organisation of the publication is desirable, and it was recommended that, following agreement, the International Committee on Intellectual Co-operation should support the International Committee in action taken to secure regular contribution by all countries of the funds required for the publication.

In the discussion on this report, the value of international bibliography was stressed, although it was agreed that Prof. Severi's scheme for the organisation of an international centre for mathematical bibliography is primarily a matter for the International Union of Mathematics. On the other hand, opinion was freely expressed that the Committee should extend its scope to include the bibliography of historical, economic, and social sciences. Against the latter proposal, M. Painlevé and Prof. J. T. Shotwell urged that the methods required for preparing bibliographies of the exact sciences are entirely different from those which should be adopted for historical, legal, and social sciences, requiring the co-operation of specialists in the various exact sciences. Accordingly, no advantage would accrue from such an extension of the Committee's scope. It was further suggested that the Institute should inquire of the national scientific unions what means they have of obtaining information on the scientific output of their countries, and thus providing a foundation for an international bibliography of each science.

In a slightly different field is the proposal by Prof. Cabrera for a repertory of scientific laboratories. This proposal was unanimously approved by the Committee of Scientific Advisers, who requested the International Committee to have the present situation in the laboratories studied by the Institute from the point of view of the working facilities accorded to foreign professors and students and the practical means of making the existing facilities known. So far as Great Britain is concerned, this information is largely contained in the "Year-book of the Universities of the Empire", and it was suggested that application should be made to the national committees in all countries where such committees exist. The national com-

mittee would be able to state whether a suitable year-book is published in the country which, as such or in modified form, could serve as a repertory. Even members of the International Committee who had questioned the advisability of continuing the Committee of Scientific Advisers were strongly in favour of this proposal, which was embodied in a resolution, expressing the opinion that a repertory of scientific laboratories would be a valuable supplement to the publications of the Institute and that its preparation might immediately be considered by the Institute.

Apart from such questions bearing on the interdependence of research and instruction, the Plenary Committee discussed a number of other matters of great interest to scientific workers. The results of the consultation with governments regarding the draft convention for the protection of intellectual rights were reviewed, together with the results of a meeting with representatives of legal institutions and, considering the scientific advisers' recommendation in favour of recognising the rights of the scientific worker, it was agreed to establish a committee of specialists to consider, with the assistance of the Institute, the whole of the replies received from governments, with any other documentary information collected, and to continue the action already initiated.

The publication of an international code of abbreviations of titles of periodicals has now been completed in regard to Slav terms, and a proposal for the preparation of an international bibliography of translations was approved, a preliminary technical study of the necessary methods by the Institute being recommended. The scientific study of international relations, university exchanges, the international use of the cinematograph in education, the utilisation of leisure in general education, popular arts, educational cinematography, etc., are other topics coming within the scope of the International Committee, which, with the assistance it is giving towards the reorganisation of education in China, illustrate its great potentialities for raising the general level of intellectual life.

Obituary.

SIR ALFRED YARROW, Bt., F.R.S.

MY first long talk with Sir Alfred Yarrow was at Oxford in 1926, during the British Association meeting. Yarrow was at that time much interested in the relation between the world's output of gold and the cost of living index figure. A year later he read a paper on the subject at the British Association meeting at Leeds. I knew little of the matter, but I listened to him with interest. Later on, at Brighton, we discussed the future of scientific societies and technical institutions, and particularly the relative merits of short term donations and endowments for perpetuity. It was a most interesting talk, and we agreed that only in exceptional circumstances were perpetuity endowments wise, and that it was better for capital and interest on donations to be spent within twenty

years or so, and to leave subsequent generations to do their bit. Yarrow thereupon told me he proposed giving me £5000 for the British Association, the capital and interest on which were to be spent within twenty years. I asked him not to spoil a very pleasant evening by putting me in the position of a beggar, and suggested the donation could wait. He agreed, but shortly after midnight he wrote out a cheque, and handing it to me, said, "I have doubled it—there is £10,000".

This principle of giving money to be spent within twenty years appealed to Yarrow very much, and whenever he read an announcement of a gift stipulating similar conditions he sent me a line expressing his pleasure. From that time I dined with Yarrow some ten or twelve times every year, and my respect and affection for him grew steadily

stronger. One of the proudest moments of his life was when he was elected a fellow of the Royal Society, the proceedings of which he followed with great interest. He read a large amount of scientific and technical literature, familiarising himself with all the latest developments of modern engineering and many of the more important discoveries in biology and biochemistry. He questioned me for more than two hours in November last about Sir Frederick Gowland Hopkins' presidential address to the Royal Society, and the recent work on vitamins. Fortunately I was familiar with some of the recent literature, but it was evident that he had read much more.

Always Yarrow's mind was singularly clear, and not only could he describe in detail his early work on the Thames, on the Clyde, his experiences during the War, and the latest improvements in ship-building, but also he was continually inventing new devices. The road-rail car was developed in Yarrow's mind long before such a car was built, and he was convinced that it would be an important factor in the development of the railways. He also sketched out a project which, had he been a younger man, he would have developed. It was to facilitate rapid transport across Europe, and particularly across Canada. In the scheme he had in mind, transport was to be by aeroplane during the day and in train sleeping-cars by night. In his ninetieth year he travelled by aeroplane a great deal, and although slightly deaf, he listened whenever possible to the throb of the engines in order to detect any failure on the part of a sparking plug. He declared that he had never known one to fail. The development of the London-Brighton line greatly interested him—possibly because of his stay at Brighton for long periods—and he worked out from data given in the technical press the relative merits of traction systems using steam, the Diesel engine, and electricity, making various hypotheses on the increase in passenger traffic.

Yarrow's very early work in life has been insufficiently described; long before he built the water-tube boiler he studied the motion of hot water in glass tubes, varying the conditions of pressure and temperature and noting the size of bubbles and their effect on the circulation. I believe that no full description of this work was published, but he was so impressed with the readiness of application of the results that he never wavered in his faith in laboratory experiments. His work on the resistance of ships at high speeds in deep and in shallow water, on propellers, and on the balancing of engines, is well known, but little is known of the small-scale experiments subsequent to sea trials.

In simpler matters, too, Yarrow's mind was very active. I remember a long talk we had on the subject of medals awarded by scientific societies. He pointed out that they were invariably tucked away in a drawer or deposited at a bank, and were rarely seen by the recipient and practically never by friends. Yarrow was of the opinion that such medals should be a source of inspiration, and devised a simple kind of mount so that a medal could be

hung on a wall or supported on a mantel. Better still, the medal might be sunk into a nice block of clear glass and used as a paper-weight, so that it could be seen while the recipient was at work.

An illustration of a different kind is associated with the 'Compleat Angler' at Marlow, which he bought, so he said, to show that an engineer could run an inn. He supplied some of the waiters with pedometers, and was astonished to find that on one Sunday a waiter said he had walked twenty miles. With a twinkle in his eye he said: "I took the pedometers away in case they should ask for an increase in wages". To help the waiters and also to lessen the irritation produced when guests desired attention, he caused to be placed on each dining-table a telescopic tube flying a small Union Jack with a notice at the base: "When you want the waiter, raise the flag". I give this illustration to show that Yarrow was ingenious in the smaller matters of life as well as in the larger ones.

Yarrow was rarely deceived by anyone, but he told with great relish how his firm sold the *Caroline* during the Russian-Japanese war to two Irish gentlemen who paid an instalment in advance. Yarrow had previously constructed the high-speed yacht *Tarantula*, which was built on the lines of a torpedo boat, and its speed was thirty knots, which was very high in those days. The *Caroline* was of similar design, but it was only completed to a certain stage so that it might be fitted up either as a torpedo boat or as a fast yacht. She left the Thames hurriedly, had an exciting passage through the Kiel Canal, and was delivered to a Russian admiral at Libau. I understand that representations were made by Japan, and *Punch* had a cartoon depicting Russia with Yarrow's *Caroline* under her arm, while Japan cried out, "I thought you weren't selling any". Yarrow admitted that both he and the *Caroline* were sold handsomely on this occasion, and as he humorously put it—"The *Caroline* got to Russia, but left many 'care lines' on me".

Yarrow's generous gifts to scientific bodies, the London Hospital, Girton College, and the Yarrow Home at Broadstairs, total more than £500,000. However, not all of his scientific friends can be fully aware of the very kind and generous heart he had. By accident I have come into contact with some who have benefited by his kindness, and I do not wonder at the very great affection with which he was held.

F. E. SMITH.

MR. R. W. WILLIAMSON.

WE regret to record the death of Robert Wood Williamson, anthropologist and former treasurer of the Royal Anthropological Institute, which took place on Jan. 12, at the age of seventy-five years. The son of Prof. William Crawford Williamson, F.R.S., he was born in Manchester in 1856. After being educated privately and at Owens College, Manchester, where he took a degree in engineering, he took up law. A successful career as a solicitor was brought to a close voluntarily in 1908, at the early age of fifty-two, in order that he might devote himself to scientific research.