seems to me from the evidence and from works I have read that however careful men may be in the working of these mines, and whatever may be the advance of science, it is almost impossible to make mining an absolutely safe pursuit. Professor Dixon agreed with this view. Indeed, it is almost impossible to make any calling absolutely safe, but so far as safety is a relative term I think this mine is

a safe one. The next point is: Is the existing law sufficient to give the Inspector of Mines full authority to order the use of safety-lamps and other appliances if, in his opinion, such appliances are necessary? There can be no doubt that under the section I have quoted to the Commission, and Special Rule 14, that the Inspector of Mines can take the necessary action. It is a question which any layman can decide for himself, because the interpretation of the rule and the section does not require any legal knowledge at all. If the Inspector of Mines deems that a mine, or any part of a mine, is so dangerous that in his opinion it ought to be worked with safety-lamps, he may order them to be put in, and other appliances also; and the fact that the matter may subsequently go before a tribunal for arbitration is not one which should justify any one in denouncing the present law in the way that Mr. Reed did. I am not suggesting that the existing law ought not to be amended. Our experience shows that in the making of laws which affect human duties and obligations it is constantly necessary to amend the statutes, and that the law which remains stagnant generally becomes quickly out of date. I am not suggesting that an amendment is not necessary, but I do submit that so far as these particular references are concerned the Commission will be compelled to come to this conclusion: that the Inspector has power under the present law to order the use of safety-lamps. He has done it already, and his order has been complied with. The next question is the general question which is usually appended to all such commissions, and I do not propose to address you at any length upon it. It is the usual comprehensive question which concludes a Commission of this kind: generally to inquire into any matter arising out of the previous points in the Commission, and into the existing law, and also as to whether an amendment of the law or the regulations is necessary. Regarding this point, we have a Coal-mines Amendment Bill now before us, and there is no doubt there are many beneficial provisions in it which will become law shortly. I have no doubt that the Commission will carefully scrutinize the Bill, and arrive at a fair conclusion regarding it. In conclusion, I submit that until this deplorable accident there was a universal concensus of opinion that Ralph's Mine was one of the safest in the world. No complaints of importance were ever received either from the Government Department or the miners, and any requests made for improvements were at once complied with. The principal shaft to-day, after twenty-five years, stands as secure as it did when constructed, and the mine after a terrific explosion stands practically uninjured—an unassailable testimony to its strength and solidity. The evidence as a whole, it is submitted, proves conclusively—(1.) That the provisions of the Coal-mines Act, 1908, and the rules were fully observed and complied with. (2.) That the ventilation was uniformly good, and that all necessary equipment to ventilate the mine was supplied, and all necessary supervision exercised, so far as mining-conditions permitted, to secure effective ventilation. (3.) That the lighting was, under the normal conditions of the mine, safe, and was so regarded by the responsible Government officers. (4.) That sudden outbursts of gas coming from the secret recesses of the earth and causing firedamp cannot be prevented, and have not up to the present time in any country of the world been rendered harmless. (5.) That the examination of the mine was regular, thorough, and efficient. (6.) That the explosives used were what are generally used in New Zealand mines, were permitted explosives under the New Zealand law, and were used with the concurrence of the Government mining officials. (7.) That no danger ever arose to necessitate the withdrawal of workmen, though there is ample power under the present law vested in the Inspector of Mines to order such withdrawal. (8.) That there are ample means of escape in the mine in case of accident, but that no means of escape could have saved men suddenly overwhelmed by exploded firedamp-mixture and dust-flame. (9.) That the working of the mine was done according to the best accepted methods, and that efficient and highly qualified managers of undoubted integrity were employed. (10.) That the Government Inspector of Mines performed his duties efficiently and impartially, and that he was highly qualified with nearly half a century's experience of mining. (11.) That the men's check inspectors were capable and diligently performed their duties. (12.) That the application of inert dust to all places of a mine would be impracticable, and it is not proved that it would be effective. (13.) That watering has been shown not to be an absolute safeguard against explosions, and that watering where the dust might be dangerous was regularly carried out. (14.) That the Coal-mines Act, 1908, gives full power to the Inspector to order safety-lamps and other appliances if, in his opinion, they are necessary. This order has already been given and complied with.

No. 2.—Mr. Tunks.

Mr. Tunks: Mr. Chairman and gentlemen,—One must approach the end of an inquiry such as this with a very strong feeling of responsibility. I desire to join with my friend Mr. Napier in thanking the Commissioners for the way in which they have dealt with us all through this matter, and the courtesy and patience they have exercised. I should also like to pay a tribute to Mr. Wilford for the way in which he has done his part in connection with the proceedings. I say frankly that he has done his part fairly and well, and that we are indebted to him for the assistance which has enabled us to prosecute the proceedings so smoothly and quickly. Now, sir, we are dealing in this inquiry with the cause of a lamentable accident which happened in one of the best-known mines in the Dominion, and one which I believe, according to the last report of the Mines Department, produces more coal than all the other mines in the North Island put together. It is a large employer of labour, it has ample funds, and has no need to stint or skimp its work in any direction. The point was brought out at the inquest that the company carried its own insurance. This is a minor point, but such company is not likely to be lax in the management of the mine. The directors of the company are some of the best-known business men in Auckland, including a representative of the owners of the mine. They include also a gentleman who for many years occupied the position of Inspecting Engineer to the Mines Department of New Zealand, and who has always been recognized as an authority upon mining matters throughout the Dominion—I refer to Mr. H. A. Gordon. An extraordinary position that has arisen in this case is that every person in authority who could supply us with the evidence necessary to enable a proper conclusion to be arrived at has perished in the accident. This is an extraordinary position,

The underground manager and all the deputies who could have thrown light upon the occurrence are gone, and we are faced with the task of finding out the details of the cause of the disaster from such evidence as is obtainable. I shall deal with the question in the same way as my friend has done, by taking the various matters referred to in the Commission in their order. I think we must admit that it is fairly well established as to the part of the mine where the accident originated and the nature of it. No doubt it occurred in No. 5 section, No. 6 bord. Similarly there is no doubt that it was due to a gaseous mixture coming into contact with a naked light. While upon this point I wish to touch upon the possibility of the gaseous mixture being a sudden outburst of a big blower, and I also wish simply in passing to mention the possibility of it having been due, as has already been suggested, to some siesmic disturbance. This is a point to which the Commissioners can pay such attention as they think proper. We have the fact that the particular place was inspected on the 9th September, three days before the accident, and that no gas was found. We know that it was not necessary that there should be a large quantity of gas present to cause an explosion. We have had some figures from Mr. Reed which suggest that there was a tremendous quantity of gas there, but I submit to you that if there had been that quantity of gas present we should have had an explosion of a very different character, and the unfortunate man Martin would never have been seen or his body found. Professor Dixon, in his depositions at the inquest, stated that he saw no evidence of a large quantity of gas. This view is supported by the statements of Mr. Fletcher, Mr. Bishop, and Mr. Wood, who ought to and who do know the mine perfectly. Now, the large amount referred to by Mr. Reed probably might establish the fact that the gas had been there for some time, but the assumption of a smaller amount, which I suggest was all that was there, is consistent with a sudden outburst and also with the possibility of a connection with a seismic disturbance. I submit that the Commission cannot lose sight of those suggestions. Now, the ventilation has been very much criticized, but upon this point I submit that the reports of Mr. Wear, who constantly inspected the place and reported from time to time on the ventilation, together with the statements of Mr. Bennie and Mr. Fletcher, should be taken as against Mr. Reed's theories, because his statements are based mainly upon an examination of the plan. The ventilation could not have been very bad, because with the regular system of inspection there would have been no difficulty in detecting it. It may be that in this matter, if blame is to be allocated, it may be—I do not know that it is, because it is impossible to say—that blame may be attachable to dead men. That puts the Commission in a very delicate position, for of the dead we speak nothing but good. The evidence is very strong that on that occasion the usual routine was followed and the men were not allowed to go forward into the mine until the deputy had examined the district. That is strongly suggested when we bear in mind that Brownlie's evidence was to the effect that the deputy met him at a similar time a fortnight previously in a position which would indicate that he had come through this part of the mine. Now, Martin's presence is unexplained. Probably he was there to assist in getting rails. If so, and if Mr. Brownlie's evidence is correct, that the rails were to be brought through that door, the fact that that door was unlocked was immaterial. If it had had a lock on it it would have had to be unlocked. I do not admit that Mr. Fletcher was right in saying that the door ought to have had a lock on it. That is a question of law, and not a question to be settled by Mr. Fletcher's admission. I think he was wrong in making that admission. Rule 3 has been relied upon in regard to the ventilation. Rule 3, of course, contains the words "reasonably practicable," to which some weight must be given. I myself desire in passing to draw attention to the question, which is a legal one, whether the part in question was a working-place on that particular occasion. Now, sir, I come to the question of naked lights, which involves the question of gas. Naked lights have always been used in the mine, and this raises the question as to whether Special Rule 14 was broken, and as to whether an offence has been committed by the want of the observance of this section. Now, round this point has been raised a keen controversy, and the company has been accused in the most unambiguous terms of concealing the facts. The charge was repeated and reiterated over and over again in a grossly offensive manner by an officer of the Department, who should have taken up an official attitude; but he was biased to an extraordinary degree. The evidence of concealment is of the flimsiest character, and no Magistrate could possibly convict on such a charge. I submit that the evidence on this point would fail to convince any fair-minded man. In this question "the company" is the manager; the company can only act by its agents, and if there has been concealment it must have been the concealment of the manager. We have had a great deal of evidence on this point. Then we have had Mr. Miller's opinion, based upon the facts and information supplied to him by the Inspector. Mr. Reed admits he depends upon the four cases of injuries to Conn, Rustin, Willcox, and Kelly. Ruston was not injured; Conn and Willcox, where is the evidence in regard to them? Dr. MacDiarmid says they were not serious cases as injuries. He did say that he considered every ignition of gas as serious, but this is the point Mr. Reed endeavours to make: that it was serious and ought to have been notified under any circumstances. But we are dealing with the law as it stands, and I submit that the evidence is perfectly clear that Mr. Fletcher was justified in not notifying these cases. But he is charged with deliberately concealing them, with endeavouring to hide these things from the Department. I submit there is not one tittle of evidence to support such a charge. On the contrary, the evidence is the other way. There is the voucher and Mr. Wood's book, to which Mr. Bennie had access. There is everything to show that Mr. Fletcher did not care a single snap of his fingers whether the Department knew or not. Then, in regard to section 62, requiring the mine-manager to notify the Inspector of all serious accidents, I think that section should be carefully considered. If the accident is serious and has to be reported, the working-place must be stopped. It must be sufficiently serious to justify cessation of work in that particular place, and that indicates what the Legislature had in mind in dealing with a serious accident. These charges that have been made against the company by Mr. Reed are not substantiated, but what position does he occupy in regard to this matter? He said he became aware of these happenings in the mine some time back, and states that we concealed them and did not report them to the Department; also that we are guilty

of a crime because we have not installed safety-lamps because of these ignitions and the prevalence of gas. Mr. Reed has emphasized the fact that he was alive to the danger; he feared a holocaust—a serious explosion might take place any time. Had Mr. Reed been fully alive to the position he occupies as Inspecting Engineer of the Department, what should he have done? What does he do? He sits down and writes six or seven letters to the Under-Secretary. It reminds me of a man who renews his promissory note and then with a sigh he says, "Thank God that is paid." Why did not Mr. Reed, if he had those convictions, tackle the Minister, the manager, and every member of Parliament? Why did he not move heaven and earth to save the lives of these men? He could have taken the platform, in order to save life in this mine. To say that there was nothing to do but write those letters to the Under-Secretary is preposterous. If he held those convictions there were hundreds of courses open to him. There is not one tittle of evidence to show that the manager, or the company, or anybody connected with the company was ever made aware in the slightest degree of Mr. Reed's fears in this matter—not one tittle of evidence. Can it be said for a moment that if such advice had been sent to the manager or the company they would have done nothing in the matter! He says, "What more was I expected to do, except to take a gun." Exactly what he should have done. He would have done his duty. I commend his zeal—he was right up to one point—but I condemn him for leaving the matter at that point. Had he been more aggressive he might have saved the lives of these men. For six months he did nothing in regard to the matter but writing these letters. Now, sir, of course the manager is to blame! I do not know what for. It has not been shown that any one of these cases, except that of Kelly, occurred in Ralph's Mine, and that, so far as we know, may have been the fault of some one who interfered with the ventilation. No one has denied it. Read the testimony to the safety of the mine, given at the inquest, by the men working in it. The manager of the company thought the mine safe, and I submit he was quite warranted in thinking so. Now, we admit there was dust in the mine—it was there for any one to see; the manager watered it. Read again what was said at the inquest. But no one had the idea that the dust was so highly inflammable as it has been proved to be. Now, what has happened? I have told Mr. Wilford that his examination of Professor Dixon was not characterized by the same courtesy as his examination of other witnesses. Why, I do not know. Suggestions were made as to a sample "grabbed" from a coal-scuttle, and I expected that some revelations of a dreadful character would follow. What followed? Absolutely nothing; and the Professor's evidence stands unassailed. I regret that that incident occurred, and I think on mature consideration my friend will regret it also. No experiments had been made by the Department; nothing whatever was done to test this coaldust. There have been cases of heating, but they were dealt with as occasion required. Now, the ventilation was, I submit, generally sufficient, and so was the fan. The Inspector testifies to that. The new fan which is to be installed was not asked for by the Department or by the Inspector. The check inspectors tested the mine for ventilation, and their only complaint was at once met. The manager was satisfied with the ventilation, and he had good grounds. It is not suggested that the examination of the working-places was defective; we have heard a good deal of evidence on that point. The evidence shows what was done in regard to the old workings. It was said that these old workings act as a return airway, and the Act requires them to be examined; but though they act as a return airway, they are not *the* return airway, and I question whether there is any liability to examine them at all; but, whether or no, they have been travelled and inspected. Now, with regard to the question of explosives, the suggestion that was made by Mr. Reed has been cleared up, and I do not think I need refer to that point; but I would like to make one remark and that is, that in anything I say or have said in regard to Mr. Reed I have no personal feeling in the matter. He did use one abusive expression in regard to the company to me, but he has apologized handsomely for it, and I want to admit that. In regard to the question of explosives, I do not think I need labour that point. It has been shown quite clearly that the staff of the mines was ample for its requirements: a certificated manager was in charge, and another certificated manager is in charge of the Extended Mine; deputies, trustworthy and experienced, were in charge of the supervision underground; and I submit that everything that could be done by the company has been done to make the supervision of the mine ample and safe. Now, sir, speaking generally, I think it is worthy of note that the Inspector has stated—I am not quite sure whether in his evidence at the inquest or here—that during the last two years he has received no complaint in regard to the mine. None of the miners have made any complaint to him. There was no extraordinary amount of dust, except so far as the Inspector's reports were concerned. When has it been suggested that the mine is dangerous? Further than that, we have had evidence that he (the Inspector) had a relative working in the mine—a man from whom he was able to obtain confidential information; and with that source of information behind him there was only one point in regard to which he was informed his instructions to Mr. Fletcher had not been carried out quite so strictly as Mr. Bennie thought they should. It is a remarkable fact—a remarkable testimony to the honesty of the management. Now, sir, it is a wide question to ask whether the whole of the provisions of the Coal-mines Act and the general and special rules have been carried out by the management. It would be difficult, I take it, to find any mine in which the management had been ideal. We do not expect that, but a general regard for these rules is the utmost that can be looked for in a mine where the conditions are changing from day to day. But the evidence shows that a substantial and proper attention has been given to the Act and regulations. The whole of the charges against the company come back again to the one point attempted to be made by Mr. Reed—that they left undone something that they ought to have done, then deliberately concealed it from the Department, and as a result of that this trouble has happened. It all centres round that point, and I submit to you, gentlemen, that the charges have been completely answered. I have wrung it out of Mr. Reed that nothing was concealed by the company. Now, the only other point that could possibly be made was that the company was in some way aware of the danger at the mine. I submit that the evidence has proved the contrary, that the company was of the opinion that they had in the mines here remarkably safe, remarkably well-ventilated mines,

and mines in which the workers were extremely content to work. The evidence all goes to show that. There is unlimited evidence on that point. So that there was absolutely nothing to suggest to Mr. Fletcher, unless the Commission is prepared to ascribe to him an extraordinary state of—I do not know what to call it—wickedness, one would almost say, in knowing these ignitions of gas had created such a dangerous position that there might be an explosion in the mine at any time, causing a holocaust, and that knowing that he deliberately went on, taking no precautions and doing nothing at all to minimize the risk that he was running. This is the position that it is suggested the Commission should take up in regard to Mr. Fletcher. It is a monstrous attitude to suggest. If he were guilty of that the Commission could not condemn him in too strong terms, but I submit when the report is being framed no such ground for condemnation will be found. As I said before, Mr. Fletcher represents the company, which can only act through its directors and through its manager so far as the technical parts of its work in the mine are concerned. I submit that neither the company nor anybody connected with it can be shown to have any knowledge that would justify the remarks that have been made by Mr. Reed in his evidence against the company. Sir, I leave this matter to the Commission with the utmost confidence. I do not propose to touch upon the other points. My friend has dealt with them in a manner of which I entirely approve. I can only endorse what he has said. We must all be deeply sensible of the responsibility that rests upon us in this matter. I could wish that Mr. Reed, occupying the responsible position that he does, had more fully appreciated the responsibility of it, and been more balanced and more judicial in the utterances which he has made here. I join with my friend in commending his knowledge, but I also join in condemning his judgment.

No. 3.—MR. MACASSEY.

Mr. Macassey: Mr. Chairman and gentlemen,—I have very little to say after the addresses of my friends Mr. Napier and Mr. Tunks. I desire to join with them in expressing appreciation of the fairness which the Commission has shown to the counsel. There are only two points to which I wish to refer. The first is question No. 8 of the Commission's order of reference: "To ascertain if the provisions of the existing law are sufficient to give the Inspector of Mines full authority to order the use of safety-lamps and other appliances if in his opinion such appliances are necessary." I want to point out precisely what are the duties of the Inspector of Mines. Under section 55 of the Act it is provided that—

"Every Inspector under this Act shall have power to do all or any of the following things, namely:—

"(*a.*) To make from time to time such examination and inquiry as may be necessary to ascertain whether the provisions of this Act relating to matters above ground or below ground are complied with;

"(*b.*) To enter, inspect, and examine any mine and every part thereof at all reasonable times by day and night, but so as not to impede or obstruct the working of the said mine;

"(*c.*) To examine into and make inquiry respecting the state and condition of any mine or any part thereof, and the ventilation of the mine, and the sufficiency of the special rules for the time being in force of the mine, and all matters and things connected with or relating to the safety of the persons employed in or about the mine or any mine contiguous thereto;

"(*d.*) To exercise such other powers as may be necessary for carrying this Act into effect."

And I further rely upon the report of the Commission of 1906, which expressly lays it down that the duty of the Inspector is to see that the Act and regulations are complied with. It is not for him to say how the operations of the company are being carried out. So far as Inspector Bennie is concerned, I desire to point out that he is a man of very wide experience, a man who has had forty-five years' experience in coal and gold mines. He holds his tickets by examination. He won the gold medal at the Waihi School of Mines, so that his ability and his knowledge cannot be questioned. I submit also that his integrity is beyond reproach. He has been described by Mr. Reed as a competent, capable, and diligent officer. I propose very shortly to point out the various steps which he took in connection with this mine to secure the observance of the Act and regulations. I put it to you that there is not a tittle of evidence, no suggestion, that Mr. Bennie has not done his duty. I do not propose to go back prior to the year 1914, when in January, 1914, Inspector Bennie, at the request of Mr. Reed, obtained from Mr. Fletcher a list of the accidents in the mines for the previous two years. So far as Ralph's Mine is concerned there was only one reported burning—that was the case of Kelly, which happened in July of this year. When the mine was opened after the strike, about January of this year, Mr. Bennie made an inspection. It cannot be denied that he gave this mine more than his usual attention. He examined the mine on the 19th and 20th May, and everything was then in good order. There was no indication of gas, but on the 30th May he wrote to Mr. Fletcher drawing his attention to the coaldust there, and asked that a jet of water be used for laying the dust which accumulates. He says he did not write that memo. to suggest the coaldust was a source of danger, but in order that it might be removed on account of the inconvenience it caused to the workmen. He says further in that letter,—

"There appears to be no rule or restraint as to the shot-firing carried out by the miners, and the air is continually full of smoke in the vicinity of where blasting operations are carried out, and therefore a greater volume of air is necessary to clear the atmosphere. I have to request that the above matters receive your earliest consideration and attention."

Mr. Fletcher replied on the 4th June: "Your remarks have been noted." On the 2nd July Mr. Bennie again visited the mine, and found gas in No. 7 level south. That was cleared away. Then there was the memo. of the 2nd July left by Mr. Bennie with Mr. Fletcher in his report-book:—

"In the little dip section old bords, three places, falls where gas has been found by Deputy D. Wear and reported, we found no trace of CH_4 gas. Coaldust on the travelling-road main dip found in dangerous quantity; the dust should be adequately watered. No. 6 level, leading to Taupiri West: coaldust in dangerous quantity on my previous visit. In view of CH_4 gas being found in this mine the dust should be removed or watered, and all shots fired by officials appointed for that purpose."

That was Mr. Bennie's minute put in the company's book on the 2nd July, 1914. On the 9th July Mr. Fletcher reported the accident to Kelly, and on the 11th July the Inspector wrote to Mr. Fletcher as follows:—

"In view of the recent finding of CH_4 gas in Ralph's Mine, and the dangerous accumulation of coaldust in the mine generally, but more especially in the main travelling-road adjacent to the main haulage-dip, and also at No. 6 level leading to the working-places at the level and to the Taupiri West section. On my visit of inspection to the mine on the 19th and 20th ultimo I noticed the above conditions, and on the 30th of the same month I wrote you and requested your immediate attention as regards spraying the dust with water to remove the danger, also as regards the dust from the coal-cutting machines, and the firing of shots by miners without restriction, &c. On my visit of inspection on the 2nd instant, when my visit was especially to examine places in the old workings of the mine, I observed that dry coaldust was still there in dangerous quantities; in fact, little or nothing had been done to comply with my request of the 30th May ultimo. On the 2nd instant I found CH_4 gas in two places adjacent to the place where Kelly got burned with CH_4 gas on the 9th instant, reported to me by you on the 9th and received by me on the 10th. In my memo. left in your mine report-book in your office on the 6th instant, I wished to impress you as to the dangerous state of the mine through dry coaldust and CH_4 gas. In view of the happening on the 9th instant I now request that shot-firers be appointed as required by Special Rule 25 (*d*), and that the dangerous accumluation of dry coaldust in the mine's travelling-roads, or elsewhere in the mine, be dealt with in an adequate and efficient manner. Failure to comply with my request will be followed by prosecution for breaches of the Act, &c., thereunder."

And Mr. Fletcher replied to that on the 20th July:—

"In view of the reporting of firedamp by the examining deputies in this mine, I have authorized that all shots shall be fired by the men in charge of each section. The travelling-roads are receiving attention, the dust must be watered regularly. Attached herewith please find extract from my report-book regarding the ignition of gas when W. Kelly was burnt."

Then followed Mr. Fletcher's description of the burning of Kelly. As to Mr. Bennie's inspection of the mine, he has told you that he did not find on his visits any gas in the working-places, but only in the old workings. There is no obligation on the company under the Act and regulations to inspect the old workings, but Mr. Bennie asked Mr. Fletcher to have that inspection made, and he did it. It is the duty of Mr. Bennie not to report to Mr. Reed but to the Under-Secretary, and on the 24th July he wrote to the Under-Secretary informing him of the accidents in Ralph's Mine to Kelly, explaining the circumstances and reporting the finding of gas. He added,—

"At the time of my visit the air-current swept through the full length of the drive, and carried away any gas coming from the cavity. I also examined four other places where gas had been found and reported by the examining officers; in one of them only I found gas, steps are being taken to ventilate those places and clear out the gas. A new air-shaft is being sunk and is now almost completed, and a new and powerful Sirocco fan of 200,000 cubic feet capacity is to be installed there. At present the quantity of air passing through the mine close to the scene of the accident, as measured by me on the 14th instant, was 23,280 cubic feet per minute, for an average of seventy-seven men, equal to 300 cubic feet per man, exclusive of 17,000 cubic feet passing into and through the little dip (old workings). There is on an average air equal to 300 cubic feet per man per minute passnig through the whole mine-workings. In consequence of the ignition of gas on the 9th instant I have notified the mine-manager that in compliance with Special Rule 25 (*d*) all shots fired in the mine must be done by an officer specially appointed for that purpose, and that all roads and places where there is dry coaldust in dangerous quantities must be removed or made damp by water. This is now being done."

Then, on the 4th August the Under-Secretary wrote to Mr. Bennie in reference to Kelly's accident, asking him to reply as to whether he recommended a prosecution of the manager for the negligence by which a disastrous explosion might have been caused. Mr. Bennie was asked for a report on that matter. He replied on the 7th August, as follows:—

"In reply to your memo. of the 4th instant, I beg to state that after careful consideration I am of opinion that to prosecute Mr. Fletcher, the mine-manager, for a breach of Special Rule 14, in the case of William Kelly, burnt by an ignition of gas in the company's mine on the 9th July last, I may fail to get a conviction, but the moral effect of such a prosecution will be to produce more effective supervision, the value of which we cannot foresee. In view of the alleged previous burnings by gas in the mines, apart from that of the 4th instant, it may render it necessary to prosecute. I, as an Inspector of Mines, receive no help from the Miners' Union or their check inspectors, who are, as at present constituted, the creation of the mining-company's directors. I have had no complaints from the union officials or any of its members, either written or verbally, for over twelve months past. I may say that there is very little carburetted-hydrogen gas found in the mine, but for some time past small quantities have been found and reported by the examining officers of the company. In view of that I have repeatedly requested that the roads in the mine where coaldust has accumulated should be adequately watered, and all shots fired in the mine to be fired by the fireman and deputy, as required by Special Rule 25 (*d*). The manager has not complied as fully as I would like. The foot-tracks of the travelling-roads only have been watered, and while the manager has informed me in writing that shots are being fired by officials I am not quite sure that this is so."

He considered that that was all that was necessary to reduce the danger of the mine to a minimum —watering of the dust and the appointment of shot-firers. In that letter Mr. Bennie goes on to say,—

"I cannot recommend that safety-lamps only be used in these mines for two reasons—(1.) Very little gas is found in the miners' working-places; it has practically always been found in falls of the roof of the old workings, and two officials are specially appointed to examine the old workings. During the

week daily inspections are made, and a full round of the work is made during the week. (2.) The working-places are 10 ft. to 18 ft. high. The light from a safety-lamp is very poor, and if the mine is to be worked as at present, by present methods, there will be a great increase in the number of accidents to miners, and serious accidents, if not fatalities, as the result of defective lighting, the safety-lamps will be damaged and the end in view defeated. To prosecute for a breach of Special Rule 14 in Kelly's case will, at least, have the effect of producing stricter supervision; therefore, I now ask permission to summons Mr. Fletcher under Special Rule 14 of the Coal-mines Act, 1908, and also permission to employ a solicitor."

That was the request which Mr. Bennie made—that he should be permitted to issue a summons even though it failed. He also wrote to Mr. Fletcher on the 25th August, saying,—

"I wish to impress upon you that should any further indications of firedamp take place in your mine, to the personal injury of any workman or otherwise, of whatsoever dimensions, it may be necessary to insist upon the use of safety-lamps only in your mine. I trust you will give this matter your earnest consideration."

Now, up to that point, or up to the point of the disaster, Mr. Bennie has stated that he was not aware of the highly inflammable nature of this coaldust. Even Professor Dixon was surprised that this lignite coal was so highly inflammable. One cannot judge the actions of the officers of the Department, nor Mr. Bennie in particular, by recent events; you must judge him from the conditions which existed prior to the accident. He is a man of ripe experience, careful and attentive to his duties, and he saw no special reason sufficient to justify the use of safety-lamps at that particular time. In addition to that, as Mr. Tunks has put it, Mr. Bennie had in the mine a brother-in-law who was killed, Mr. Holden. Mr. Bennie could have obtained from Mr. Holden confidential information, but neither of them had any fears as to the dangers that existed in the mine. Then, those letters from Mr. Bennie to the Under-Secretary were submitted by Mr. Blow to Mr. Reed for his information, and Mr. Reed recommended that the opinion of a solicitor should be obtained, and if he (the solicitor) thought there was a reasonable chance of obtaining a conviction a prosecution should follow. The Minister authorized that to be done, and Mr. Bennie took the opinion of Mr. Miller, who is a reputable mining lawyer. Mr. Bennie prepared a statement of facts, but he also had a personal interview with Mr. Miller, and pointed out everything that had occurred not only in connection with Ralph's Mine, but also at the Extended Mine, and on those facts he advised the Inspector that there was no reasonable ground for the manager to apprehend danger. He puts it very clearly:—

"In the case now under consideration an underviewer made examinations, and for several days preceding the accident everything was reported safe and ventilation good. In view of the fact of which you inform us—that with good ventilation a mine could be clear and work could quite safely be undertaken a day after gas was reported—we cannot conceive a reasonable man who relied on the underviewer's reports having any fear whatever from danger of firedamp. So that the manager, we think, could not be held to be guilty of an offence unless he could be said to have neglected Special Rule 14, or, in other words, unless the steps taken by him would be less than the steps taken by a reasonable man to ascertain the presence of firedamp. As stated above, the Act and regulations provide what is to be done as to examining the mine, and although a bare compliance with the letter of the statute is not necessarily sufficient, yet such a compliance (which is undoubtedly shown in this case) is *prima facie* evidence of reasonable care being taken. And the evidence required to rebut such a *prima facie* case would have to show very definitely that the mine-manager did in some way neglect his duty; but there is nothing whatever in the facts submitted by you to us which suggests that the manager was in any way neglectful. And on these facts we do not think that a Magistrate could or would find the manager guilty of a breach of Special Rule 14."

As I said before, the instructions given to Mr. Bennie were to obtain a solicitor's opinion, and if there was a fair chance of a conviction being secured he was authorized to institute the necessary proceedings. The solicitor's opinion was unfavourable, and Mr. Bennie notified the Under-Secretary to this effect, and enclosed a copy of the opinion, adding that no good purpose could be served by a prosecution. I put it to the Commission that there is not a tittle of evidence to show that Inspector Bennie has in any way neglected his duty. He only acted on instructions from the Under-Secretary, and every instruction given him was faithfully and carefully carried out. I do not think that I need take any further time so far as Mr. Bennie is concerned. He is the only officer whose official inspection you are authorized to consider. In regard to this, section 8 of the order of reference says you are "to ascertain if the provisions of the existing law are sufficient to give the Inspector of Mines full authority to order the use of safety-lamps and other appliances if in his opinion such appliances are necessary." It is true that the Inspector of Mines has no power to issue what may be termed an administrative order. I do not contend that he has the power to order that safety-lamps must be used, or that he can insist on it under an administrative order, but what I do submit is this: that there is power indirectly under section 58 to secure the safety of the lives of the miners in the mine. If there is an extraordinary danger in the mine it is quite open for him to call the men out. I am not now referring to this particular mine, but speaking generally. I put it to you that under that section and on the evidence of Mr. Bennie, Mr. Fletcher, and Mr. Bishop, if there is real danger and if the Inspector ordered the men to be called out until the danger is removed, the men would be called out. Under the special rule there is also power to effectively secure the safety of the lives of the miners in the mine. As I have said, the Department obtained an opinion to the effect that they could not succeed under the special rule; and it appears from the file that the Minister was not aware that the proceedings had been dropped until the disaster had occurred. Mr. Bennie then directed that safety-lamps should be put in. I submit with confidence that there is not a tittle of evidence to show any negligence or breach of duty on the part of Mr. Bennie or any official of the Mines Department.

No. 4.—Mr. Newton.

Mr. Newton: Mr. Chairman and gentlemen,—I do not propose to address the Commission generally, but there are just two points to which I would like to refer. These are: Firstly, the knowledge of the union as to the danger of the mine, and, secondly, as to the check inspection. With regard to the knowledge of the union, I think there is nothing at all in the evidence to show that the union or any of its officials had any knowledge of this being a dangerous mine, or any reason that a disaster was likely to occur? If that knowledge was in the possession of the Mines Department, and if the Mines Department was apprehensive of a disaster in the mine, no intimation was ever given to the union or its officials, or to any of its members, who were perhaps most interested in the matter. I submit, therefore, that the union cannot be held in the slightest degree to be guilty of any dereliction of duty, because it had no knowledge, and its officials had no knowledge, that the mine was considered dangerous. On the question of the check inspection, this is, of course, purely voluntary. The Act says that the union may appoint check inspectors, and these check inspectors may make inspections at certain periods, and that inspection is to be at the instance of the union. The union would welcome any recommendations which might be made by the Commission to ensure a more effective inspection by the check inspectors, but I would point out this: that the check inspectors have not been in the habit of making very frequent inspections of this mine. Mr. Fulton told us that during the year he had been in office he had made only two inspections of the mine, and I believe that only two inspections have been made this year. One reason for that is that it would probably be a considerable burden and expense upon the union to make more frequent inspections of this mine where there is such a great area of old workings. If the check inspection is to be efficient those old workings should be periodically examined by the check inspectors, and, as I say, to make frequent inspections would be a considerable burden upon the funds of the union. These are the only matters to which I wish to direct the Commissioners' attention.

No. 3.—Mr. Wilford.

Mr. Wilford: Mr. Chairman and gentlemen,—First of all, may I tender my thanks to you for your patience with me during the proceedings of this Commission, and to my learned friend Mr. Tunks for his kindly reference to myself. The assistance given to me by the members of the Commission has made my task quite a light one. Now, sir, there is one important point which strikes me in the speeches of the former gentlemen who have already addressed you as apologists for the company, and that is that they have united in one common object, and that is to whitewash everybody and everything. Now, if there were no speech to be delivered in reply to the statements that they have made it would not be necessary for you, gentlemen, to leave your seats to arrive at a conclusion; but if they have conveyed to you the case as it has appeared from the evidence, everybody should be absolved—no one is to blame, and to suggest blame is a heresy; but I propose not only to suggest blame, but to prove it. The first point which I make, which cannot be controverted, is this: A naked light originated the disaster. That is clear. The next point I make is: The disaster could have been prevented. If the disaster could have been prevented, then who is to be blamed if it was not prevented. I hope to show. My learned friend Mr. Tunks and my learned friend Mr. Napier have asked over and over again, "Where is there any negligence and recklessness shown on the part of this company?" The case bristles with instances which are patent and clearly proved. I will enunciate them. There is an old saying amongst lawyers, "No case, abuse the other side," and if that adage has ever been exemplified it has been in the delivery of the speeches we have heard to-night. No evidence of negligence or recklessness in connection with the working of the mine was alluded to, but they simply indulged in bitter invective against Mr. Reed, the Inspecting Engineer of the Mines Department—the man who has dared to indict these people for what he believes to be their culpable negligence. The company knew that gas explosions or ignitions had taken place—they knew they had taken place through the use of naked lights—and yet they persisted in the use of these naked lights. They even deputationized the Government, with others, to oppose a Bill being passed into law which provided for the use of safety-lamps where gas ignitions or explosions had taken place within the twelve months previous. It is damning evidence that on the 16th February, 1912, Conn was burnt by a gas-explosion; on the 23rd March, Willcox was burnt with a gas-explosion; and within a few weeks of these two men being injured by gas-explosions we find the manager and directors of this very company travelling to Wellington to prevent the passing of a Bill which prohibits the use of naked lights in such a mine as theirs. It cannot be denied. Put the dates of these two burnings—the 16th February and the 23rd March, 1912, in juxtaposition to this visit to Wellington, and you will see those men in their proper light. That Bill, if it had been placed on the statute-book, would have prevented the disaster; and they opposed it with the full knowledge in their minds that two gas-burnings had taken place here. Is that recklessness? The question of whether or not safety-lamps could be insisted on is beside the point. The company knew they were necessary, and chanced it—risking the valuable lives of men without any justification whatever, except perhaps the miserable mundane score of expense. What else could it have been? If the manager, after the gas-explosions had taken place, could not see the necessity for safety-lamps he should give place to some one who could. If after the presence of gas had been proved to him by those burnings sustained by the men through gas-iginitions, he could not see the necessity for safety-lamps, he should give place to some one who could. But the law speaks loudly here—it speaks eloquently. In Special Rule 14, under the Coal-mines Act, 1908, we find these words: "The underviewer, under the directions of the manager, shall see that locked safety-lamps are used, and naked lights excluded

wheresoever and whensoever danger from firedamp is apprehended." Can anything be clearer? Is any sort of fustian which obscures the issue to blind our judgment in regard to that fact? Mr. Fletcher not only apprehended danger from firedamp, but he knew that explosions of it had occurred. Therefore, not only is Rule 14 to be invoked, but it should have been invoked. There is no excuse for it not having been invoked. The company is guilty of wilful recklessness in allowing naked lights to be used for one day after they apprehended danger: it was enough that one man had been burned. My learned friend says, "Where is the negligence." That is point No. 1. What is the next? The company knew and have admitted that high bords could not be examined without ladders. They know that; a child knows it; every miner knows it, let alone a certificated mine-manager. Did they provide a single ladder? Not a ladder was found in the mine after the disaster, save a broken one. Did you hear any of my learned friends refer to ladders? And yet we are asked whether this company has been guilty of negligence. That was wilful negligence, and the examination for gas a farce. What is the use of pretending to this Commission or this country that this mine was efficiently examined for gas before the men went to work when they have not had a ladder for examining the roof where the gas accumulated? Because it is proved that gas is not present on the floor is not proof that gas is not locked up in the roof. That is another sign of wilful neglect. It is also provided in Rule 16, so that those who read can understand, that "Doors only used occasionally by the inierviewer or his deputy must be kept securely locked, and only opened by properly authorized persons." Mr. Fletcher frankly admitted that the door that opened into this fatal death-trap had no lock. The law says it should have had a lock. He admits that it had no lock. And if my learned friend relies upon the fact that Martin entered by that door, then he went through a door that had no lock; the company is responsible for the absence of a lock on that door, and is therefore directly responsible for what occurred. But I do not believe that Martin went that way. I do not believe the non-lock on that door caused his death. There was neglect on the part of the company in refusing to place a lock on that door; if there had been a lock on it, it ought not to have been unlocked unless by some person in authority. Now, what do we find? We find that the ends of the bords in the old workings were *not* fenced. Rule 18 is quite clear on that point: it says that such places must be properly fenced across the whole width, so as to prevent persons from inadvertently entering the same. And this is what we find next: We find that the company knew that unless the old workings were effectually ventilated gas would collect and become a source of menace and danger to the men. Notwithstanding this knowledge, the company, without any regard to the danger of life, omitted to property ventilate such old workings; and Inspector Bennie, forsooth, claims that he initiated the idea of getting these old workings inspected regularly for gas. Are we not to believe, then, that if Inspector Bennie had not insisted upon these old workings being inspected that the company would have allowed them to become gas-collectors and death-traps all that time; because that is the meaning of it. The company did not have those old workings properly inspected until the Inspector insisted on it because of the accumulations of gas. There was danger to the lives of the men, and another case of the recklessness of the management is absolutely made out. Every time Inspector Bennie inspected these old workings he swears he found gas there. There were now the deaths of Martin and all those other men, which were caused by the fact that No. 6 bord was not properly inspected before Martin went into it. He walked in confident that he was all right, believing it to have been inspected, and as he entered the bord where the gas was not sufficient to cause an explosion he marched with confidence up there, and when he got to the height of the bord where the gaseous mixture was such as to ignite from his naked light this ghastly catastrophe eventuated. It is clear, I say, that if that place had been properly inspected that morning the lives of those forty-three men would have been saved. There is no question about it. There is no use burking the fact that the inspection of No. 6 bord that morning of the 12th September would have prevented the explosion. What next do we find? That flame-producing explosives were used in the mine, the use of such explosives increasing the chance of a catastrophe. I do not want to make a strong point as regard the explosives used. I believe the company did not know which were permitted explosives and which were not. I want to say that where the evidence does not prove these matters one should willingly admit it. The next point is that the company allowed men to act as inspectors and examiners who were inexperienced in gas-testing—they had passed no examination in it, and they tested generally for heat and not for gas. The only men—Young and Darby—who apparently understood the gas-test had reported accumulations of gas in the mine; and my friend has produced witness after witness who have stated that there were no gas accumulations there. But look at their qualifications. Young, who learned gas-testing and passed the examination, swears that there were great accumulations of gas in the mine. So that this company has recklessly not only not guarded the men against explosions, but has allowed inexperienced men in regard to testing for gas to decide whether the miners should go into these places or not. Then, what next do we find? That the men who examined the old workings only tested up to 7 ft. What a farce with such bords as these, which run up to 20 ft. in height. Is not the charge, then, of caring little about the safety of the men fully proved? Surely. Then, again, the place where Martin was killed was not examined by Examining Deputy Whorskey on the morning of the catastrophe. This is required by law. Whorskey never examined these places that morning. It is not suggested so. If he did, why is it not referred to in his report-book? I asked Mr. Fletcher if he could prove it, and he said "No." Then, Whorskey never reported as required by Special Rule 25. It is provided in that rule that he (the deputy) "shall report to the manager any violation by workmen of the rule as to entering the mine before inspection." There is not a word of it. Is that not negligence? Then, again, the management have neglected, as required by Special Rule 3, to see that an adequate amount of ventilation is constantly produced in the mine to dilute and render harmless noxious gases "to such an extent that the working-places of the shafts, levels, stables, and workings of the mine, and the travelling-roads to and from such

working-places shall, so far as is reasonably practicable, be in a fit state for working and passing therein." Can that be said to have been carried out? Is there no onus upon the company for that? Is the company going to be whitewashed by simply denouncing Mr. Reed? Leave him out of the question. They have never missed an opportunity of blackening this man, who has risked his position and dared to beard them. Then, charge No. 4 against the company is this: They failed to ventilate bords Nos. 4, 5, and 6 by brattice and stoppings from the main ventilating air-current, where Martin met his death and started the explosion which has caused this dreadful fatality which every one of us deplores and regrets. Has the company come out of this inquiry with clean hands? Have they come out of it as careful men exercising that care and consideration for the lives of their employees which you would expect from men interested in great undertakings? I say, No. At the Coroner's inquest, although evidence was given as to where Martin's body was found, was there one word said as to the rails being near Martin's body? Was there one tittle of evidence given at the Coroner's inquest that the rails in bord No. 5, in regard to which this Commission is inquiring, were near Martin's body? Brownlie said that Martin had gone to look for rails, but no one gave any evidence at the inquest that the rails were close to where Martin's body was found. Look at the difference it makes. To-day we have no question as to what Martin was there for, or whether the explosion was caused by him, but only whether Mr. Reed has spoken words in a strong way. Then, what next do we find? That during the speech of my learned friend Mr. Napier he comments on Mr. Reed's statements as those of a charlatan and a humbug, adding that he was reckless in his language when giving his evidence. My friend Mr. Tunks, in prefacing his remarks, said that Mr. Reed had apologized to him, and that he had acted an honourable part towards him. Strong men speak strongly, I say. Men of sincere convictions speak perhaps more strongly than men whose opinions are of the jellyfish mould. I think, on many occasions, he did speak strongly; but how many men will stand a heckling in the witness-box during two long days by able lawyers, and not at times hit back. We of the profession are in the position when cross-examining a witness of having legal license. The witness has not that license. There is given to counsel an advantage which I fear we sometimes overstep, but when a witness replies in the heat of the battle under severe cross-examination in words which may be hard and strong, remember the circumstances. Whatever may be said about Mr. Reed, can any one question his testimonials? Can any one question his sincerity? He predicted this disaster six times, and Mr. Tunks says, "Why did he not get a gun?" What was he to do? He felt something was going to happen. He made representations to the men to whom he had to report. He wrote to Mr. Blow, the Under-Secretary of his Department, who did him the justice, in writing to the Minister on the day of the disaster, of saying, "This explosion shows that the fears of the Inspecting Engineer were well grounded." I hope Mr. Reed will live beyond the gibes and sneers of my learned friend to reach that position of greatness in connection with the mining industry of this country to which his abilities undoubtedly entitle him. Now, gentlemen, my learned friend Mr. Tunks has remarked upon my cross-examination of Professor Dixon. I want to say that I believed as little in Professor Dixon as Mr. Tunks believes in Mr. Reed. We are all entitled to our opinions. I was ready to kneel to the Professor as a man skilled in chemistry, as a man who in that particular line was *facile princeps*, but I think he suffered from what the Americans call "exaggerated ego." You must remember this: that he allowed his name to be used in the public prints—a man of responsibility and high position in England as a chemist—I say he allowed his name to be used in the papers by the reporters when he came to Huntly expressing opinions upon this disaster, and he took those opinions back. He wrote a report to the Minister in regard to the gas-explosion before he had analysed his samples, and he took that back; and I make bold to say that if he had delayed another month in this country we would have had still another opinion from the Professor. He had plenty of ability; but, in regard to the Professor, I thought he was speaking of matters beyond his cognisance. When he visited this mine while the Commission was sitting, he was the only man of the party whose light went out in the mine. It makes you wonder whether he was such a tester for gas as we were led to believe. Now, in regard to Mr. Miller's opinion, I do not know Mr. Miller—I have never met him—but I believe he gave the only opinion he could have given on the case as it was submitted to him. I believe that many lawyers are blamed for opinions which are found afterwards to be wrong, because those opinions are founded upon insufficient or erroneous statements of facts submitted by their clients. If the whole case were particularized, if every detail that has come before this Commission had been placed before Mr. Miller, do my learned friends suggest that he would now say that a prosecution would not lie against Mr. Fletcher and against the company under Special Rule 14? Is there any man in this country to-day, after hearing the evidence of this Commission, would say that under this section, which provides that "an underviewer, under the direction of the manager, shall see that locked safety-lamps are used and naked lights excluded wheresoever and whensoever danger from firedamp is apprehended"—is there any man who would say that such an action would not lie? Could anybody argue to-day that if Mr. Fletcher had been prosecuted under Special Rule 14 before the disaster, it could have been argued that he did not apprehend any danger from firedamp when he knew that men had been burned by firedamp in the mine? I am sure that the prosecution would have been a much easier job than the defence. Gentlemen, I am sorry that I cannot in the short time at my disposal in any possible way deal with this case as fully as the evidence warrants. I cannot do more than touch lightly upon the fringe of the subject, but I feel convinced and satisfied, as a man with some experience in public trials, that justice will prevail—that though you cannot do justice to those who are gone, justice will be done to those who are left behind. And when you come to sum up this evidence you will have only one answer to give to New Zealand (which is waiting for that answer), and that will be that the recklessness and carelessness of this company can only be met with such condemnation as is in your power to inflict.

EVIDENCE TAKEN AT INQUEST.

[NOTE.—All the Coroner's inquest witnesses who were subsequently examined by Commission (with the exception of John McGill) were requested, on being sworn, to confirm their evidence given at the inquest proceeding. Their inquest depositions is consequently embodied in the Commission evidence. The following depositions (apart from the evidence of John McGill) were made by witnesses at the inquest other than those who appeared before the Commission.]

Frederick Berry, sworn, saith: I am a stableman at Ralph's Mine. I went down the mine on the morning of the accident at 5.30 a.m. I proceeded to the stables with Thomas Cummock, a pump-man. I attended to my duties at the stable, and came up at ten minutes to seven. I did not see anything of the deputies down the mine. The engine-driver let us down; his name is Dudley Starr. I did not notice anything unusual down the mine that morning. The mine, as far as I could see, was in its usual condition, and the air good. I had to go down early to get the horses ready for work. I did not see anybody at the top of the shaft when I came up. Cummock went into No. 1 pump about 100 yards from the bottom of the shaft.

Frederick Berry, recalled: I did not go down previous to the deputies—that is, the examining deputies. I presume I was after them. I do not know when they went down. I had a naked light—an acetylene-lamp. Some miners use acetylene-lamps and some oil-lamps. I did not get "all right" from the examining deputies when I went down. As a rule, I used to go down with these men every morning. As far as I went, they used to go with a naked light. I knew it was safe as far as I went.

Dudley Starr, sworn, saith: I am engine-driver at Ralph's Mine. I went on at midnight, and was on duty until 8 a.m. on the morning of the 12th September. The fan and pumping-engines are kept going all night. A pumper, Mr. Cummock, went down at 4 a.m. The deputies—Whorskey, Skellern, and Peckham—went down at 5 a.m. Fred Berry went down soon after the deputies; he usually goes down with the deputies in the morning. This was not a regular working-day. Just before seven o'clock O'Brien went down: he is the onsetter. The main body following shortly after. There is no one to supervise and say who is to go down or not.

By Mr. Tunks: The fan is not allowed to slacken down at night.

By Mr. Bennie: I have never known of the fan being stopped. It has been stopped on Sunday for repairs. I am quite positive it did not stop on the night before the accident.

William Brocklebank, sworn, saith: I am a clipper-on at Ralph's Mine. On the 12th instant I went down the mine with five others in the cage at 7 a.m. There would be forty or fifty others went down about the same time. I saw Darby, the deputy, in the cabin along the shaft. He gave me instructions to go down Dooley's dip. In going in that direction I passed No. 6 cabin. I saw John Whorskey there; he is fireman. He was smashing carbide for his lamp. I passed the time of day with him, and went on. I overtook Arthur Ruston. I did not see any one else. When I got about 200 yards past No. 7 flat sheet I felt a gust of wind coming behind me. It carried me on and knocked me down. My light was blown out. It was an acetylene light. Arthur Ruston was with me: we both went down. We spoke to each other for two minutes after that. I got up again and fell down again, when I lost consciousness. I could not breathe freely. It was the after-effects of the explosion that caused me to lose consciousness. It would be the gas. I was not burnt at all. I did not see any flame. It must have been six or seven hours before I remembered anything more. I recovered consciousness and crawled out to the rescue party. It was about an hour before I got to the rescue party when I recovered consciousness. I came out at the Taupiri West shaft. I had been working in the mine about nine months this time. I did not notice any smell in the mine. I had not gone very far before I reached the rescue party. I did not notice anything different about the mine that morning from any other morning. I have never heard any complaints about the mine being a bad mine to work in or insufficient air. The way from No. 6 cabin to where I went used to be very bad with dust. I went along a road only used by clippers-on—the haulage road.

By Inspector Bennie: This is the first time I have ever been out Taupiri West shaft.

By Coroner: I was about the last man to go down the mine. The first man would have gone down about five minutes before me.

Alexander McGill, sworn, saith: I am a clipper, employed in Ralph's Mine. I was in company with the last witness, Brownlie. I accompanied him to the stables, and from there until we came out. We went down the little dip, and through two trap-doors. We were there struck by a gust of wind. There were small lumps in the coaldust blown by the wind. Morton was in front. After the explosion we went to the shaft. Morton we found lying in water, bleeding at nose, and his knee was hurt. I have been employed in the mine about nineteen months. I have not known gas to exist in the mine before. I work on the main rope-road.

By Mr. Bennie: I know the road from No. 6 cabin to No. 6 special. There was a little dust on that road, but it is watered now. It is two months since I went that way. They were watering it then.

By Mr. Tunks: Ransome was watering it then.

James Wilkie, sworn, saith: I am a trucker, employed in Ralph's Mine. I went down the mine on the morning of the 12th instant at 7 a.m. I had my ordinary acetylene-lamp with me. When I got to the bottom of the shaft I went down the haulage-road. I got to the road turning into No. 6 special. Joseph Richards was with me. A gust of wind caught us from behind. It knocked us down. It lasted a minute or two. I thought one of the air-pipes had burst just behind us. The

air had a nasty smell and full of gas. After some time we got our lamps alight, and went to Taupiri West. I have been six months in the mine, and always found it free from gas and the air good. I was working in No. 5 for three days six months ago. I have never heard any complaints from the men about the ventilation or presence of gas. There used to be coaldust on the main road when I went there, but now it is kept well watered; in fact, it is slushy.

By Mr. Bennie: I have not worked in any but No. 5 and No. 6 special. It used to be dusty before they watered it. I do not know what method was used to water it. It has been well watered for the past two months.

Joseph William Ritchie, sworn, saith: I am a trucker, employed at Ralph's Mine. I went down the mine at 7 a.m. on the morning of the accident, in company with others, including Wilkie. We were close together when the terrific gust of wind occurred. I could not say whether it came in front or behind. I was knocked down. I was not injured. Eventually I got out at Taupiri West. I have never heard any complaints amongst the men as to gas or insufficient ventilation in the mine. I have been mining for eight years, and in Ralph's Mine for six months. I have never seen any signs of gas in the mine, and the ventilation was real good. There was no dust on the travelling-road from No. 6 flat sheet. The road had been well watered.

By Mr. Tunks: I have been travelling along that way since I have been in the mine. It was being watered a little at first, but for the last two months at least it has been really well watered.

By Mr. Bennie: I do not know the man's name who was watering. Water-pipes are only on the travelling-road to No. 6 flat sheet.

John Walter Hollis, sworn, saith: I am a detective sergeant, stationed at Auckland. On the 20th instant I interviewed Peckham and Jackson in the Hamilton Hospital. They are both ill, suffering from burns and other injuries. I took down the statements they made in reference to my inquiries from them. The statements are produced. They were unable to write. Their state of mind was clear. It was not read over to them after it was taken down. [Statement of Jackson put in and marked "L"; Peckham's statement put in and marked "M".] The statements were made in answer to questions put by me. I did not lead them at all.

Herbert Augustus Earby, sworn, saith: I am a set rider, employed in Ralph's Mine. I went down the mine on the 12th September at 7 a.m. I went down with Tolan and others. We proceeded to Darby's cabin, and there received instructions from Deputy Smith. We were instructed to proceed to work at Taupiri West. We went down the main haulage-way as far as No. 6 cabin. We saw Deputy Whorskey there breaking carbide. We saw no one else about. After leaving No. 6 cabin we went along the travelling-road as far as No. 6 G. We reached No. 6 winch. There was then a short sharp rumble, followed by a gust of wind, followed by fine coaldust. It came behind us. We were carrying naked lights, and had carried them right through the workings from the foot of the shaft. My lamp kept alight. I was not knocked down, as I caught hold of a prop. We went on to Taupiri West and came out there. I have been working in the mine three years last August. I have always found it a safe mine, and that has always been the impression amongst the miners. I have never heard anything to the contrary among the miners. I have not noticed dust on the haulage-ways, but there was dust in the travelling-ways. This has been well watered for this last two or three months. I did not go into the old workings that morning, but kept to the main travelling-road. I have never been in the old workings, nor seen any of the men go there.

By Mr. Bennie: The travelling-road would be 14 ft. wide. Half of that was watered, down the middle. The sides were a little dusty.

James Young, sworn, saith: I am a clipper, employed in Ralph's Mine. I went down the mine on the morning of the 12th September at 7 a.m. I proceeded along the main travelling-road past No. 6 cabin and along No. 6 rope-road. William Mitchell was with me until we got to the rope-road, and there were two others caught us up. We had nearly reached No. 6 winch when a gust of wind caught us and knocked me down. I did not hear any noise of an explosion or a fall. The wind came behind us. There was a dusty smell with it. I have been working in coal-mines for about twelve years. I have worked in Millerton and Stockton Mines. I have only worked in Ralph's Mine for three months. This mine compares with other mines I have worked in very favourably. I have never noticed any gas in the mine. I came out at Taupiri West shaft.

Albert Alexander Stewart, sworn, saith: I am a machine-man, employed in Ralph's Mine. I went down the mine on the morning of the 12th September at 7 a.m. I was with Fletcher and others. Fletcher and I went down the main haulage-road until we got to the stable, and then crossed to the main travelling-road. We then went along No. 6 flat sheet. We got through No. 3 door on the travelling-road. We heard a report, and it put the lights out. After the report we felt a very strong gust of wind, with dust and fumes. We were the last two that crossed the flat sheet. This gust of wind came from behind. I thought the report came from the direction of No. 6 flat sheet. The dust came from that direction. We were not knocked down, but were blown against the side of the road. Some time after we lit our lights, and after we picked the others up we tried to return the way we came. We found the air too bad. We got within 150 yards of No. 6 flat sheet. We subsequently got out at Taupiri West. I have been in the mine fifteen months. I have been latterly working in Wilson's jig, No. 6 jig. I have always found the mine free of gas. I have been down the mine since the explosion. I think the most damage has been done from No. 5 to No. 6. The bodies of those found about No. 5 and No. 6 were all scorched. Those found in No. 7 seemed to have died from gas. No. 6 travelling-road was always kept well watered.

By Mr. Tunks: The main travelling-road was well watered. This has been so for the last four months. This is since the check inspectors have been appointed—in May, I think. Part of the road goes through stone, but the road is always kept watered. The travelling-road was not watered to its full width, just the actual travelling part. On the sides there was a mixture of coal and dust, more coal than dust. As far as those travelling on that road were concerned the conditions were satisfactory.

By Mr. Bennie: I have been in No. 5 since the explosion, past where four of the bodies were found. There is not much dust there now; it is now like a black ash now. One of the bodies from No. 5 was very severely knocked about. There were several skips where the bodies were found. They were just as they had been left with the tallies on. They were just below a bank.

Re-examined: I am vice-president of the Miners' Union. I have never had any complaints from the miners in any shape or form about the mine.

Recalled, saith: About five weeks ago, on one occasion, I complained to one of the deputies that the air was not reaching the face where I was working, it needed more bratticing. It was remedied at once. It is not an unusual thing for this to happen in a mine as we are advancing all the time.

Arthur Farrar, sworn, saith: I am a machinist, employed in Ralph's Mine. I went down the mine on the 12th September, about 7 a.m. When I got to the bottom we went straight along the main rope-road. Healy and Allen were with me. Allen left us at No. 5. We had got about half way along No. 6 rope-road when a strong wind came behind us, carrying small coal with it. We were all carrying naked lights. It put the lights out. It blew me against an empty skip which was on its side, and I got in that. After it was over I smelt gas. We did not strike a light for five or ten minutes. The air was getting better then, and we lit our lights again. Wilkie and Richards came running from No. 6 jig, and we all went and finally got out at Taupiri West shaft. I have been in the mine between three and four months. I have worked chiefly in No. 6 jig. I have never heard any complaints of gas in the mine. I have not been down the mine since the explosion.

By Mr. Bennie: On the road to No. 6 jig there was a little dust in the centre of the travelling-road. It has been watered ever since I have been down the mine. It was the centre that was watered, not the sides.

Daniel Fletcher, sworn, saith: I am a machine-man, employed in Ralph's Mine. I went down the mine on the 12th September, about 7 a.m. I went down with a number of others. We proceeded along the rope-road until we came to a crosscut, and then along the travelling-road and joined the rope-road at No. 5. We saw William Maylands at No. 5 flat sheet. We went along the rope-road until we came to No. 6 flat sheet. We saw Deputy Whorskey there. We turned to the left there, and went along the travelling-road in the direction of No. 6 jig. We were about the third door when I heard a deep report of an explosion. It came from behind us. It came from behind me and to the left. Almost immediately there was a rush of foul air, with very small coal. It did not knock me down, but pushed me along a bit. It blew our lights out. A few minutes after we lit up again. The first few matches would not burn. We eventually got out at Taupiri West shaft. I noticed nothing unusual in the mine that morning. The air was as fresh as it usually was. I did not notice any unusual heat or signs of smoke. I have been employed in the mine for six or seven months. I have heard complaints that sometimes there has not been sufficient air conducted near enough to the face. Complaints were made to the deputy. I have never heard of any complaints that were not remedied. I have heard that Stewart complained of insufficient air; he told me so himself.

By Mr. Napier: I have never made a complaint of insufficient air without it being remedied. I made a complaint six or seven weeks ago, and it was immediately remedied. Brattice was put up.

By Mr. Bennie: The coal-cutting machine makes a certain amount of dust. There used to be a little dust on the road to my work from No. 6 cabin, but it is watered. The dust is on the sides. It has been watered for two or three months. It is sloppy lately.

By Mr. Robertson: I have never complained of gas being in the mine, nor have I heard of any complaints of gas being in the mine. I have never complained of fire being in the mine. I do not know of any fire having been down the mine.

By Mr. Tunks: I could not say whether the noise I heard was a fall, but it was more like a report than a fall.

William Mitchell, sworn, saith: I am a clipper, employed in Ralph's Mine. I arrived at the pit-head about ten minutes to 7 on the morning of the 12th. After the signal blew I heard the signal given to lower the men into the mine. I proceeded straight down the main rope-road to 50 or 60 yards past No. 6 cabin. I went then into No. 6 branch rope-road. I had nearly reached the end of this road when I felt a sudden gush of wind from behind. It put the lights out. I did not hear any noise as of an explosion or fall. I was slightly bruised on the leg where I was knocked against the rib. There was small coal flying in the wind. I got out at Taupiri West shaft. I have been mining for six or seven years. I have been at Denniston and here for last five or six months. At Bond's dip I used to notice it a bit warm walking in in the morning. I have never noticed any signs of gas in the mine. The mine is a dustier mine than the Denniston Mine. I should call this a dry mine compared with Denniston. During the last two months the dust has been kept well watered. A path of about 6 ft. was watered in the centre of the rope-road. No dust was raised by the traffic along that road. There was dust down the sides. I have never thought it was dangerous to use naked lights in this mine. I have never heard it suggested that it was dangerous. I always thought it a safe mine.

Alexander McIntosh, sworn, saith: I am a machine-man, employed in Ralph's Mine. I entered the mine at about three minutes past 7 on the morning of the 12th September. When I reached the bottom I went along the main haulage-rope road as far as No. 6 cabin. I went from there to the lavatory. It is about 50 yards on the cabin side of the last door. It would be about 7.23 a.m. when I left the lavatory. Just as I left the lavatory I felt a terrible gust of wind. I heard no explosion. It came in my face. I was facing Taupiri West. I was not in the main road at the time. I was knocked down and the light blown out. I went back about 20 yards towards No. 6 cabin, but the air was too bad. Others came along shortly after, and we all got out at Taupiri West. I did not notice anything unusual about the mine that morning, it seemed to be in its usual state. The first ones to go down the mine that morning were Onsetter O'Brien and Deputy Darby. When I got to the bottom Darby was at the telephone that connects with No. 6. It was his practice to ring No. 6 up to see if all was right. I have worked in the mines about eight years—in Allendale, Green Island, and Huntly. I once noticed a little bleeding of gas from a hole we had bored in No. 8. It did not explode, but went off in a flame. This was about twelve months ago. I have never seen gas in the mine in any quantities. It is not a dry mine compared with Green Island. Only on the travelling-road have I noticed any dust, and this was four months ago.

By Mr. Bennie: I have been in this mine nearly two years. During that time I have worked in No. 6 south and No. 8, nearly all the time in No. 6 south. I have been in nearly all the other places in the south part of the mine. I have been putting in roads there. I have noticed the main travelling-road dusty prior to about three months ago. Since then it has been slushy for 4 ft. or 5 ft. There was not a great quantity of dry coaldust lying along the sides. No. 6 jig travelling-road was also damp. It has been watered for the last three months. There was dust and rough stuff along the sides.

By Mr. Tunks: I had not noticed that it was watered prior to the last three months. I had been over it.

Bernard Healy, sworn, saith: I am employed in Ralph's Mine as a machine-boy. I went down the mine on the morning of the 12th at 7 a.m. Allen and four others were in the cage with me. When we got to the bottom, Farrar, Allen, and I went along the main rope-road as far as No. 5. We left Allen at No. 5, and we went on to No. 6 machine bords, past No. 6 cabin. We went up to No. 6 rope-road. We nearly got to the end of the rope-road when we felt a gust of wind come from behind, which knocked us down and put out our lights. After the gust was over we noticed bad air and dust. We tried to return to No. 6, but had to return and got out at Taupiri West. My arm and back were injured with flying coal. I did not hear any sound prior to the gush of air. I thought the compressed-air pipe had burst close to us. I have never noticed gas in the mine in any quantity. I have been working down below for over six months, and never noticed any gas. None of the men were going to mine that morning, only to clean up.

John McGill, sworn, saith: I am a deputy in Ralph's Mine. I usually go on duty at 4 p.m. and come off at midnight. I remember some heating taking place in the little dip. I visited it on the 27th August. It was part of my work to go and examine it. I was instructed by the acting-manager, and went, accompanied by Mr. Jackson, now deceased. I was instructed to take the brattice from the brick stopping and let the full current of air play upon it until the following morning. I worked at that for about an hour—from 4.30 to 5.30 p.m. At that time we left everything safe. We had cooled the heating down. About 8.30 I returned, and there was nothing visible. We again opened it up and spread it, to see if there was any smouldering. I was relieved by Mr. Webb at midnight. I informed him about it. I cannot suggest any other cause than spontaneous combustion. I have been employed in mines for forty-five years. I have been in this mine for four years and a half. During that time I have visited every part of the mine. I would only go into the old workings when I was authorized, but not very often. I have known gas in the mine, but not often. I have never seen gas in the working-faces on any occasion. I have worked in eleven mines besides this one. This mine is much safer than some I have worked in. I have never had occasion to look upon it as a dangerous mine. I have never considered it should be worked with safety-lamps: they are not used in any of the Westport mines I have worked in, except for examining. A man has not the same freedom with a safety-lamp as with a naked light; a man does not get the same light. I have worked in the Brunner Mine with a safety-lamp. I could not say whether accidents were more frequent with safety-lamps than with ordinary lamps. I have been down the mine three times since the explosion. I cannot form any opinion as to where the explosion took place. I was there on rescue-work. I was all through No. 5 since the accident. I could not get to the door of No. 5 because of the presence of gas. The break-through had been blown out: I could not say which way it had been blown; I put a brattice-cloth there.

By Mr. Bennie: Of late there has not been much dust on the travelling-roads. The road has been watered since the manager received your letter drawing attention to the dust. The centre of the road was very sloppy. The right side going in would be wet as the water would fall that way. I could not speak as to the left-hand side.

By Mr. Dixon: I was on shift the night previous to the explosion. Miners were on shift also. I was in charge of the miners. I have no doubt shots were fired on that shift. The shots would be fired by the men themselves. Three shifts were working just previous to the accident. There were only four men on the night shift.

By Mr. Tunks: I was instructed to go and see the gas reported by Mr. Wear in the old workings on the 23rd March, 1914. It was in No. 7 south. I had no difficulty in clearing the gas away. We cleared some of the stopping and let as much fresh air in as would go, and in two or three hours it was quite clear.

By Court: The brick stopping was sound on the evening before the accident. No gas could get through. Gas could get through the door in No. 5. It was a fairly good door.

Thomas Edward Webb, sworn, saith: I am a deputy in Ralph's Mine. I remember the 27th August, when Mr. McGill told me about some heating in the little dip. He told me he visited it and when he left it it was in perfect order. I relieved him at 12 midnight. He told me to go and look at it again. I did so. When I left at 8 a.m. it was perfectly cool. I wrote a letter to the acting-manager reporting it [Exhibit P]. I have been there once since the 27th August. It was on the Monday following. There was no heating then. I have known heating in No. 7 south. It was immediately attended to. I cannot fix any date. It was within the last six months. I left the mine at 6 a.m. on the morning of the explosion. The only portion I visited that night was the stone drive in No. 6. I went down as far as No. 7 pump that night. I did not notice anything unusual in the mine that night. The last time I was at the No. 7 pump would be before 4 a.m. I have had thirty years' experience in mines. I have been everything from a door-boy to under-manager. I have worked and visited many mines, but only remember one that was as safe as this one. It was Allen's Colliery, in Wigan. It was worked with naked lights. I have never considered naked lights to be dangerous in this mine. It has never struck me that safety-lamps should be used in this mine. I have noticed gas in this mine in the old workings. During the whole of the time I have been working in the mine I have never found the slightest trace of gas in the working-faces.

By Mr. Dixon: I have been a deputy a month this last occasion. I have an under-manager's certificate.

Edward Patrick Kennedy, sworn, saith: I am a trucker in Ralph's Mine. I remember the 9th July last, when an accident happened to William Kelly, now deceased. I was working mate with him in the stone drive. We had been working about an hour and a half when Kelly walked back about 10 or 12 yards from the face to get a drink of water. A few minutes after he went I heard what sounded like a dull explosion. There was a rush of air which knocked me down on my hands and knees and put the light out. I jumped up again, and I heard Kelly calling out, "I am burnt; come here Ned." I went to him as quickly as I could in the dark. His lamp was on his cap; it was out. His cap was on his head. In taking a drink he would be standing up to his full height. I eventually brought him out of the mine. He told me he had been taking a drink out of his billy when the explosion occurred. Kelly was about 6 ft. high. He would be within a foot of the roof when he stood. The place would be about 7 ft. high. There was no pot-hole where the explosion occurred. The roof was nearly level, with time lathes along timber supports. We had lit gas about 30 or 40 yards away from the spot before: it was in the face where we were working. The gas just lit with a puff. It would be a month before the time Kelly was burnt. The deputies told us to be cautious about gas in that drive. That was the greatest quantity of gas I have seen in the mine. I have been working the mine for over four years. Kelly reported the first occasion to Darby. I was only working for Kelly.

By Mr. Tunks: We had holed through the day before Kelly had the accident. This would increase the ventilation a good deal. We did not find it cold there after we had holed through. I did not speak to Darby about the quantity of air coming through after we had holed through. I cannot explain how the pipe at the intake end was blocked up with a brattice-cloth: we noticed it was blocked when we got there that morning, about 8.30 a.m. There were two shifts working in that drive; the other shift followed us.

By Mr. Bennie: I heard afterwards that the explosion (Kelly's) put the lights out on No. 6 flat. I do not know if it raised any dust.

Stuart Dixon, sworn, saith: I am a miner, employed at Ralph's Mine. I am also president of the Taupiri Coal-mines Employees' Industrial Union of Workers. I have been mining for between seven and eight years, quartz and coal. I am also check inspector with Mr. Turton for the union. I had full power to visit all workings and see that everything was in order. I produce report made by me [Exhibit E]. I found that the ventilation in one place was bad owing to insufficient air coming in, and in another section of the mine the air was not being circulated. Taking the whole of the mine, there was plenty of air. I reported the matter, and the following day it received attention. Shortly afterwards Mr. Fletcher asked me to go through the old workings to satisfy ourselves. I told Mr. Fletcher we could not do so without consent of the union. I have only received a complaint as to insufficiency of air—that the air was not sufficient to carry away the dust. Mr. Turton and I visited this portion of the mine complained of. We took a reading, and there was no current of air. We complained to the manager. The following day the manager told us he had discovered the defect—the brattice had been pulled down. The man who complained told me the same night he had plenty of air. I have been down the mine since the explosion. I have always considered the mine perfectly safe to work with naked lights. It would be my duty, if I discovered anything dangerous, to complain to the manager.

By Mr. Bennie: I did not notice dust in dangerous quantities on the travelling-roads where we walked. I noticed dust alongside the ribs. I have noticed dust, but not on the travelling-roads. I did not know the dust was dangerous except as to health until I read Professor Dixon's report in the *Star* just previous to the explosion.

By Mr. Tunks: I know that check inspectors had referred to dust in their report three months previous to my appointment as check inspector. I think they were made in reference to discomfort in travelling. Mr. Turton said to me when making our inspection, "The complaint in our last report has made a terrible difference: they are watering the roads."

By jury: No special qualification is needed to be appointed check inspector. I have no qualifications except my experience and study. I have attended the School of Mines.

Thomas Graham Hughes, sworn, saith: I am a miner, employed in Ralph's Mine. On the morning of the 12th September I went down the mine with Mr. Wear. I accompanied him to No. 3 pump, down the little dip. We were both using safety-lamps. We had just turned off to the left, and went to a little stopping to change our clothes. While there three men passed, and said, "Good morning." They were Mortrum, Brownlie, and McGill. They had a horse with them. They had just passed when I heard a sound like the opening of a door. Shortly after this, a second or two, I heard a noise like rushing air. Mr. Wear had then left me. I got back into the stopping, and the rush of air went past in front of me and did not touch me. I did not see any signs of any flame. Mr. Wear sang out to me, and I waited a minute or two, and I rejoined Mr. Wear, and we made our way to the shaft. The rush of air sounded to me like an explosion: the force came from the direction of the little dip. I had been working with Mr. Wear for a fortnight previous to this, inspecting the old workings. During that occasion of a fortnight I did not see any signs of gas in the old workings. I saw signs of heating on one occasion on the 26th August in the little dip: it was at No. 4 bord; it was smouldering timber; it was smouldering where it touched the bench. It is mentioned in the report.

By Mr. Bennie: I did not observe much dust in the old workings.

John Turton, sworn, saith: I am a miner, employed in Ralph's mine. I am also check inspector for the union, together with last witness. I have heard the account of our inspection of the mine in August last. I agree that Mr. Dixon's evidence is correct—that is, so far as he has gone. In May last I was acting as check inspector with George Allen. We inspected the mine on the 23rd May and made a report. The dust complained of in our report was attended to by the manager. It is better than ever it was. I thought the dust was dangerous and would cause an explosion. I have never noticed anything in the mine that should have been brought under the notice of the management to make the mine more safe. I was working in No. 6 special the day before the explosion. I left at 4 p.m.

By Mr. Bennie: You accompanied us on our inspection on the 23rd May last. It took two days, the 23rd May and the 24th May. There has not been shot-firers appointed since that inspection to my knowledge. The shots have been fired by the miners. I have fired my own shots since that date.

By Mr. Tunks: I was satisfied with what was done in the way of watering to lessen the danger.

By Mr. Bennie: I have not heard that any shot-firers have been appointed.

James Lamont, sworn, saith: I am director of the School of Mines at Huntly. On the 12th September I heard of the explosion and went to Ralph's shaft. I noticed one of the cages stuck in the poppet-head. Shortly afterwards some of the injured came to the surface. I, with others, descended the mine with the return cage. We went to the top of the little dip. We found the atmosphere foul beyond that, and we had to return. We returned to the foot of the shaft. I put a brattice-cloth at the head of the little dip, No. 1 pump, as the air was leaking into the return. This was to improve the ventilation. On the opposite side of the road to No. 1 pump we found some pieces of timber burning. We put them out. This was on the main haulage-way. It must have been started by the explosion. We then returned to the surface. Owing to the ventilation being bad at Ralph's shaft we went to Taupiri West shaft. I was present when a great number of the bodies were recovered. The first two found on the 12th September were Nos. 16 and 17. The next were Nos. 3, 4, and 6. This was same day. Nos. 1, 7, 12, and 5 were got from near No. 6 cabin. On the Monday morning, the 14th, I found the body of Bowler in No. 7 section—he is No. 21. Later on I found the body of Mayland, No. 22. After 4 p.m. I found the bodies of Nos. 28, 29, 30, and 31 in No. 5 section. That is all the bodies I found. I was working for twelve months in the mine about two and a half years ago. I have not been all over the mine since the explosion. I always considered it a safe mine. I have not seen gas in quantities in this mine. I have never seen gas at all in the mine. I was on the survey staff, and often went into the old workings, but never found gas there. I have had ten years' experience with safety-lamps. In my experience 3 per cent. of gas is not dangerous, although some authorities say 1 per cent., combined with coaldust, is not dangerous. Without the presence of coaldust, 1 per cent. would not be dangerous. I have seen nothing in the mine which would, in my opinion, make it necessary to use safety-lamps.

By Mr. Napier: I consider Ralph's Mine to be the safest mine I have been in.

By Mr. Tunks: I am a certificated colliery-manager, an Imperial certificate.

By Coroner: I am certificated by examination. The most dangerous accumulation of dust is that adhering to the vertical sides of the roads, and the tops, and timbers. This is because of its fineness. I do not require an examination in New Zealand in addition to the English certificate. I do not know if this mine has had the dust on the roofs and sides sprayed with water. Wherever there is fireclay strata watering is condemned—that is, where the fireclay is exposed. It is exposed in Ralph's Mine in the haulage-way and on the stone drive. This coal contains more moisture than the ordinary bituminous coal. It is a lignite coal. This is considered a sufficient reason for dispensing with watering the sides. The sides could be dusted with inert dust: it would cost about 1s. 8d. per ton to do it. In cold weather, in lignite-mines as at Huntly, when the air is cold on the surface the capacity for air to contain moisture, or to hold moisture in a state of suspension, is greater than when the temperature is higher. Cold air ascending the mine its temperature is increased, and moisture is absorbed from the road-ways through which it passes. In weather when the temperature is higher at the surface than in the mine the opposite happens, and the coal and coaldust absorbs the moisture. Considering the composition of the coal in this mine I should consider watering the roads would be sufficient to prevent an explosion. Prior to this explosion I considered the steps taken to water the dust were sufficient. I would not have taken any more precautions myself.

By Mr. Bennie: I have not seen dust in any quantity anywhere in this mine. There is very little timber used in this mine in comparison with other mines. There were no recesses in the mine where dust could accumulate in great quantities. I did not observe dust on the walls of the roads in what I would call dangerous quantities. I would consider there was sufficient inert dust in the stone drive to render the coaldust there harmless. In other portions of the mine the moisture of the coaldust would make it harmless. About one-third of the main haulage-way ran through stone. This is to No. 5. From No. 5 to Dooley's two-thirds of the haulage-road would be in a stone drive. It is the practice in the mine in the working-bords to work the coal down to the fireclay floor. If the floor such as this were watered a creep would come on, caused by the pressure from above. I think since the explosion that parts of the walls and roads required inert dust to be scattered upon them. I did not think so before the explosion.

By Coroner: If there was no dust on the sides and the dust on the floors was watered, the initial explosion might have created sufficient dust to carry on the explosion by knocking pieces of coal about. In my opinion, the initial explosion would be a small one. If I had been manager, and saw that there was dust on the sides and roof, and the dust was dangerous, I would have had the walls and roof watered or scattered with inert dust. A manager ought to be able to judge if the dust was of a dangerous nature.

By Mr. Tunks: I did not think it was a dusty mine when I worked in it—that is, two years ago. In my opinion, the condition of the mine could not be materially different from what it was two years ago.

By Coroner: The old workings were not watered, and I would not consider it necessary to water them now. My reason for that is that persons are not likely to be there with a naked light.

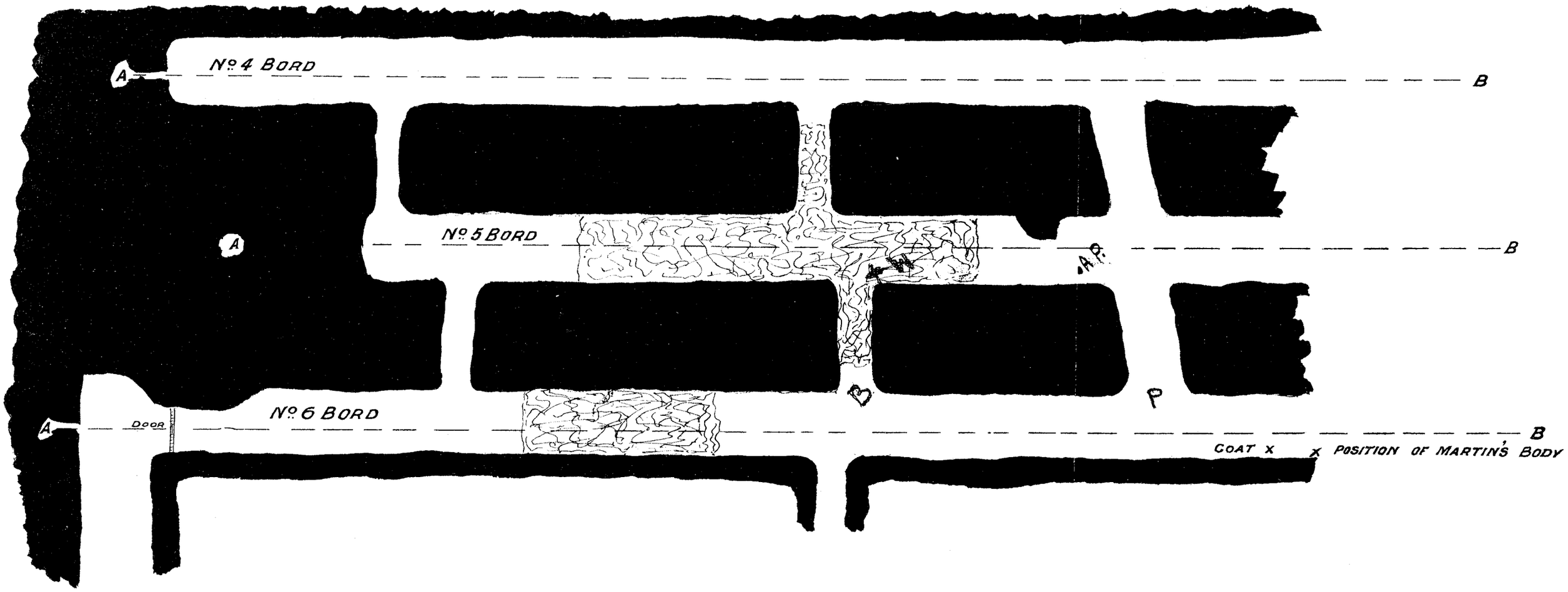
TAUPIRI COAL MINES LIMITED.

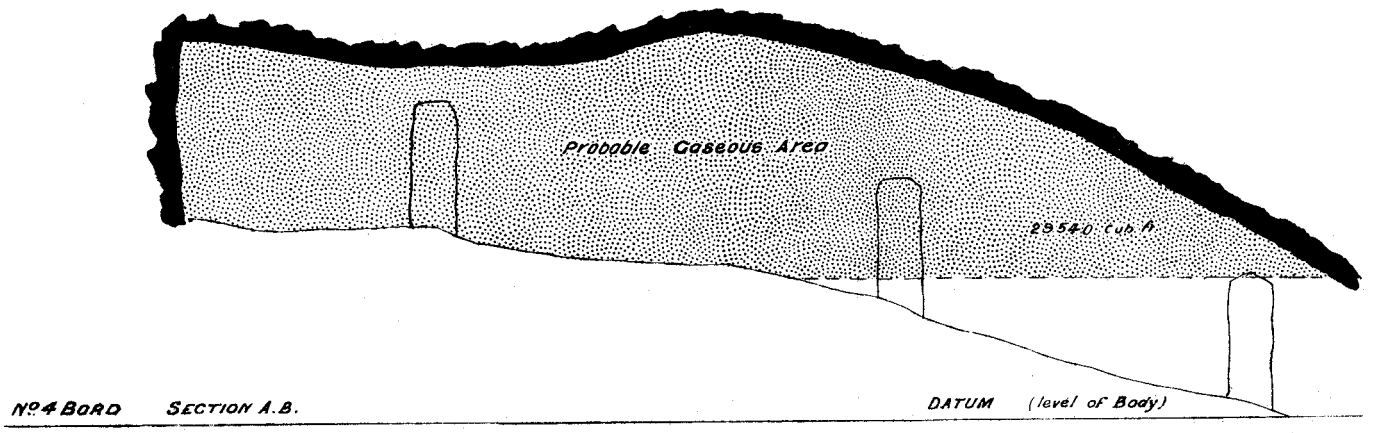
Plan & Sections of Nos. 4, 5 & 6 Bords "LITTLE DIP" DISTRICT adjoining "No. 5" DISTRICT

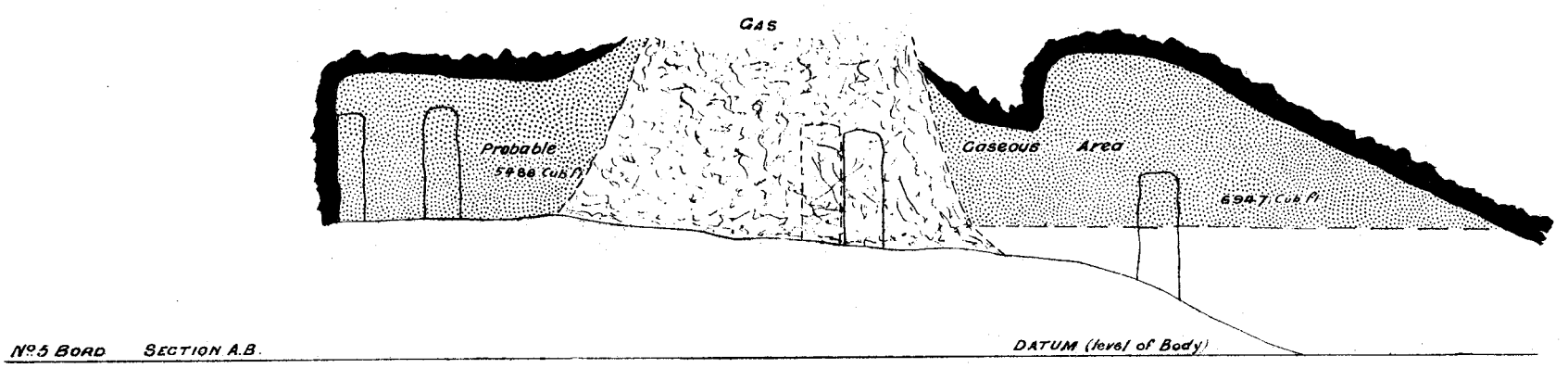
RALPH'S MINE.

Exhibit "AA"

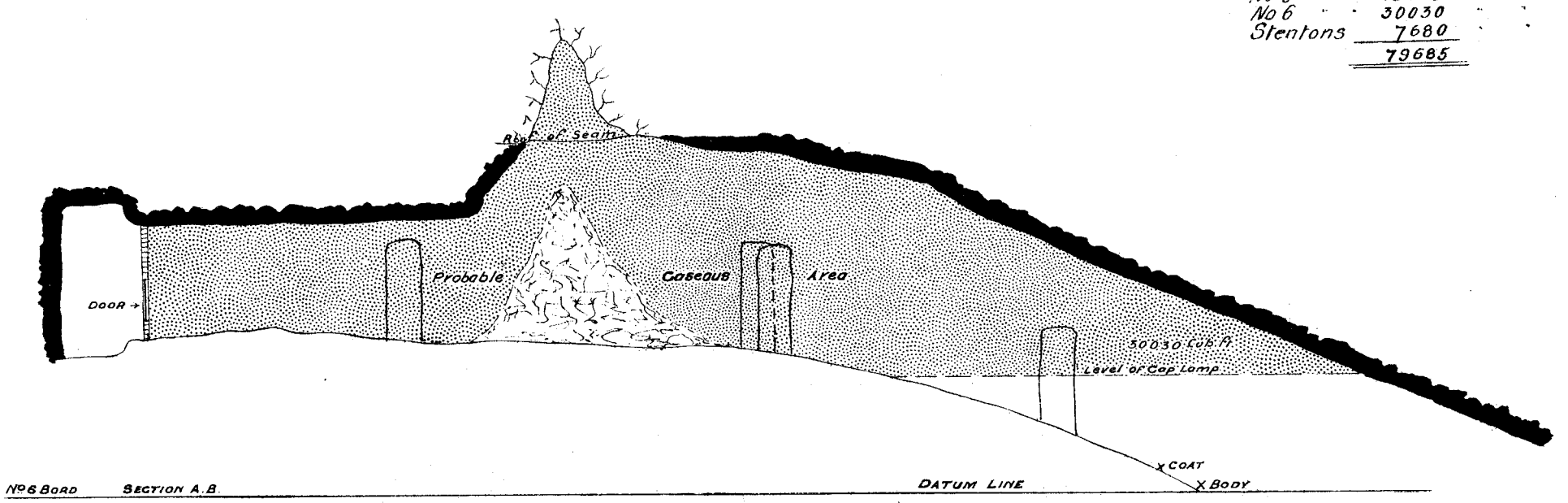
PLAN.







No 4 Bord	29540	Cub Feet
No 5 "	12435	" "
No 6 "	30030	" "
Stentons	7680	" "
	79685	

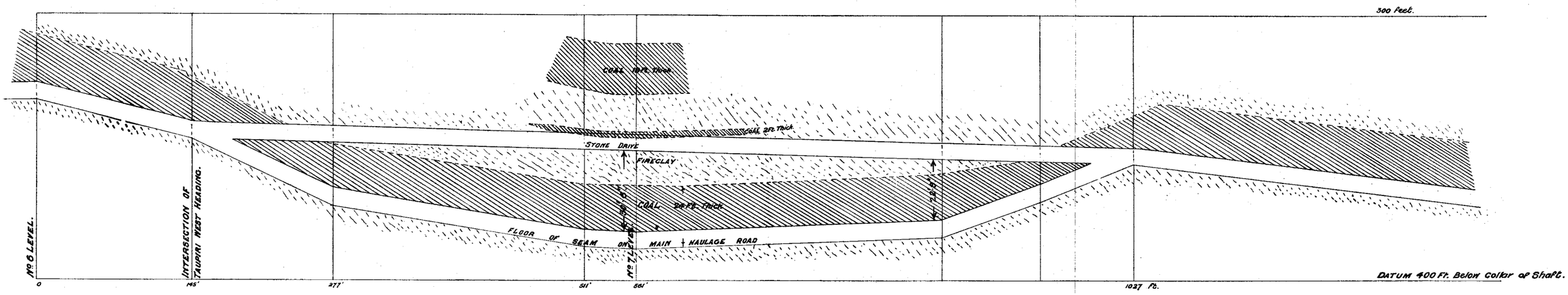


Scales:- Vertical 5 Feet to an Inch.

Horizontal 20 Ft

Geo. D. Langford
mine Surveyor

SECTION OF STONE DRIVE OVER MAIN HAULAGE ROAD.



SCALES — Horizontal 50 Feet to an Inch.
Vertical 20 . . .

EXHIBITS.

COMMISSION EXHIBITS.

EXHIBIT I.

Bottle containing coaldust, marked " Taupiri Coal, Ralph's Mine; Mr. Reed's sample."

EXHIBIT AA.

Plan of Nos. 4, 5, and 6 bords, " little dip " district, Ralph's Mine.

EXHIBIT DD.

Plan of Ralph's Mine (borrowed by Mr. Ostler).

EXHIBIT CC.

Dominion Laboratory (Department of Internal Affairs),
Wellington, 23rd October, 1914.

Report on Specimens Nos. E/1144, 1145 (1–3), 1146 (1–2), forwarded by Mr. F. Reed, Inspecting Engineer, Mines Department.—Samples in connection with recent explosion in Ralph's Colliery —16, single piece of coal—E/1144; 13 to 15, coaldust from mine—E/1145 (1–3); 17, brattice-cloth—E/1146 (1, 2).

Analyses of the coal and coaldusts gave the following results:—

—	E/1144.	1145 (2), No. 13, on 30 mesh.	1145 (2), through 30 mesh.	1145 (3), No. 14, 30 mesh.	1145 (3), No. 14, 30 mesh.	1145 (4), No. 15, 30 mesh.	1145 (4).
Fixed carbon	44·23	42·7	44·1	35·3	33·6	22·8	24·9
Hydro-carbons	41·07	40·9	38·7	36·0	34·7	30·5	35·3
Water..	13·14	12·3	10·1	13·0	12·9	8·8	9·5
Ash	1·56	4·1	7·1	15·7	18·8	37·9	30·3
	100·00	100·0	100·0	100·0	100·0	100·0	100.0

A microscopic examination showed that 1145 (2) contained a considerable number of charred particles. In the case of 1145 (3) it is doubtful if there are any charred particles, but in 1145 (4) there are undoubtedly some. The brattice-cloth when examined under a low power gave undoubted evidence of singeing, and the dust on it also proved to have been charred.

In order to determine the inflammability of this coal I have made the following experiments: A small amount of coal, ground to pass through a fine sieve (100 holes to the linear inch), was blown through a glass tube across the flame of a Meker burner (fixed horizontally) towards a piece of cotton-wool supported by a clamp. By varying the distance of the cotton-wool from the flame of the burner it was possible to measure the greatest distance at which the coaldust flame would ignite the wool. Four coals ground to the same degree of fineness were examined by this method, and, as a result of a number of determinations, I have found the distances to be as follows:—

	Distance at which Coaldust Flame ignited Cotton-wool. Inches.
Huntly, E/1144 (brown coal)	.. 20
Westport–Stockton (bituminous coal)	.. 16
Aberdare Collieries, New South Wales (bituminous coal)	.. 13
Wales (anthracite)	.. 2½

These results show that the Huntly coaldust is very inflammable, and that the flame of the ignited dust travels greater distances than ordinary bituminous coals such as Westport–Stockton and Aberdare. Such properties would render the coaldust very effective in carrying on and intensifying an explosion once started.

The four coals referred to above gave the following results on analysis:—

	Fixed Carbon.	Hydro-carbons.	Water.	Ash.
Huntly	44·23	41·07	13·14	1·56
Westport–Stockton	58·50	39·98	1·34	0·18
Aberdare	52·54	41·59	2·46	3·40
Wales (anthracite)	89·07	6·51	2·27	2·15

J. S. Maclaurin, D.Sc., F.C.S., Dominion Analyst.

Reference: No. 13, dust from bord W.C., No. 5 district; No. 14, dust from near No. 6 cabin haulage-roadway; No. 15, dust from main haulage-roadway at No. 4 level; No. 16, piece of Ralph's Colliery coal; No. 17, Brattice from near flat sheet No. 5 jig.

EXHIBIT EE.

Dominion Laboratory (Department of Internal Affairs),
Wellington, 23rd October, 1914.

Report on Specimen No. E/1275 (1–3), forwarded by Inspecting Engineer, Mines Department.
Particulars: Mine-air from Ralph's Colliery, Huntly (marked Nos. 18, 19, and 20).

	(18.)	(19.)	(20.) Per Cent.
Methane (firedamp) (CH_4)	48·100	0·070	Nil.
Carbon monoxide (CO)	0·015	0·007	,,
Carbon dioxide (CO_2)	0·350	0·150	0·05
Oxygen	10·100	20·450	Not determined.
Nitrogen	41·435	79·323	,,
	100·000	100·000	

J. S. Maclaurin, D.Sc., F.C.S.,
Dominion Analyst.

Remarks.

Samples taken in the following localities: Sample 18 at old fall in bord 5, No. 5 district, taken 7 ft. from floor, 29/9/14; sample 19, at main return little dip, near upcast shaft, 2/10/14; sample 20, at second return, near upcast shaft, 2/10/14.

In taking sample 18 at the level of my head I felt but little inconvenience, although there was 48 per cent. CH_4 and 10 per cent. O present.

I climbed up the fall about 6 ft. higher into a much greater proportion of CH_4—perhaps 70 or 80 per cent.). I had to descend quickly as the effect on me was critical. I carried an electric safety-lamp. I felt no ill effect afterwards.

Frank Reed,
Inspecting Engineer of Mines.

EXHIBIT FF.

Extracts from Monthly Reports of Inspector of Mines, Thames, to Under-Secretary, Mines Department.

4th August, 1914.

"Herewith I beg to tender my report on the coal-mines visited by me during the month of July, 1914.

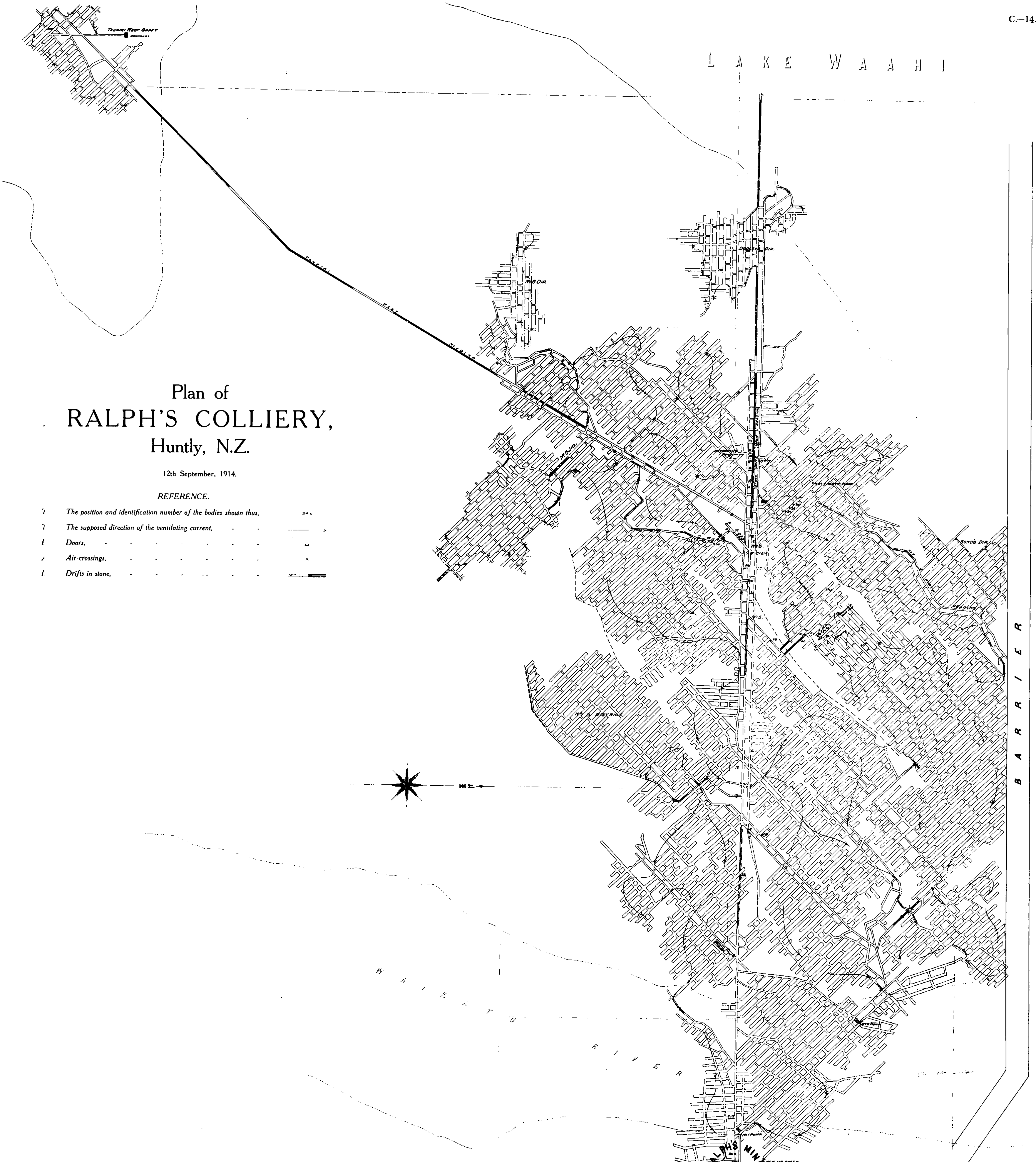
"*Taupiri Coal Company's Mines.*—Ralph's Mine (Mr. James Fletcher, mine-manager): On the 1st July I visited the mine office and read several copies of the mine-manager's reports of both the Ralph's and Extended Mines, who had reported machinery and mines all safe. I also read the firemen and deputies' reports of the new and old workings and roads. These reports show that CH_4 gas is met with in both workings. Extended Mine, No. 4 dip, west side: Firemen and deputies reported CH_4 gas found in above section owing to brattice-cloth being torn down; renewed brattice-cloth, restored ventilation, and cleared out the gas. No. 5 section, west side: Reported gas found in bords Nos. 1, 4, and 5 in above section; gas cleared out and places made safe. Mr. Wood, the mine-manager, confirms the safety of above section by his report to the effect that he found all safe, gas cleared, and the ventilation good. On the 2nd July, together with the underviewer (Mr. W. Gowans), I examined several sections of the old-mine workings, where it was reported CH_4 gas had been found, and found as follows: At No. 7 level, south side of the main haulage-road and in the third bord (old workings) we found CH_4 gas in the roof over a fall of coal and rock; the gas was very strong. The place is not a public travelling district, and is fenced off; the road leading to same is past the haulage-winch, and is not a public road. A place is being driven to cut into the third bord, and a strong current of air will sweep into the place and clear the gas out. On the north side of the main haulage-road in the old workings behind the pump, off the horse haulage-road leading to Bond's dip, I found CH_4 gas in a fall over the back of the drive, which would be about 12 ft. square. The little dip, old workings, winch-level: I examined three old bords where the back of those places are falling, up to a thin seam of coal. It had

Plan of
RALPH'S COLLIERY,
Huntly, N.Z.

12th September, 1914.

REFERENCE.

The position and identification number of the bodies shown thus,	34 ×
The supposed direction of the ventilating current,	——→
Doors,	
Air-crossings,	×
Drifts in stone,	



By Authority: John Mackay, Government Printer.

EXHIBIT "D D"

A Portion of the Plan of

RALPH'S MINE, HUNTLY.

October, 1914.

Scale: 2 chains to an inch.

REFERENCE.

Intake airways.

Return airways.

Return-air scaling (approximate).

Short-circuited air-current. } *Mr. F. Reed's evidence.*
Isolated panel.

Lines, &c., in pencil, indicating air-current. } *Mr. Fletcher's evidence.* C D E

Position and reference-numbers of bodies. 27 X

TAUPIRI EXTENDED COLLIERY (TAUPIRI COAL-MINES, LIMITED).

B A R R I E R

Scale 1 to 13,000 ft 15,000

By Authority. John Mackay, Government Printer.

been reported by the firemen and deputy that CH_4 gas had been found in these places; however, no gas was observed by me when I examined them on the 2nd July. It was stated to me that the mine ventilation-fan is not running continuously during Sunday night and Monday morning, but this could not have caused the above gas, as the dates reporting this gas were both on Wednesdays. Crossing through the old workings we reached the damaged pillars in the No. 2 north section, and carefully examined that area. No further damage appears to be noticeable to the pillars since my previous visit. Coaldust in the travelling-roads has not been attended to as might have been expected, and I requested by a memo. in the manager's report-book that this dust in the No. 6 south level, Taupiri West travelling-road, and No. 6 haulage-road, together with sections of the main dip travelling-road be removed or efficiently watered."

8th September, 1914.

"Hereunder I beg to tender my monthly report on the coal-mines visited by me during the month of August:—

"21st. *Taupiri Coal-mines.*—Ralph's section (J. Fletcher, manager). With the manager I examined several places, and found as follows:—(*a.*) In the stone drive between Nos. 6 and 7 levels, where William Kelly was burned by an ignition of gas, we found with a safety-lamp a very small trace of gas over the drive timbers. I advised the removal of debris behind the timbers, so as to allow the air to more effectually sweep into the cavity. This was done and the gas cleared out the same day. (*b.*) Doolie's section, No. 8 level: All the places were examined and found to be in good order. (*c.*) No. 7 level behind the haulage-winch: In what is described as Doolie's south side and in the old workings there is a fall of coal and rock from the roof. CH_4 gas has been found here and reported by the examining deputies, but we found no trace of gas here on our examination. (*d.*) No. 7 north, Bond's dip: We examined all the miners' working-places, and found them in good order. (*e.*) The stone drive through an upthrow fault. It is believed there is a good area of coal to be worked behind this fault. The air in the drive face was clear and good, and the drive is timbered where necessary. (*f.*) No. 6 level south: We examined all the working-places and found as follows: There are three coal-cutting machines in this section driven by compressed air, but the ventilation is not as good as it might be, and fine coaldust and powder-smoke are fouling the air. The air passing was for an average of twenty-nine men equal to 557 cubic feet per man per minute. The air was fresh, showing that nearly two-thirds of the air was short-circuiting. I pointed this fact out to the manager, who promised to give his attention to a better distribution.

"22nd. With the manager, I continued my examination of the following:—(*a.*) Taupiri West section: All the working-places and the haulage and other roads leading thereto were in good order, and ventilation was good. (*b.*) The specials: A section between No. 7 and 8 levels south side of main haulage-road. All the roads and working-places were found to be in good order. Ventilation was fair, but powder-smoke was in the air, due to shots having just been fired; and the height of the drive (from 12 ft. to 16 ft.) causes a slow air-velocity. Bords are 14 ft. wide. (*c.*) No. 5 north section: All the working-places and roads leading thereto were examined and found to be in good order; ventilation was also good. All the travelling-roads have and are being watered, and the dust nuisance is much abated, especially on the foot-tracks; but there is still dust along the sides. The manager's and firemen and deputies' reports were read. Rules and signals are posted at the mine."

INQUEST EXHIBITS.

EXHIBIT B.

RALPH'S MINE.

7 a.m., 12th September, 1914: Bar., 30·7½; therm., 49.

No. 7 North Section and No. 8 Lake Section.

I, THE undersigned, have examined between the hours of 5 a.m. and 7 a.m. all working-places, airways, brattice, and travelling-roads in the above-named sections, also No. 6 stone drive, and found all safe. Ventilation good. J. SKELLERN. Read B.B.

RALPH'S MINE.

7 a.m., 12th September, 1914: Bar., 30·7½; therm., 48.

SECTIONS No. 6 dip and Taupiri West: I, the undersigned, have between the hours of 5 and 7 a.m. examined all working-places, airways, and travelling-roads in above-mentioned sections, and found all safe. Ventilation good. H. PECKHAM. Read B.B.

RALPH'S MINE.

5.15 a.m., 12th September, 1914.

I, THE undersigned, have examined the stone drive in No. 6 section, also the roadway leading thereto, and found all safe. Ventilation good. T. E. WEBB. Read B.B.

EXHIBIT C.

4 p.m., 11th September, 1914.

I, THE undersigned, have examined the old workings and return airways of No 7 north and No. 2, and found all safe. No signs of heating. Ventilation good. D. WEAR.

EXHIBIT E.

WE, the undersigned, duly appointed check-inspectors of the Taupiri Coal-mine Employees' Union, present the following report to you:—

Ralph's Mine.

On Thursday, the 27th August, 1914, we proceeded by way of travelling-road to No. 6 section, and visited all working-places, and found them to be in good working-order, and after taking a reading of air we found as follows: Area, 51 ft., 11,823 ft. of air per minute; and area 30 ft., 7,655 ft. per minute, making a total in intake airway for this section, 19,478 ft. of air per minute for forty-seven men, equal to 414·4 ft. of air per man.

We also took a reading of air in the return airway, and found in an area of 42 ft. 18,942 ft. of air per minute.

We also visited No. 6 special, and took a reading of air, which we found as follows: Area 40 ft., 6,800 ft. of air per minute for twenty-eight men, equal to 242·87 ft. of air per man.

We next visited Taupiri West, and after visiting working-places, which we found in good order we took a reading in intake airway for the whole of the above section, and found as follows: Area 63 ft., 11,000 ft. of air per minute for ninety-five men, equal to 115·89 ft. of air per man, which is 34·11 ft. of air per man short of the required amount. As there was sufficient air found in the return airway, we attribute the fact to a leakage of air from the north side.

On Friday, 28th August, 1914, we proceeded to Bond's dip, visiting all working-places, and after taking a reading, found as follows: Area 45 ft., 15,705 ft. of air per minute for thirty-two men, equal to 349 ft. of air per man.

We next visited Dooley's dip, and found the places in good working-order, and on taking a reading of air, found as follows: Area 39 ft., 3,734 ft. of air per minute for twenty-one men, equal to 177·89 ft. of air per man.

We next took a reading of air on both intakes for the whole of the north side, and found as follows: Area 47 ft., 14,194 ft. of air; and area 33 ft., 9,306 ft. of air, making a total of 23,500 ft. of air per minute; and on taking a reading of air in return airway we found—area 54 ft., 19,224 ft. of air, which is 4,276 ft. of air per minute less than found in the intake. This we attribute, as before mentioned, to leakage to the south side.

We next visited No. 5 section, and after visiting the working-places, took a reading of air in the intake airway, and found as follows: Area 76 ft., 3,192 ft. of air per minute for thirteen men, equal to 245·54 ft. of air per minute per man

Remarks.

In No. 6 section we found the air was not being circulated through the working-places, and reported the matter to the manager, who at once proceeded to rectify the fault, which was done accordingly the following day.

We also visited the sanitary places and found they were kept in clean order and condition.

We are, &c.,

S. DIXON
J. TURTON } Check Inspectors.

EXHIBIT F.

Huntly, 23rd May, 1914.

SIR,—We, the undersigned, being duly elected check inspectors for the Taupiri Coal-mines Industrial Union of Workers, did on the 19th day of May, between the hours of 8 a.m. and 4 p.m., commence our inspection of Ralph's Mine, Huntly, and report as follows:—

Proceeding along the travelling-road, which we found to be rather dusty in some parts, more so between road leading from the stables to top of brow above No. 3. We drew the attention of the management to it, and he promised to have it attended to. We then proceeded to No. 6 flat sheet, where we took a reading of air, and found 16,624 cubic feet of air per minute passing; also in travelling-road, and found 9,570 cubic feet per minute, which makes a total of 26,194 cubic feet of air for both intake airways.

We then examined No. 5 section, and found everything in good order. We also took a reading of air, which showed a total of 5,100 cubic feet per minute for twenty men.

We then went to No. 7 north, and found all working-places in good order, with a good current of air flowing through.

We then took a reading of the return airway between No. 7 and little dip, which is return airway for No. 7, No. 5, and Dooley's dip; it showed a total of 24,310 cubic feet per minute for seventy-three men and one horse.

We next went to Dooley's dip, where we found the working-places with a quantity of smoke in, but the miners had just fired some shots which we think was the cause of it. A reading of air in this section in intake airway registered 4,140 cubic feet per minute for eighteen men, which averages 230 cubic feet per man per minute.

We next took a reading of the air at end of air-pipe in the extension of Dooley's drive, and found only 340 cubic feet per minute; but in addition to the above there was compressed air blowing off, which, in our opinion, was quite adequate for the number of men—viz., three.

We then proceeded to north side main return airway, near shaft bottom, and found the quantity of air as follows: 39,120 cubic f et per minute.

We also took a reading of the air in south side air return near upcast shaft bottom, and found the following quantity—viz., 24,480 cubic feet of air per minute.

On Wednesday, the 20th May, we proceeded to Taupiri West section, and found everything in good order.

We also took a reading of air in Taupiri West drive, and found a total quantity of 15,323 cubic feet per minute for eighteen men.

We then entered No. 6 special section, and there found a little smoke in some of the working-places, but the miners had been firing shots. We drew the attention of the deputy in one place only to the want of a little brattice-cloth, it being in our opinion too far from the working-place, and he promised to attend to it at once.

We also took a reading of the air for this district, which was as follows: 6,750 cubic feet per minute for twenty men, averaging per man 337 cubic feet per minute.

We then proceeded to No. 6 jig section, and found it in good order.

We took a reading of air in intake airway, and found 9,660 cubic feet of air per minute. There was also a quantity of air going up the jig—viz., 4,590 cubic feet—which makes a total quantity for this district of 14,250 cubic feet per minute for thirty-three men and one horse.

We also visited the sanitary pans, and found all in good order.

We would recommend that a little more attention of the management and workmen in general to the amount of waste-paper and crusts of bread lying around where the workmen are in the habit of taking crib, and we would advise the workmen in all sections to avoid this very disagreeable nuisance by putting the same in an empty skip, or on the top of a full skip, and sending it to the surface.

We may state that in our inspection we were accompanied by Mr. Boyd Bennie, the Government Inspector of Mines, who gave us every assistance possible.

We are, &c.,
J. Turton.
George Allan.

The Manager, Taupiri Coal-mines (Limited), Huntly.

EXHIBIT G.

Wednesday, 26th August, 1914.

This afternoon, at 3 p.m., the underviewer reported that signs of fire-stink were noticeable in the old workings to right of the old main dip haulage-road. After a thorough search by him and deputies the trouble was located at the face of an old bord which is 25 or 30 yards in advance of the last holed cut-through. Putting a body of fresh air on to the mass, and trenching carried out, the fumes were considerably reduced, together with the temperature. At midnight conditions were again practically normal, and officials and myself anticipate no further trouble. J. Fletcher, Manager.

EXHIBIT G 1.

Thursday morning, 6.15 a.m., 27th August, 1914.

I have this morning examined the mass in old bord—reported on previous day—and find, after another shift had been done by a deputy and two shiftmen, that the conditions are further improved. Further trenching and spreading of the fallen coal will be pushed on, with a view of preventing further trouble as regards heating. J. Fletcher, Manager.

EXHIBIT H.

Firedamp—CH_4 Gas and Dry Coaldust.

Mines Department, Inspector of Mines Office, Thames, 11th July, 1914.

Sir,—In view of the recent finding of CH_4 gas in Ralph's Mine, and the dangerous accumulation of dry coaldust in the mine generally, but more especially in the travelling-road adjacent to the main haulage-dip and also at No. 6 level leading to the working-places at that level and to the Taupiri West section: On my visit of inspection of the mine on the 19th and 20th May ultimo, I noticed the above conditions, and on the 30th of the same month I wrote you and requested your immediate attention as regards spraying the dust with water to remove the danger, also as regards the dust from the coal-cutting machines and firing of shots by miners without restriction, &c.

On my visit of inspection on the 2nd instant, when my visit was especially to inspect places in the old workings of the mine, I observed that dry coaldust was still there in dangerous quantities; in fact, little or nothing had been done to comply with my request of 30th May ultimo.

On the 2nd instant I found CH_4 gas in two places adjacent to the place where W. Kelly got burned with CH_4 gas on the 9th instant, reported to me by you on the 9th and received by me on the 10th instant.

In my memorandum left in your mine report-book in your office on the 6th instant I wished to impress you with the dangerous state of the mine through dry coaldust and CH_4 gas. In view of the happening on the 9th instant, I now request that shot-firers be appointed as required by Special Rule (*d*), and that the dangerous accumulation of dry coaldust on travelling-roads or elsewhere in the mine be dealt with in an adequate and efficient manner. Failure to comply with my request will be followed by prosecution for breaches of the Act, &c., thereunder.

B. BENNIE, Inspector of Mines.

Mr. J. Fletcher, Mine-manager, Taupiri Collieries, Huntly.

EXHIBIT I.

Taupiri Coal-mines (Limited), Huntly, 20th July, 1914.

DEAR SIR,—I beg to acknowledge your letter of the 11th instant, regarding your recent inspection of Ralph's Mine.

In view of the reporting of firedamp by the examining deputies in this mine, I have authorized that all shots shall be fired by the men in charge of each section.

The travelling-roads are receiving attention, the dust being watered regularly.

Attached herewith please find extract from my report-book regarding the ignition when W. Kelly was burnt.

Yours faithfully,

J. FLETCHER, Manager.

Mr. Boyd Bennie, Inspector of Mines, Thames.

EXHIBIT J.

FIREDAMP.

Mines Department, Inspector of Mines Office, Thames, 25th August, 1914.

SIR,—With reference to my recent inspection of your colliery on the 21st and 22nd instant, I wish to impress upon you that should any further indications of firedamp take place in your mine to the personal injury of any workman or otherwise, of whatsoever dimensions, it may be necessary to insist upon the use of safety-lamps only in your mine.

I trust you will give this matter your earnest consideration.

B. BENNIE, Inspector of Mines.

Mr. J. Fletcher, Manager, Taupiri Collieries, Huntly.

MINE-MANAGER'S REPLY.

26th August, 1914.

DEAR SIR,—I beg to acknowledge your letter of the 25th instant, regarding firedamp and safety-lamps, and your remarks thereon have been noted.

Yours faithfully,

JAMES FLETCHER, Manager.

EXHIBIT K.

Office of Inspector of Mines, Thames, 30th May, 1914.

Memorandum for Manager, Taupiri Mines (Limited), Huntly.

ON my visits of inspection to Ralph's Mine on the 19th and 20th instant, I noticed that there was a great amount of coaldust on the travelling-roads, and have to request that the same be remedied by spraying.

From one of the coal-cutting machines in the Taupiri West section I noticed a youth clearing away coaldust. The air was also laden with dust, and as, in my opinion, it is unreasonable to ask persons to work under such conditions, I have to request that a jet of water be used for the purpose of laying the dust which accumulates.

There appears to be no rule or restraint as to the shot-firing carried out by the miners, and the air is continually filled with smoke in the vicinity of where blasting operations are carried out, and therefore a greater volume of air is necessary to clear the atmosphere.

I have to request that the above matters receive your early consideration and attention.

B. BENNIE, Inspector of Mines.

EXHIBIT L.

JOHN JACKSON: I am a clipper-on, and was employed at Ralph's Mine, Huntly. On 12th instant I was lowered into the mine shortly after 7 a.m. I had previously been instructed to go to No. 5 rope-road. I had no light, but when I reached the bottom of the shaft I asked Mr. O' Brien if he could lend me a light. He said he could not. I told him I had a lamp, and he told me where I could get some oil at a place near the old stables on the main rope-road, which is now or was used as a latrine by the men. I proceeded along the main rope-road and reached the old stable before mentioned. I was about to get the oil when the explosion occurred. I heard the fall of some coal in the little dip section, or that is where it seemed to come from. This was shortly before the explosion occurred. I got blown down, and then a travelling flame came and I got severely burnt about the face and hands, also a portion of my body. I was taken to the Hamilton Hospital, where I am still an inmate. I have never known gas to exist in the mine before; I always considered the mine a safe one.

EXHIBIT Q.

REPORT TO THE CORONER ON THE INJURIES RECEIVED BY THOSE KILLED IN THE HUNTLY MINING DISASTER.

SIR,— Huntly, 15th September, 1914.

The following is a detailed report on the injuries received by the miners whose lives were lost in the colliery disaster in Ralph's Mine on the 12th instant. The bodies were examined in series in the King's Hall as they were brought out of the shaft:—

(1.) *John Whorskey.*—There were abrasions of the face and arms which were pigmented with coaldust. The skin-surface was charred, and the appearance was consistent with severe and sudden burning by a fierce heat, such as is produced by a flame of gas. An additional factor in the cause of death was no doubt the inhalation of poisonous gases.

(2.) *Samuel Jackson.*—This man had injuries to his head and skull sufficiently severe to cause death. Post-mortem rigidity was well marked. The force of exploding gases carrying the body along the drive with great violence would account for such injuries. The skin was charred and loosened over the fingers.

(3.) *Jack Skellern.*—This man's face was charred and pigmented with carbon, and the skin loosened from the hands and arms. There was a fracture of the right leg and of the skull. Death was probably due to the direct consequence of the explosion, and he might have been hurled some distance down the drive in which he lay.

(4.) *William Burt.*—This man was found lying on his back under a haulage-rope, which he held firmly in his hands. There was an injury to the head and right side of face and arm, but very little disfigurement. I am of the opinion that the deceased survived the explosion and succumbed to the poisonous gases. The skin was not greatly scorched.

(5.) *Jack Robinson.*—This man had sustained a fracture of the right leg and left arm, and injuries to his skull. Death was due to direct violence.

(6.) *William Hinchco.*—He was found lying in a manhole exactly opposite where Burt's body was found. He had sustained a compound fracture of the skull, and death must have been instantaneous and due to direct violence. He was probably creeping into the manhole, and was blown in against the walls by the force of exploding gases.

(7.) *Harry Peckman, sen.*—He had injuries to his head, arms, and face, and the whole surface of the body showed appearances consistent with burning by the flames of gas. Death was due to shock and asphyxia and burns of a second degree on face and arms and hands.

(8.) *Jacob Thompson.*—This lad had severe abrasions and burns. These injuries were consistent with those which might be produced by a flame of gas, and if death was not instantaneous it followed as the result of the inhalation of noxious gases.

(9.) *James Holden.*—This body had severe injuries to the head and face. The front of the nose and face was partly blown into the base of the skull, and there were injuries to the right arm. The face was peppered with coal in minute and larger fragments, which had been driven into the skin with explosive force. Death must have been instantaneous, and due to the great violence inflicted on the face and skull, which must have caused serious medullary injuries.

(10.) *C. Moloney.*—This body showed charring of head and face due to flame. The hair was scorched and burned. The injuries were consistent with a flame striking the body with great force. Death was probably instantaneous and due to shock and burns.

(11.) *William Slavin.*—The injuries were principally to face, which was charred and burnt, these injuries corresponding to severe burns inflicted by flame. Death was instantaneous.

(12.) *Robert Munsie.*—There were injuries to face and hands and burns of varying degree and severity. Death was due to violence and burning.

(13.) *James Darby.*—This man's body was almost unrecognizable. All the hairs of his beard and part of head had been completely burned off, and the skin was stripped off his arms up to the elbows. The burns were very severe, and death was either due to severe shock and almost immediate, or from asphyxia.

(14.) *William Kelly.*—This man's hair was scorched and burnt. The appearances were consistent with those caused by burning by a flame of considerable intensity and violence. Although death may not have been immediate it was accelerated by asphyxia.

(15.) *Dan Lyons.*—This man had an injury to his skull and a fracture of the left leg. He must have been hurled some distance with great violence. Death was due to burns and violence, as the appearances were consistent with such.

(16.) *Hutchinson Burt.*—This body was supine when found, and the appearances were consistent with the inhalation of a noxious gas producing asphyxia. This body was the second found, and was examined *in situ* about 11 a.m. on Saturday, when the body was still warm.

(17.) *John Steele.*—The appearance of this body was consistent with death by carbon monoxide poisoning.

(18.) *David Patterson.*—This body was charred and burnt, and showed the characteristic injuries produced by a flame of great heat and violence. Death was probably instantaneous and due directly to burns and shock.

(19.) *William Paterson.*—The hair of the moustache and head was partially burnt. The arms and hands were charred, and the appearances were such as one would expect from severe and sudden burns.

(20.) *Alexander Izatt.*—This lad, who was burnt all over the body, died in the Hamilton Hospital.

(21.) *John Bowler.*—This man had an injury to his nose. His face and hair were charred, and he must have been struck by a flame of intense violence and force. Death was instantaneous.

(22.) *William Mayland.*—This lad had received the most severe injuries of all (with one exception). His face was known to me, but I could not recognize it. He was burnt about the head and face. There was a fracture of the right leg below the knee and of the left leg below the knee. There were injuries to the face and possibly a fracture of the spine. Decomposition was proceeding apace. The multiplicity of this lad's injuries was incompatible with life, and the force which struck him must have been of terrific momentum. No explosion except one of unexampled violence could have produced such terrible injuries.

(23.) *William Dixon (or Mitchell).*—The face was comparatively uninjured. The appearances were such as one would expect from death by direct violence and asphyxia.

C. 14.—Inset.

(24.) *Fred. Taylor.*—This man had injuries to his face and mouth, which were charred. They were obviously due to burning by a flame of great violence and intensity.

(25.) *Thos. Casson.*—This body had similar injuries to face and hands through burning by a flame. Death must have been due to the shock and violence of the burning.

(26.) *Theo. Molesworth.*—The face was swollen, charred, and knocked about. The skin was off the hands. The feet were cut, and the appearances consistent with death by burning and asphyxia.

(27.) *Arthur Ruston.*—There were no marks on this body. Its appearance was consistent with death by asphyxia due to the inhalation of a noxious gas or deficiency of oxygen.

(28.) *Henry Jackson.*—There was a compound fracture of the left side of this man's skull. Skin was burnt off the hands and hanging in shreds. Death must have been instantaneous, and the force of the burning flame which struck him must have been very great to bring about directly or indirectly such a terrible injury to the calvarium. The general surface of the body was severely burnt.

(29.) *Roper* (?).—This man's body could not be identified. It was charred and blackened from head to foot, and the tongue was protruding from the mouth. The skin of the hands and arms was burned completely off, and the burns extended beneath the true skin. The end of the penis was completely burnt off, and the body was charred generally. Death was due to burning in an intense heat. The head was knocked about.

(30.) *William Allen.*—This lad has sustained the most terrible injuries (with two exceptions). The top of his calvarium was completely blown away and the left side of his face was reduced to pulp. Most of the body was charred. A book in his pocket had the leaves charred and almost burnt away. The explosive force which burnt must have struck him about the region of the head and thorax and killed him on the spot.

(31.) [*Unidentified*].—This was the body of a small man of stout build. The top of the skull and brain and the right side of the face were completely blown away; what remained of the cerebrum was pulped. A portion of the medulla oblongata was visible through the anterior aspect of the neck. Both legs were fractured below the knee, and both arms were fractured. Portions of them were blown off. The mutilation of the body was extreme. Most of the general shin area was burnt, including the testes. The explosive force which struck the man must have been tremendous.

(32.) *William Burton.*—The skull and face of this man were generally injured and severely burnt—in fact, the skin of the legs and thighs and some of the trunk was carbonized. A portion of the intestines was protruding through the abdominal wall (of which a portion was missing), and there were compound fractures of both legs below the knees. Death was instantaneous, and the body had been subjected to great heat.

(33.) *J. Greener.*—The skin was off both hands; the front of the face blown in and charred. Fragments of the coal lay on the face and neck. Death was due to direct violence. Decomposition was taking place.

(34.) *William Gowans.*—There were injuries to the head, and the hands were charred and denuded of skin. The neck was charred and scorched, and on the anterior surface of the neck were several pieces of coal as long as one's finger. Death was due to violence; the body was decomposing.

(35.) *William Brocklebank.*—The head was injured, the face blown in, and the skin of the hands in fragments. The flesh was charred. Death was due to violence.

(36.) *Seymour Hopper.*—The skin of the face was burnt off. Part of the upper lip was absent. The general body-surface charred and burnt, the skull fractured at the base, the right foot missing, and the left femur fractured in the middle third. The appearances were consistent with death by burning and extreme violence.

(37.) *William Blenkinsop.*—There were injuries to the face and skull. The face, arms, and legs were charred. Death was due to direct violence, as the body bore evidence of having been struck by coal.

(38.) *John W. Jones.*—The skin of the face and arms was burnt off—in fact, that on the arms was carbonized. The hair and side whiskers were completely burnt off, and there was evidence of violence—viz., from a fall of stone or coal. Death was instantaneous. The body was decomposing.

(39.) *Hugh Ransome.*—The skin was burnt off the hands and face. The appearances were consistent with death by asphyxia due to the inhalation of noxious gases.

(40.) *Baker* (?).—The body-surface was burnt and charred. The left thigh had been fractured, as the rest of the leg was missing. There was a fracture of the right femur, and the hair was completely burnt off the head and face. Death, which was due to direct violence, was instantaneous.

(41.) *Thos. Berry.*—This man had a compound fracture of the leg above the ankle, a fracture of the same thigh above the knee, and a fracture of the right arm above the wrist. Death was due to violence.

(42.) *John Jackson* died in the Waikato Hospital. The cause of death was burns.

(43.) *John Martin.*—This man had a compound fracture of the skull (the vertex). An oblong piece of coal was driven into it. There were compound fractures of both legs below the knee, and a fracture of the left femur in the middle third. The body was devoid of clothing. There was a fracture of the right side of the ilium, where there was a wound exposing muscle. The intestines were exposed and charred, and there was charring of the skin of the thighs.

CAUSES OF DEATH.

Violence	12
Violence and burns	10
Burns and CO poisoning	6
Violence and poisoning	1
CO poisoning	6
Burns and shock	7
Asphyxia	1
	43

JOHN CAMPBELL MACDIARMID, M.B., Ch.B. (Edin.).

EXHIBIT M.

ALFRED GEORGE PECKAM: I am a fitter, and on the 12th instant I was employed as a fitter at Ralph's Mine, Huntly. I entered the mine on the date in question. At 7.20 a.m. I arrived at the bottom of the shaft and went to the telephone, situated about 75 yards from the shaft. I was using the telephone for about three or four minutes when I heard a slight explosion in the old workings towards the shaft. I was using the telephone when the explosion occurred, and it was there I got burnt. I have no idea how the explosion occurred. I heard a little fall of coal first, then the explosion. It did not seem more than 30 or 40 yards away, in the little drive section. I got severely burnt about the face and arms. I was rescued and sent to the Hamilton Hospital, where I am still an inmate. I have never known gas to be in the mine before except in the old workings, which is a long way back off the main travelling-road, and no one has a right there except the officials. I always considered the mine a safe one.

EXHIBIT N.

4 p.m., 31/8/14. RALPH'S MINE.

I, THE undersigned, have examined all the old workings and return airways of Nos. 6 and 7 south sections, and found all safe. No sign of heating. Ventilation good. D. WEAR.

EXHIBIT O.

Exhibit O is a letter from Professor Dixon to Minister of Mines, for which see Professor Dixon's evidence before Commission.

EXHIBIT P.

Mr. Gowans, Ralph's Mine.

J. MCGILL asked me to inform you that he and S. Jackson carried out "red-hot coal" from the place in the little dip that was heating, but when they left the place "it was quite cool." I visited the place this morning and found all in order, really in the same cool state I left it in yesterday.

T. E. W.

EXHIBIT R.

2nd June, 1893.

"ON EARTH PULSATIONS AND MINE-GAS." JOHN MILNE, F.R.S., F.G.S.

REFERENCE is made to seismometer used at Marsden.

Mr. W. Brain draws attention to the fact that earthquakes in Great Britain are more frequent in winter months when explosions are more frequent. The writer refers to a close relationship between the siesmic activity in Italy and explosions in Germany. The writer concludes: "From the little information at the author's command it appears likely that firedamp escapes in greater quantity when earth pulsations are most frequent."

At the conference of delegates of corresponding societies of the British Association for the Advancement of Science, held in Ipswich, 1895, J. H. Merivale, the delegate, writes: "There are several papers by Professor Milne and Mr. Symons on 'Earth Tremors.' This matter may have a bearing upon the issue of gas in mines."

"THE GLASGOW EARTHQUAKE OF THE 14TH DECEMBER, 1910, IN RELATION TO MINING." BY J. W. GREGORY, D.Sc., F.R.S. (8TH FEBRUARY, 1911). VOL. XLI, PAGE 55.

"To the colliery engineer, however, earth-movements are perhaps of most importance in connection with the evolution of firedamp. The apparent contradiction between many observations and the natural conclusion from the laws controlling gas-pressure may, perhaps, be reconciled by the possible effect of earth-movements; for there is much evidence to show that periods of high barometric pressure are those of especial seismic activity, which may occasion the liberation of gas from joints and cavities in the rocks. Hence, the increased discharge of gas at or after a period of high barometer may not be due directly to the air-pressure, but indirectly to the earth-movements which have resulted from the increased atmospheric load."

The President (Mr. Robert McLaren, Inspector of Mines) said it was a paper which opened up a very wide subject. Professor Gregory had given them something to think about with regard to disturbances of the earth, and that gentleman would be glad to have the views of practical mining men on the matter.

In replying to the discussion, Professor Gregory said, "He thought that there were well-established cases of the abundant discharge of gas from coal at times when the barometer was high. The suggestion that the cases which were so difficult to understand on the ordinary conditions of gas-pressure might be due to earth-movements would, he hoped, be proved or disproved by further evidence. He hoped that the discussion would lead to the collection of further data upon this unsettled problem."

BAROMETER READINGS (REDUCED TO SEA-LEVEL), AUCKLAND.

September 1	29·78	September 9	30·23
,, 2	29·78	,, 10	30·32
,, 3	29·93	,, 11	30·28
,, 4	30·02	,, 12	30·25
,, 5	30·03	,, 13	30·28
,, 6	30·08	,, 14	30·22
,, 7	30·14	,, 15	30·33
,, 8	30·10		

EXHIBIT S.

(Apparently a duplicate of Exhibit CC, p. 179, but with several slight differences.)

Dominion Laboratory, Wellington, N.Z., 29th September, 1914.

Report on Specimens No. E/1144, 1145 (1–3), 1146 (1, 2), forwarded by Mr. F. Reed, Inspecting Engineer. Particulars: Samples in connection with recent explosion in Ralph's Colliery—E/1144, single piece of coal; E/1145 (1–3), coaldust from mine; E/1146 (1, 2), brattice-cloth. Analyses of the coaldust and coal gave the following results:—

——	E/1144.	E/1145 (2), No. 13, on 30 mesh.	E/1145 (2), through 30 mesh.	1145 (3), No. 14, on 30 mesh.	1145 (3), through 30 mesh.	1145 (4), No. 15, on 30 mesh.	1145 (4), through 30 mesh.
Fixed carbon	44·23	42·7	44·1	35·3	33·6	22·8	24·9
Hydro-carbons	41·07	40·9	38·7	36·0	34·7	30·5	35·3
Water	13·14	12·3	10·1	13·0	12·9	8·8	9·5
Ash	1·56	4·1	7·1	15·7	18·8	37·9	30·3
	100·0	100·0	100·0	100·0	100·0	100·0	100·0

A microscopic examination showed that 1145 (2) contained a considerable number of charred particles. In the case of 1145 (3) it is doubtful if there are any charred particles, but in 1145 (4) there are undoubtedly some. The brattice-cloth when examined under a lower power gave undoubted evidence of singeing, and the dust on it also proved to have been charred.

In order to determine the inflammability of this coal I have made the following experiments: A small amount of coal, ground to pass through a fine sieve (100 holes to the linear inch), was blown through a glass tube across the flame of a Meker burner (fixed horizontally) towards a piece of cotton-wool supported in a clamp. By varying the distance of the cotton-wool from the flame of the burner it was possible to measure the greatest distance at which the coaldust flame would ignite the wool. Four coals ground to the same degree of fineness were examined by this method, and, as a result of a number of determinations, I have found the distances to be as follows:—

	Distance at which Coaldust Flame ignited Cotton-wool. Inches.
Huntly E/1144 (brown coal)	20
Westport–Stockton (bituminous coal)	16
Aberdare Collieries, New South Wales (bituminous coal)	13
Wales (anthracite)	2½

These results show that the Huntly coaldust is very inflammable, and that the flame of the ignited dust travels greater distances than ordinary bituminous coals such as Westport–Stockton and Aberdare. Such properties would render the coaldust very effective in carrying on and intensifying an explosion once started.

The four coals referred to above gave the following results on analysis:—

	Fixed Carbons.	Hydro-carbons.	Water.	Ash.
Huntly	44·23	41·07	13·14	1·56
Westport–Stockton	58·50	39·98	1·34	0·18
Aberdare	52·54	41·59	2·46	3·40
Wales (anthracite)	89·07	6·51	2·27	2·15

J. S. MACLAURIN, D.Sc., F.C.S., Dominion Analyst.

Reference: No. 13, dust from bord W.C., No. 5 district; No. 14, dust from near No. 6 cabin haulage-roadway; No. 15, dust from main haulage-roadway at No. 4 level; No. 16, dust from piece of Ralph's Colliery coal; No. 17, dust from near flat sheet No. 5 jig.

EXHIBIT T.

DEAR SIR,— Taupiri Coal-mines (Limited), Huntly, New Zealand, 9th July, 1914.

I have to report that William Kelly, a contractor, was slightly burned about the chest through an ignition of firedamp in Ralph's Mine at 10.30 a.m. this morning.

It occurred in the stone drive that is being constructed for regrading the haulage-road. This drive was only connected yesterday by the two ends meeting, and a good current of air was flowing through.

It appears from a statement made by Kelly that he went back for a drink, and in the act of doing so he lighted up the gas that had collected suddenly, because previous to this he had been three times to the same place for the same purpose and all was clear.

Two or three days will make Kelly fit again. Yours faithfully,

The Inspector of Mines, Thames. JAMES FLETCHER, Manager.

EXHIBIT U.

DEAR SIR,— Taupiri Coal-mines (Limited), Huntly, New Zealand, 4th June, 1914.

I beg to acknowledge your letter of the 30th ultimo, regarding your inspection of Ralph's Mine on the 19th and 20th ultimo, and your remarks thereon have been noted.

I am, &c.,

Boyd Bennie, Esq., Inspector of Mines, Thames. J. FLETCHER, Manager.

EXHIBIT V.

The following is a copy of a memorandum left in the mine-manager's (Mr. Fletcher's) report-book on the 2nd July, 1914.

2nd July, 1914.—To-day, with the underviewer, Mr. Gowans, I have examined several places in the Ralph's Mine, especially two places in the main dip, old workings, off the main haulage-dip road behind the haulage winch, near Doolié's (I think it is called No. 7), and found gas there in both places. In one the area would be 144 cubic feet by 1·5 ft. high, full of gas equals 212 cubic feet of gas; in the other place an amount of gas equal to between 200 and 300 cubic feet.

In the little dip section old bords, three places, falls where gas had been found by Deputy D. Wear and reported, we found no trace of CH_4 gas. Coaldust on the travelling-road main dip found in dangerous quantity; the dust should be adequately watered. No. 6 level district leading to Taupiri West, coaldust in dangerous quantity on my previous visit.

In view of CH_4 gas being found in the mine, this dust should be removed or watered, and all shots fired by officials appointed for that purpose. B. BENNIE, Inspector of Mines.

EXHIBIT W.

STATEMENT OF CASE FOR OPINION.

27th August, 1914.

ON the 9th July ultimo a miner named William Kelly was burned by an ignition of CH_4 gas in the Taupiri Coal Company's mine.

The examining deputy reported finding gas in Kelly's working-place on the 1st July ultimo, but on each succeeding morning up to and including the 9th July (date of accident) the examining deputy reported the place clear (safe).

The Coal-mines Act, 1908, section 60, states: "Accident in mine *prima facie* evidence of neglect."

Special Rule 14, Second Schedule, Coal-mines Act, 1908, states: "The underviewer, under the direction of the manager, shall see that locked safety-lamps are used and naked lights excluded wheresoever and whensoever danger from firedamp is apprehended."

The manager did not order safety-lamps to be used, and Kelly was using a naked light.

Under the above circumstances, Is the manager guilty of a breach of Special Rule 14, Second Schedule, Coal-mines Act, 1908? B. BENNIE, Inspector of Mines.

Mr. E. N. Miller, Barrister and Solicitor, Thames.

EXHIBIT X.

DEAR SIR,— Thames, 1st September, 1914.

We are asked to advise you, with reference to an accident which occurred in the Taupiri Coal Company's mine on the 9th July last, as to whether the mine-manager was, in respect of the circumstances of such accident, guilty of a breach of Special Rule 14 in the Second Schedule of the Coal-mines Act, 1908.

The material facts are that on the date in question a miner named William Kelly, who was then using a naked light, was burned by an ignition of CH_4 gas; that the examining deputy reported finding gas in the place on the 1st July, and on each day subsequent to the 1st up to and including the 9th July (except Sunday) the examining deputy reported the place clear and safe. The material

part of Special Rule 14 provides that "The underviewer, under the direction of the manager, shall see that locked safety-lamps are used and naked lights excluded wheresoever and whensoever danger from firedamp is apprehended." The Act and regulations provide that an examination of the mine is to be made each day (or, according to circumstances, twice per day). This examination was made, with the result noted above.

It seems to us that the question submitted is a simple question of fact. There can be no doubt as to the meaning of Special Rule 14. The test to be applied under that rule to any set of circumstances is, we think, this: Would a reasonable man have apprehended danger from firedamp? And as to the liability of the manager we may add the further test: Were the steps taken all that a reasonable man would take to ascertain whether or not there was firedamp?

As to the first question, we do not think that it could possibly be suggested that the mine-manager had any reason for fearing danger from firedamp. The Act and regulations provide that an underviewer is to be appointed, whose duty it is to examine the mine daily, and it is as a result of his examination that work is or is not undertaken in any part of the mine. In the case now under consideration the underviewer made examinations, and for several days preceding the accident everything was reported all safe, and ventilation good. In view of the fact of which you inform us, that with good ventilation a mine could be clear and work could quite safely be undertaken a day after gas was reported, we cannot conceive a reasonable man who relied on the underviewer's reports having any fear whatever of danger from firedamp. So that the manager could not, we think, be held to be guilty of an offence unless he could be said to have neglected Special Rule 14, or, in other words, unless the steps taken by him were less than would be taken by a reasonable man to ascertain the presence of firedamp. As stated above, the Act and regulations provide what is to be done as to examining the mine, and although a bare compliance with the letter of the statute is not necessarily sufficient, yet such a compliance (which is undoubtedly shown in this case) is *prima facie* evidence of reasonable care having been taken. And the evidence required to rebut such a *prima facie* case would have to show very definitely that the mine-manager did in some way neglect his duty. But there is nothing whatever in the facts submitted by you to us which suggests that the manager was in any way whatever neglectful. And on those facts we do not think that a Magistrate could or would find the manager guilty of a breach of Special Rule 14. MILLER AND SON.

The Inspector of Mines, Thames.

By Authority: JOHN MACKAY, Government Printer, Wellington.—1914.

Price 3s. 6d.]