THE OXFORD MEETING OF THE BRITISH ASSOCIATION.

THERE are already signs that the meeting of the British Association, to be held this year at Oxford, will be a success. It is unfortunate, perhaps, that the city of Oxford is this year destitute of municipal buildings, the old buildings having been pulled down, while the new have scarcely their walls raised to the level of the first floor. But this deficiency is amply compensated by the numerous University and College buildings which have been placed at the disposal of the Local Executive Committee. The reception room will be in the entrance hall of the new Examination Schools in High Street, and the rooms for the meetings of Council, of the General Committee, and of Sections E and F will be held in the same building, the large south and east writing schools lending themselves particularly well for the departments of Geography and Economics and Statistics. The meeting rooms of the remaining sections will be distributed among the University Museum and among Colleges which are on the direct road between the Schools and the Museum. Section A (Mathematical and Physical Science) will meet in the Lecture Theatre of the Clarendon Laboratory, and the allied Section G (Mechanical Science) will meet in close contiguity in Keble College Hall. Section B (Chemistry) will meet in the Chemical Theatre, and for larger meetings will have the use of the large Lecture Theatre in the Museum. Section C (Geology) will meet in Hertford College Hall; Section D (Biology) in the Anatomical Theatre. Section H (Anthropology) will be accommodated in Prof. Arthur Thomson's new Hall of Anatomy, and will have the advantage of being in close proximity to the Pitt-Rivers Museum. The new Section I (Physiology) will perhaps be better off than any, as the whole of the new Physiological Laboratories will be at its disposal.

The proceedings will begin on the evening of Wednesday, August 8, when Prof. Burdon Sanderson will resign the presidency, and the new President, the Most Hon. the Marquis of Salisbury, K.G., Chancellor of the University, will deliver the opening address. On the Thursday evening there will be a conversazione in the University Museum. On the Friday evening Mr. W. H. White, C.B., will give an evening lecture in the Sheldonian Theatre, on "Steam Navigation at High Speeds." The Saturday evening lecture to working men will be given by Prof. Sollas. On Monday evening Prof. J. Shields Nicholson will lecture in the Sheldonian Theatre, on "Historical Progress and Ideal Socialism," and the Tuesday evening will be occupied by a conversazione, which will probably be given in the new Examination Schools. Invitations to foreign investigators have been issued by the Local Executive Committee, and nearly eighty have already signified their intention to attend the meeting, amongst them being Prof. Quincke, Prof. Oskar Schlömilch, Prof. Moritz Cantor, Prof. Kohlrausch, Prof. Strasburger, Prince Roland Bonaparte, Prof. Anoutchine, M. Cartailhac, Dr. Mojsisovics von Mojsvar, Prof. Maxime Kovalevskij, Prof. Victor Carus, Prof. E. van Beneden, Prof. Dames, Prof. F. von Sandberger, Prof. F. Schmidt, Prof. Taussig, Prof. Ostwald, Prof. Beilstein, and many other notabilities in every branch of science. Nearly every prominent English man of science has already expressed his intention of being present, and there can be little doubt that the Oxford meeting of 1894 will equal in interest the last Oxford meeting of 1860, which was made celebrated by Prof. Huxley's spirited defence of the then novel doctrine of Darwinism.

The Local Secretaries for the Oxford meeting are Messrs. G. C. Bourne, G. Claridge Druce, and D. H. Nagel, and any communications respecting the meeting should be addressed to them at the University Museum, Oxford.

EXHIBITIONS OF PHYSICAL APPARATUS.

IN the days when *a priori* reasoning reigned supreme, when all observations which were not found in the works of early writers were regarded with suspicion, and all facts had to stand or fall according to their relation to metaphysics, there was no demand for scientific instruments and apparatus. A cause or a principle was then stated like a proposition in mathematics, and the effects which follow upon it were deduced; nowadays the scientific method is to observe the effects, and afterwards formulate a law which embraces them. To carry out this method of experiment and induction, apparatus is needed, and hence the state of physical science at any epoch can be estimated by the character of the instruments at the disposal of investigators. Judged by this criterion, physics and astronomy must have attained a marvellous degree of accuracy. The intricate nature of some physical instruments, and the complicated accessories with which all large astronomical telescopes are now equipped, not only testify to the skill of the instrument-maker, but also represent engines of research whereby new fields are explored. These instruments thus afford tangible evidence of advance, and it is for this reason that their exhibition is to be commended. Such an exhibition of physical instruments was lately held at Paris by the Société Française de Physique, and it is well worthy of imitation on this side of the Channel.

The apparatus of physics falls naturally into two classes—that used for lectures, and that belonging more especially to the laboratory. The apparatus employed in teaching elementary science cannot be too simple and the experiments performed with it should be so clearly shown that the facts they exemplify become evident to the most obtuse student. In many cases this tenet of experimental philosophy is disregarded, the lecturer aiming at producing brilliant effects—stage fireworks, as they have been appropriately called—rather than the illustration of a physical law. In fact, there is a tendency to push lecture-room experimentation too far, to use the lecture-assistant's skill as a make-up for lack of eloquence. The popular mind looks in awe upon the abundance of instruments arranged for this end, but it may be doubted whether, under such circumstances, the points of the discourse are not often obscured.

As to laboratory experiments for students, each should constitute a little investigation in itself. An experiment consists in changing the conditions and arrangements of natural bodies in order to examine their behaviour. The student should, therefore, be given the apparatus required to demonstrate a principle, and should be told what to do with it, but the inference to be drawn from his observations should be left entirely to him. If it is necessary to tell him what the experiment proves, then the object of his work has not been attained. By following this method, and properly grading the experiments, the student not only derives considerable educational benefit in learning to think for himself, but the instinct for research is also stimulated. In many colleges and institutions where the aim is to rush the student through as much experimental work as possible in a short time, the apparatus is all arranged for the student, who merely presses a knob and sees a galvanometer needle wriggle, or something of the kind. There can be no independent thinking in such cases, and, except for examinational purposes, the experiments might just as well be left undone. Most physicists agree with these opinions, and, by arranging an exhibition of apparatus, the Physical Society would help to impress their importance upon teachers. Sets of apparatus suitable for lectures and for practical work in various branches of physics might be arranged for exhibition by a committee, and these, with the instruments of precision, would make an extremely interesting, as well as useful, collection.