

that is brought about through a mere trickle of water: it is scarcely observable; you can simply see it oozing out of the wall.

226. You say you avoid cutting the shales: I suppose you have another source of danger in fire, have you not?—Not of late years. We had a source of danger from fire when we could not dispose of any of the waste, but not since we have been able to dispose of a portion of it.

227. Does it make any difference in the amount of difficulty you have with falls, whether the seam is a thin one or a thick one?—The thicker the seam is, and the more coal you take out, the greater difficulty you have with flood; that is, it will be much greater before it chokes itself.

228. When it does occur it is far more serious in a thick seam than in a thin one?—Yes; because it takes so much more to choke itself.

229. Supposing a fall occurs in a cut through a seam 3ft. 6in. to 4ft. thick, how would you compare the difficulty arising from that with a fall in a seam 7ft. thick?—To put it at the very least, it would not be half.

230. *Mr. Reid.*] You have had no experience of submarine working, I understand?—None whatever.

231. Can you tell us what would be a safe thing to adopt as to the size of pillars in a submarine working, where there was an overhead cover of about 117ft. to 200ft.—the overhead strata being sand and a hard belt of sand above that?—What is the thickness of the hard belt of sand?

232. A hard belt of 18 inches?—I will give you my experience at Walton Park.

233. In this particular mine, could you give us what would be a safe thing to leave for pillars to support that roof?—I should say it would be quite safe to leave pillars, say, 15ft., 16ft., or 17ft., thick.

234. You would not reduce the pillars to less than 16ft.?—I think it would be unwise to reduce below 15ft. It often occurs in a mine that there are thin places in a working. A pillar might be in some places 18ft. or 20ft. thick, and a hundred yards ahead only 10ft. or 12ft. Take an average, I should say, 15ft. thick.

235. You would not allow the pillars in any particular place to attenuate to 18in.?—Not by any means.

236. Nor to 6ft., if you were aware of it?—It would not be advisable at all, unless it was for a very short distance—a few yards—which does occur in the best coal mine.

237. Would not a body of water allowed to flow up to the level of the roof—would not that, by hydrostatic pressure, support the roof?—I do not see that it would have any great effect, unless you confined the water.

238. Allowing it to flow to the level of the roof, would not that, by hydrostatic pressure upwards, support the roof?—I do not think it would support it to any extent. The shales are so many times heavier than the water, and would certainly fall away.

239. Have you ever heard of water supporting the roof in that way in coal mines at Home?—I do not think it would support it to any extent unless you could confine it.

240. I am assuming that the water has reached the roof and is allowed to stand there—when it has filled to the level of the roof, and has filled all the under-ground workings—would it not be sufficient, not only to support the sides and the walls, but the roof itself?—I do not think it would to any great extent at all. I think the shales would wear away and fall.

241. From your experience as a miner, have you never heard that theory asserted that a standing body of water by its pressure upwards would support a roof?—I have never heard of it.

242. You are not aware that English engineers of eminence have asserted that that is so?—I am not aware of it.

243. In a mine of this nature it is usual to have water running over the floor, and which you must pump. Would the action of the water—the ordinary drainage of a mine of that kind—added to the pressure, without allowing extraneous water, help to upheave the floor?—It would have some effect, no doubt, but very little.

244. I understood you to say that the smallest stream of water would operate on and disintegrate it?—Yes.

245. Would it not be a necessity in a mine of that kind that some amount of water should lodge on the floor?—No doubt there would be some; and the manager, no doubt, would do his best to obviate that as much as possible. You cannot avoid it altogether, but the result is just in proportion to the water.

246. Would you, in working, work up to the sand, or would you leave a portion of the coal?—We always leave a portion of coal.

247. You have never seen the action of water allowed to stand for some time in a mine and then taken off?—No, except for a few days; and then the result was very bad. I will give you one slight instance. In driving the original mine at Walton Park, about seventeen years ago, about New Year's time, there was three days' holiday. A quantity of water accumulated during those holidays. In those three days the timber sank into the floor and went all out of shape.

248. The pillars you have in your mine are regular in their size?—Not regular, but as nearly as possible.

249. The greater the regularity of the pillars, no doubt the greater support of the roof?—Yes.

250. *The Chairman.*] About what is the dip at Green Island?—One in nine.

251. *Mr. Chapman.*] Supposing there was hydrostatic pressure of water from below, would that have any counteracting effect, contrary to the ordinary effect of water, in softening the shales, or would the softening go on even though there was pressure?—I should say so; indeed, to my mind, I should judge that, if there was any force at all, it would force itself into the shales all the more.

252. I suppose hydrostatic pressure of water is like any other supporting pressure, it needs to be confined on all sides?—I should say so.

253. Should you expect to see it exerted to any considerable extent if there was a free end or open shaft?—No.

254. The sand in Walton Park is running sand, is it not, when you strike into it?—The running sand is some distance from the coal.