

Prof. Wyville Thomson succeeded me on the 19th of July, and made a short but very successful cruise to the northern part of the Bay of Biscay, where he dredged at the extraordinary depth of 2,435 fathoms, or 14,610 feet. Some particulars of this dredging I have already given. Dr. Carpenter replaced Prof. Wyville Thomson on the 12th of August, and explored the sea-bed lying between the north of Scotland and the Farøe Isles. The depths there dredged did not exceed 650 fathoms; but the results are most interesting and important in a biological as well as physical point of view. Prof. Wyville Thomson accompanied Dr. Carpenter in the last part of the expedition. It terminated on the 7th of September.

J. GWYN JEFFREYS

(To be continued.)

UTILISATION OF SEWAGE

WE have been requested by the Secretary of the Committee* of the British Association on the Treatment and Utilisation of Sewage, to print the following letter, which has been sent to the Municipal Authorities throughout the country:—

22, Whitehall Place, London, S.W.
November 18th, 1869.

SIR,—I have the honour to inform you that, last year, at the meeting of the British Association at Norwich, a Committee was appointed to report on the Treatment and Utilisation of Sewage. In the first instance, a grant of £10 was placed at the disposal of the Committee, with which to defray the cost of printing and postage incidental to the collection of preliminary statistical information. Through the kindness of Her Majesty's Government, the Committee was enabled to obtain Reports respecting the methods of dealing with town refuse practised in most civilised countries, and that information has now been collected in a more complete form than hitherto existed in any country.

This preliminary work being completed, the Committee was re-appointed at the meeting of the British Association this year at Exeter, and the inquiry was considered to present such important features of social and scientific interest, that the sum of £50 was voted towards enabling the Committee to enter more fully and practically upon the investigation of this subject. The British Association being a purely scientific body, has not at its disposal funds which would be adequate or applicable for the full prosecution of this very large and pressingly-important inquiry. The Committee nevertheless desires to take advantage of the opportunity created by the British Association, to investigate the entire subject in all its bearings—whether chemical, physiological, or engineering, sanitary, municipal, or agricultural—and in a manner worthy of the body they represent.

It is unnecessary to point out the enormous importance, especially at the present time, of a full and complete investigation of this question by the light of the knowledge and experience now gained in the several departments above alluded to; but properly to carry out such an inquiry with a practical end, numerous observations, gaugings, and experiments, aided by simultaneous analyses, are essential; and these cannot be accomplished, especially the analyses, without the continued aid of efficient and therefore highly-paid assistants. Moreover, from time to time it may be necessary for the Committee to purchase extensive apparatus, and to subject various inventions and processes to a thorough and complete test; for it is the desire of the Committee, not only to ascertain, as far as possible, the causes of the sanitary inefficiency of existing works, but also to inquire into every suggestion which affords promise of practical utility, in order that this investigation may be searching, the report practical, and any recommendations that may be made authoritative.

It is the wish of the several members of the Committee to devote, to the utmost of their ability, their personal attention to the work thus sketched out; but the expenses absolutely necessary to enable them to conduct so extended an inquiry cannot but be

very heavy, and, unless they are able to secure an adequate fund, they must abandon the attempt to investigate the subject in this broad and comprehensive manner. However, since there is no subject of greater practical and social importance to the public generally, and thus to the various municipal authorities and other governing bodies throughout the country, it is believed that many will share the opinion expressed at the recent meeting of the British Association at Exeter, that the existence of this Committee affords a specially favourable opportunity for such a wide inquiry, and for that reason its members confidently appeal to those authorities who are officially interested in the subject to supply the funds necessary for the investigation.

I am therefore desired to request that you will kindly submit this letter to the body you represent, and I venture to hope you will give the Committee the benefit of your good offices in procuring a subscription proportionate to the population of your town or district.

It is suggested that the subscriptions of towns of different populations might be graduated somewhat in the following proportions:—

Where the population does not exceed 10,000	£5	5	0
Between 10,000 and 25,000	10	10	0
Between 25,000 and 50,000	21	0	0
Between 50,000 and 75,000	30	0	0
Between 75,000 and 100,000	50	0	0
Above 100,000	100	0	0

I beg to call your attention to the accompanying list of members of the Committee, and to inform you that all public bodies subscribing not less than 5*l.* 5*s.* 0*d.* will have the benefit of the information from time to time, as the results of the inquiry partake of a conclusive character, and will receive a copy of the report of the Committee when published.

I have the honour to be, &c.,

GEORGE F. BARNES,

Honorary Secretary pro tem.

TELEGRAPHIC COMMUNICATION WITH FRANCE

LAST Tuesday, November 30, the S.S. *William Cory* left Greenhithe with a heavy submarine cable, to be laid between Salcombe in Great Britain and Cape Finisterre in France. This cable, 105 miles long, has just been made by the Telegraph Construction and Maintenance Company, at their works at North Woolwich, and its special object is to establish direct telegraphic communication between London and Brest, so as to expedite the transmission of messages between Great Britain and America by the French Atlantic Cable.

The new cable is very strong and heavy. The shore ends weigh 20 tons to the mile, and the deep-sea portion weighs very nearly 10 tons to the mile. It contains one conductor only, consisting of a strand composed of seven copper wires, and weighing, when twisted together, 107 pounds to the mile. The insulating medium is gutta-percha, and weighs 166 pounds to the mile. The contractors undertook that the electrical resistance of the conducting strand should not exceed 12.25 ohms per mile, and that the insulation resistance should not be less than 200 megohms (million ohms), at the standard temperature of 24 degrees centigrade. So well have the contractors done their work, that the quality of the cable is better than agreed upon, the conductivity resistance being only 11.8 ohms, and the insulation resistance nearly 400 instead of only 200 megohms per knot. The inductive capacity of this cable is as nearly as possible .333 Farad. per mile.

The *William Cory*, since 1858, has laid many submarine cables; she carried and laid portions of the French Atlantic cables last summer, and is now employed solely in this new branch of industry. Captain Donaldson has been in charge of her throughout the whole of this period, and he took her out again last Tuesday, on which day she left Greenhithe for Salcombe. For the above details relating to the conductivity, insulation, and capacity of the cable, we are indebted to Mr. C. F. Varley, C.E., engineer to the French Atlantic Telegraph Company, who accompanies the expedition. The apparatus used in testing the cable

* The following are the names of the Committee:—Richard B. Grantham, Esq., M. Inst. C.E., F.G.S., Chairman; J. Bailey Denton, Esq., M. Inst. C.E., F.G.S.; J. Thornhill Harrison, Esq., M. Inst. C.E.; Benjamin H. Paul, Esq., Ph.D., F.C.S.; Profess Wanklyn, F.C.S.; William Hope, Esq., V.C.; Professor Williamson, Ph.D., F.R.S.; Professor Marshall, F.R.S., F.R.C.S.; Professor Corfield, M.A., M.D.; M. C. Cooke, Esq.; and Sir John Lubbock, Bart., F.R.S., Treasurer. Subscriptions should be paid to the credit of Sir John Lubbock, on behalf of the Committee, at Messrs. Roberts, Lubbock, and Co.'s, 15, Lombard Street, London, E.C.