

Turner's contribution to nature study. Mr. Bonacina's detailed discussion of notable examples of Turner's pictures in the National Gallery, the Tate Gallery, and the Victoria and Albert Museum deserves the careful consideration of students of both science and art. The attention of these specialists and also of persons of general culture may properly be directed to the following sentence in which the outlook of the author is strikingly expressed: "the co-ordination and unification of truth acquired on the one hand through scientific research and on the other expressed through artistic intuition are the intellectual needs of the age".

Recent Work in Meteorology

THE annual report of the Director of the Meteorological Office for the year ended March 31, 1938, describes the work of a period during which attention has been focused on the ever-growing needs of the rapidly expanding Royal Air Force and civil aviation. Many new meteorological stations were opened during that period on service and civil aerodromes as trained staff became available. The installation of direct teleprinter connexions between the meteorological stations in the country and the Air Ministry Meteorological Office headquarters was begun and arrangements for its extension to the constantly growing network of similar stations had to be considered. Meteorological information for the trans-Atlantic flights of July 1937 was supplied from stations set up at the Shannon Airport and at Botwood. The first of these was worked on an agency basis by the Meteorological Office for the Government of Eire, and the second was operated by the Canadian Meteorological Service on behalf of the Government of Newfoundland. Conferences were held afterwards at Toronto and Dublin to review the meteorological organization and improve it.

ON the research side, important work was done in collaboration with the National Physical Laboratory in developing apparatus for measuring upper air conditions by radio instruments carried on unmanned balloons, so as to obtain immediate information about wind, pressure and temperature up to greater heights than could be reached when observations were made in aeroplanes. An additional advantage from the new methods is that the information can be obtained in weather dangerous for flying. Climatic conditions in Africa during years when there were serious outbreaks of locust swarms were under investigation on behalf of the Committee on Locust Control.

Electric Heating for Merchant Ships

THE heating installation of a merchant ship is very different from that of a building on shore. An ocean-going merchant ship may sail into cold weather at any time of the year. In the course of a week she may sail from tropical heat into almost arctic conditions; and in a voyage of a month's duration she may sail from winter in one hemisphere, through spring, summer and autumn, or vice versa, and come into winter conditions in the other hemisphere. A paper on this subject was read to the Institution of

Electrical Engineers on November 24 by H. C. Macewan. A difficulty of arriving at a simple method of calculation, like that used for computing the electric heating for a building, arises from the fact that the regulations quoted in specifications are very vague. Recently the British Board of Trade stated in its instructions to its surveyors in relation to master's and crew's spaces that "a heating system will be considered satisfactory if it is capable of maintaining a temperature of 60° F., when the temperature of the outside air is 30° F." This, although a useful help for making calculations, is insufficient as the basis for a test to show the adequacy of the heating. Mr. Macewan has collected data for the calculation of quantities and gives a general review of the problem as it exists to-day. He points out that the capital cost of the electric heating of ships is usually less than that of other systems as it is cheaper to run electric cables than pipes. In running cost also, electric heating is cheap, as it usually acts as a 'demand leveller' and it is seldom necessary to run an extra generator.

Broadcasting in India

IN *Electrotechnics*, the journal of the Electrical Engineering Society of the Indian Institute of Science, Bangalore, of April, we learn that the Government of India is making progress with the construction of broadcasting stations. In December 1937, the 5-kw. medium-wave transmitter at Lahore and the 10-kw. short-wave station at Delhi commenced operation. The short-wave station at Bombay—also of 10 kw.—started to radiate early in February, and Lucknow early in April. The 0.25-kw. medium-wave and the 10-kw. short-wave transmitters at Madras were put into regular service from the middle of June. The Trichinopoly 5-kw. medium-wave station is expected to commence operation at an early date. Several Provincial Governments have already distributed a small number of receivers for group listening in villages. The broadcasting authorities of the Central Government have under way a programme for installing 120 receivers in as many villages in the Delhi Province. At the present moment, the broadcasting service touches but a fringe of the population and the programmes are of limited appeal. The element of novelty and wonder is still the dominating factor in reception amongst all classes of listeners. Listening for pure entertainment and enjoyment, oblivious to the mechanism, is as yet virtually non-existent in India. Until the present uncritical listening gives place to the habit of turning to radio for enjoyment, such questions as the acoustical requirements of studios and the special requirements demanded by Indian music and its technique can receive no adequate and satisfactory answer. In this journal, Mr. K. Sreenivasan's thoughtful address on the design of studios for broadcasting is published.

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