Reclamation of Tidal Lands

IN the *Journal of the Royal Society of Arts* of July 15, 1938, there is published the paper read before a meeting of the Society on February 23 by Mr. Oscar Borer, chief engineer of the River Ouse Catchment Board, in which he gave a survey of the reclamation of tidal lands which has been proceeding on both sides of the North Sea. In a brief note on the geological history of this sea, the author shows that, whether it be accounted for by one theory or another, its water holds in suspension a fine sand or silt which was ground to its present state during the glacial period. This silt only settles in quiet protective bays where the flood water can come to rest; the aim of the work of reclamation is therefore to create those favourable conditions requisite for the extension of the land from the enormous stock of silt provided by Nature. Nature not only provides the material but also constitutes the agency by which the main operations are carried out. Here the engineer exercises his highest function in studying the methods of Nature and in directing them so that they benefit mankind.

If the natural process of accretion be not assisted by artificial means it becomes stationary after reaching a certain distance from the shore, because beyond that distance the movement of the flow and ebb of the tide does not admit of the quiet conditions favourable for deposit. When a sea marsh is enclosed by a bank, the movement of the water is restricted, and, outside the bank, accretion takes place rapidly, so that in a few months the sand becomes covered with warp. This is followed by a growth of samphire, which is, in turn, succeeded by grass, so that eventually the surface consists of a fine mass of warp mixed with roots of grass and decaying vegetable matter. In the course of a few years this process results in the production of a highly fertile soil which, however, must not be enclosed until a sufficient number of years have elapsed and the land thus reclaimed has become 'ripe'—a process taking about twenty years. Meantime, of course, no accretion beyond this is taking place, so that it will be realized that the work is such as to demand patience, foresight and continuity in its direction.

In the course of the lecture, many details were given of the work carried out since Roman times and of the different methods adopted in the operations at the Wash, in the Netherlands and on the German North Sea coast, at each of which the necessary favourable conditions exist. Mr. Borer also mentioned the various plants and grasses which assist the work and the order in which they appear.

Science News a Century Ago

British Association at Newcastle-upon-Tyne

ON taking the chair of Section A (Mathematical and Physical Science) of the British Association, on Monday, August 20, 1838, Sir John Herschel said that the Committee had decided on the order of proceedings for the Section, but it had been found difficult to arrange matters, as although notices of abundance of communications had been received, few papers had come to hand and it was almost impossible to get in touch with contributors owing to a lack of knowledge of their addresses. The part of the proceedings he considered most valuable and important was the opportunity to ask questions. In exercising this privilege members, however, would do well to condense their remarks.

Importance of Meteorological Data

AMONG the contributions to Section A of the B.A. at Newcastle-upon-Tyne was "A Report explaining the Progress towards developing the Laws of Storms" by Lieut.-Colonel W. Reid, R.E. His attention, he said, had been first directed to the subject in 1831 when he was on military service in Barbadoes. A hurricane had occurred just before he arrived in the colony and for two years and a half he had been employed among the buildings which had been ruined. In the course of his paper he referred to the observations of Benjamin Franklin and of Col. Capper of the East India Company, the writings of W. C. Redfield of New York, the anemometers of Whewell and Osler, and he pointed out the desirability of preserving the logs of ships, and of inducing the several maritime nations to establish registers at their lighthouses, and mutually to communicate their observations.

Waves and Water Resistance

To Section A and also to Section G (Mechanical Science), John Scott Russell contributed papers on waves and the resistance of water. He and Sir John Robison, he said, had been constituted a committee to prosecute the investigation of the motion of waves and other problems in hydrodynamics. As to the general problem of the resistance of a fluid to a floating solid, this was a department of science of which we were avowedly ignorant; so much so that some of our best vessels were acknowledged to be constructed by rule of thumb. The question of resistance resolved itself into that of the motion of waves. Waves were of various kinds. The laws of the great primary wave had been laid down in previous communications. Its velocity depended simply on the depth of the fluid. The old law of resistance, as the square of the velocity, was too small so long as the velocity of the solid was less than that of the wave, but too great so soon as the velocity of the solid becomes greater than that of the wave.

Structure of Teeth

THE most important paper before Section E (Medical Science) was that on the structure of teeth and the resemblance of ivory to bone, as illustrated by microscopical examination of the teeth of man, and of various existing and extinct animals, read by Richard Owen, then Hunterian professor and joint conservator of the Hunterian Museum. Until recently, Owen said, the analogy of tooth to bone was supposed to extend no farther than related to the chemical composition of the hardening material, while the arrangement of this earthy constituent, as well as its mode of deposition during the growth of the entire tooth, were considered to be wholly different from those of bone, and to agree with the mode of growth of hair and other so-called extra-vascular parts, with which the teeth undoubtedly closely correspond in the genera vital properties. Owen referred at length to the work of Prof. Retzius of Sweden, and explained the views he himself held on the analogy subsisting between tooth and bone, illustrating his observations by description of teeth of both living and extinct species. Through the endless diversity which the teeth of different animals present, he said, the general law of the tubular structure could be unequivocably traced.