

on January 15. This proved to be a comprehensive account of the history of the dyestuffs industry in Great Britain, and traced the development and expansion of the chemist's skill and the dyer's needs since Sir W. H. Perkin's original discovery in 1856. Perhaps the most interesting section of the address was the examination of the causes which produced the rise, and then, in England, the decline of the new manufacture. In the first place, the time was ripe for such a discovery because the successful application of machinery to the textile industries and the increase in available wool (from Australia) offered almost unlimited expansion, and also as England was a wealthy country and the workshop of the world. As for the decline, Perkin himself attributed it to three causes: the Patent laws, the ease of infringement abroad, and foreign import duties. Others have blamed the textile manufacturers and the greater facilities for scientific publication in Germany at that time, but Mr. Cronshaw placed above these, lack of foresight, and the fact that the leaders of the industry retired too soon. Perkin was certainly the leading technologist of his day, and he retired at the age of thirty-six years, Caro at thirty-five in 1869, and Nicholson in 1868. Perhaps the early success was too easy, and proved to be dearly bought.

Queen Maud Ranges of Antarctica

THE American expedition to the Bay of Whales in the Ross Sea is reported by *The Times* to have undertaken a most successful dog-sledge expedition to the Queen Maud Ranges, which amplifies the work of Dr. L. M. Gould of the previous Byrd expedition of 1929-30. A party of three under Mr. Q. A. Blackburn reached the Thorne glacier, which lies in about lat. 86° S., long. 153° W., and then ascending the glacier reached the surface of the polar plateau at an elevation of about seven thousand feet. The ranges appear to continue with decreasing heights to the north of east. This direction may lead to Coats Land in the Weddell Sea or possibly towards Hearst Land. At the top of the glacier, deposits of coal are reported to have been found. This would appear to be the same deposit found on the Beardmore glacier and the carbonaceous layer found in the flank of Mount Nansen. There is thus a confirmation of the suggestion made some years ago by Sir Edgeworth David of a great coalfield associated with the Beacon sandstone of the polar plateau. The brief cabled report also refers to a subplateau at an elevation of 2,500 ft. between the Ross Sea ice and the level of the polar plateau. This was called the Leverett glacier in 1929. The sledge party reached three degrees from the Pole before turning back, and altogether covered 1,410 miles in 88 days.

Effect of Rough Seas on Marine Structures

ON February 2-3, 1934, a storm of exceptional severity was experienced along the northern coast of Africa and led to the destruction of more than 1,300 ft. of the recently constructed Mustapha Breakwater at Algiers. The storm and the damage done is described by Dr. B. Cunningham in *Engineer-*

ing of January 11. There are several moles protecting the Port of Algiers, but whereas the older ones are rubble mounds, the Mustapha Breakwater consisted of a vertical wall 11 m. thick with its base resting on a rubble foundation 50 ft. below mean sea-level. It was recognised as one of the finest examples of its kind. The wall successfully withstood a severe storm on December 31, 1933, when it was subject to waves 6-6½ m. in height and 100-120 m. in length, but was completely destroyed by the storm of February 2-3, 1934. Observations made during this storm showed that the wall was being subject to the action of waves 9 m. in height, 200 m. long and with a period of 13¼ seconds, and photographs taken show unbroken masses of water 2-6 m. thick passing over it. There were three stages in its destruction: (1) erosion of the bed of the sea in front of the rubble foundation, (2) the sudden removal of the rubble foundation by one or more great waves, and (3) the excavation by the sea of a trench into which the wall collapsed. It has been generally thought, says Dr. Cunningham, that a level of about 40 ft. below the sea-surface marked the limit of appreciable dislocation of rubble foundation mounds by wave action, but this view now needs reconsideration, and it is clear that the effective suction of a back draught following wave stroke may extend to depths far below the accepted standard. Fortunately, the failure of the mole did not lead to damage to shipping in the harbour. It has now been decided to replace the wall at once with a breakwater of the classic mound type.

Removal of Smoke and Acid Constituents from Flue Gases

PRACTICAL remedies for preventing or reducing the emission of objectionable constituents in flue gases have in the past been mainly confined to the elimination of grit and dust emission. In large urban areas it is now realised that the acid emission is attended with more serious consequences. In 1927, Parliamentary sanction was only given to the erection of Battersea Power Station on the condition that the best practicable means should be taken to remove the oxides of sulphur from the flue gases. In a paper on a new method of removing smoke and acid constituents from flue gases read on January 7 to a joint meeting of the Institute of Fuel and the Institution of Electrical Engineers by Dr. J. L. Pearson, G. Nonhebel and P. H. N. Ulander, it was stated that the daily combustion of 1,000 tons of average coal in addition to grit, dust and tarry matter, leads to the formation of 45 tons of sulphuric acid, 3-7 tons of nitric acid and half a ton of hydrochloric acid. It is clear that when wet washing is applied, a non-effluent system must be used. The new system is a recirculating, non-effluent water system, from which the grit, dust and ashes are separated and removed as solids. A pilot plant was erected at Billingham, and was subjected to a twenty-months' running test. The water used was a hard surface water drawn from a local stream. Lime was used as the alkali for most of the test, and chalk was used for the remainder. Very satisfactory results were obtained. 97-99 per cent of the sulphur oxides