

122. Are you aware whether gas-engines are, or ever have been, built in Auckland?—Yes; there are two gas-engines in Campbell and Ehrenfried's, in Auckland, built by the Century Motor Company.

123. Is it not your opinion, essentially, that prior to a man being placed in charge of one of these engines—say, of forty-horse power—that he should have three years' shop-experience?—I would not say three years, but he should certainly have some reasonable mechanical knowledge. Some men will learn as much in one year as others in three. I think it is quite as much in the interest of the owners as any one else that we should have qualified men to go to sea. Our trouble is that we have to take unqualified men who have certificates, and have in addition to put men on board to operate the engines who have not certificates.

124. Do you think the cost of auxiliary power is four times greater than that of steam-engine?—I have had no experience.

125. Do you think the present Board of Examiners are competent to examine engineers or drivers of oil-engines?—I am sure they know very little about oil-engines, and are entirely incompetent to have anything to do with them at present. They are men who are thoroughly well up in their own work, and well able to do it.

126. Do you think it is necessary to set up other Examiners?—Yes.

127. *Mr. McLean.*] Why do you think the Examiners are incompetent to examine engineers so far as these oil-engines are concerned?—Because they have no knowledge of the engine, or only a very trifling knowledge, which they have picked up incidentally.

128. Do you not think that with their mechanical knowledge they could acquire this special knowledge?—Undoubtedly they could. It is only a very stupid error to suppose that a mechanic will not learn as easily as a man with no mechanical skill at all, but he requires to learn it. He cannot know without.

129. *The Chairman.*] If our present Examiners are not competent to examine candidates, who in the colony would you set up as Examiners?—I would appoint a competent Examiner.

130. Where would you get him?—Here he is. [Witness here indicated Mr. Henderson.]

131. *Mr. Duncan.*] What objection have you to the oil-tank being kept in the engine-room?—In case of fire you have no means of getting it away, whereas if you place it on deck, where it could be properly protected, you could take it right away if there was any danger.

132. *The Chairman.*] Do you know that the oil on the "Huia" was stored on deck?—I did not know that it was.

133. *Mr. Duncan.*] Are you not aware that fires occurred on oil-vessels where the oil was actually boiling?—I have heard so, but I was not there.

134. Does that not upset your objection to the tank being in the engine-room—that the oil was actually boiling and did not explode?—It is a very fortunate circumstance there was no leakage.

135. *The Chairman.*] Do you admit that the oil was boiling?—I do not know—it might be a fact; but the tanks did not give way. I know that as an absolute fact.

136. *Mr. Duncan.*] You infer, I suppose, that when the "Torora" ran accurately for six months and broke down immediately on the first trip after she left your hands, that it was the fault of the engineer that she broke down?—I do not infer anything of the sort. There is the bare fact that she did run for six months under a man who had not a certificate, and then a man with a certificate took charge of her and she broke down.

137. Do you not think that the defect might have arisen through a fault in the material where the breakdown occurred?—I do not think it from the inquiry I have made on the subject.

138. In winter naphtha would be more largely used than benzine?—Only for starting purposes.

139. In cold climates they would use naphtha?—Only for starting.

140. What should be the qualification of an Examiner?—I should imagine he should know all about the construction of the engine, how to build and how to run it, and that he should ascertain if the men he was examining could practically run the engine.

141. Do you know anything about the construction of a steam-engine?—A little.

142. *The Chairman.*] To what extent?—We use engines in our mills, and have done so for a good many years, and I have a river certificate myself for steam.

143. *Mr. Duncan.*] With auxiliary oil-engines you have pumps, valves, piston-rods, admission- and exhaust-valves, the same as in a steam-engine, and you have a shaft-and-propeller reversing-gear?—Yes.

144. The only difference in the machinery is the dynamo?—But there is this difference, the power that operates it. The one is operated by gas that has to be manufactured as you go on. That is exploded by an electric spark. In very many instances the trouble is that with a battery there is some short circuit; and then again, when you start the engine, if the mixture is not right she will not work. All these things are quite different from steam, and a speck of dirt will stop an oil-engine.

145. Is it not liquid fuel?—Yes.

146. Naphtha and benzine?—Yes.

147. They must both be reduced to a gas or vaporized before they can be applied as power?—Yes.

148. Then where is the difference?—You have other things to consider.

149. Where have the present men who have permits gained their experience? Where did the first man who drove an auxiliary-powered vessel get his experience?—He simply got it on board the vessel. The first engine was a Priestman, which was put in the "Aotea."

150. Could he drive as well in the beginning as afterwards?—No, he made numerous mistakes.

151. *The Chairman.*] You say that marine engineers cannot drive these oil-engines?—Of course they can when they know how, but they have to learn how.