

but the author is evidently a keen and thoughtful observer, and he has much to tell us on the reconstruction of the country. We fully agree with him that the real Egyptian of Egypt is not to be found in the towns but in the country villages, and we have been particularly interested in reading how he succeeded in training *fellahin*, or members of the peasant class, to undertake the skilled work of observation required in an experimental garden, including the use of a chemical balance and other laboratory appliances. These later parts of the book are preceded by three chapters on the ancient history of the country. Here the author has no special knowledge, but he has in the main followed sound authorities, and the outline he gives serves as an effective foil to the account of modern developments.

Among the numerous half-tone plates, reproduced from photographs, several make effective illustrations and others are of technical interest. But a few are not of a distinctive character, either in subject or treatment, and, like the not very artistic representation of the Egyptian flag on the cover, scarcely do the author justice. Perhaps we are hypercritical. But first-hand information and experience of Egypt or the East are so rarely coupled in their record with a real sense of style; when we do meet them we are, perhaps, inclined to be ungratefully impatient of accessories which tend to disguise the combination.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

An Application of the Rules of Zoological Nomenclature.

MR. GERRIT S. MILLER, JUN., has published (Smithsonian Misc. Coll., vol. lxxv., No. 12, November 24, 1915) the results of his investigation of a set of casts of the famous Piltdown fossils as compared with a large series of actual anthropoid and human skulls. Modern casts are made with great accuracy, and Mr. Miller is a competent and experienced authority on the skulls and teeth of mammals. He confirms the doubt already stated by many investigators as to whether or no the Piltdown lower jaw belongs to the same individual as the Piltdown skull, and goes further in the discrimination of the anthropoid character which has been obvious to all the investigators. He admits that the skull is human, but decides that the lower jaw is that of an extinct chimpanzee.

Mr. Miller's arguments are impressive, and may turn out to be convincing when they have been examined by persons who have seen the actual specimens. But Mr. Miller, who is also experienced in the application of the rules of nomenclature, has thought it necessary to name and describe a new species of chimpanzee, founding it on a jaw that he has never seen. Thus, if his opinion be sustained, the very famous Piltdown jaw, discovered by Mr. Dawson, made known to science by Mr. Dawson and Dr. A. Smith Woodward, and lodged in the British Museum, will have to be cited as the type of *Pan vetus*, Gerrit S. Miller.

P. CHALMERS MITCHELL.

Zoological Society of London, Regent's Park,
London, N.W., December, 1915.

THE SCIENTIFIC ORGANISATION OF INDUSTRIES.

AN article by M. Jules Garçon on the scientific organisation of industries appears in the *Bulletin d'Encouragement pour l'Industrie nationale* for September-October, p. 383. After describing the proceedings of the deputations to Messrs. Pease and Runciman on behalf of the Royal and Chemical Societies, with representatives from the Society of Chemical Industry, the Society of Public Analysts, and the Institute of Chemistry, as the sequel to memorials presented to the Prime Minister on March 1, which have already been treated of in NATURE (May 13, p. 295), and giving a useful analysis of the various points raised, the sympathetic replies of the Ministers are alluded to. An account follows of the proceedings at the annual meeting of the Society of Chemical Industry at Manchester in July of this year, with reports of the addresses given by the president, Dr. M. O. Forster, Mr. Charles Carpenter, Prof. H. E. Armstrong, and Dr. Beilby. Next follows a summary of the address delivered by Sir W. Ramsay to the British Science Guild at its annual meeting on July 1, and, lastly, the details of the Committee and Advisory Council on Scientific and Industrial Research, appointed under the Board of Education.

M. Garçon sums up these various opinions and resolutions in several pages of "conclusions," which it may be useful here to indicate. The English men of science are unanimous in their view that the technical and scientific knowledge of the nation should be utilised to the greatest possible extent during the war, as well as to guarantee future progress. They demand the formation of a permanent central committee; that scientific investigation shall be encouraged; that the teaching of science in the universities shall be reformed; and that the scientific societies lend their aid to effect these changes. They demand *prompt and decided action*. The committee in connection with the Board of Education has now been appointed; it consists of men of acknowledged ability in science and industry, and is now busying itself with various items on the programme drawn up in accordance with the demands of the scientific societies. It has, besides, a very considerable annual grant to dispose of. It is the closer association of science and industry which is most to be desired, and an effort must be made to arrange university courses so that they will furnish young technologists able to experiment and to assist manufacturers. Centralisation is also imperative, for much has been lost in England for lack of concentrated effort.

M. Garçon notes that while the Société d'Encouragement, under the chairmanship of M. Léon Lindet, has done excellent work in succeeding in its attempt to induce chemical manufacturers in France to collaborate, and while in France there has been formed a "Union des Sociétés industrielles de France," also while in

the United States various engineering societies have collaborated as the "United Engineering Society," little is being done in this direction in Great Britain. The Society of Chemical Industry is attempting to collect a register of manufacturing chemists, but it is an expensive undertaking. It is, however, hoped that something tangible may be published in 1916.

There are obviously two questions, which, however, are closely related. First, how can the scientific and technical ability of the *entente* be utilised to the best effect in prosecuting the war? and, secondly, how can the efforts which Germany will undoubtedly make after the war to secure complete industrial ascendancy best be defeated? M. Painlevé, the French Minister for Education, points out the necessity for the best brains and the best plant in France being utilised to assist the Army and Navy. This war is more and more becoming dependent on engineers and chemists, and to conquer, all talent must be mobilised on a national footing. The excellence of the idea is obvious; the difficulties arise in arranging details. In England, too, it may be said that every man connected with science and industry is eager to do his utmost to help his country, but it is by no means easy to assign to each his task. Progress is, however, being made, although perhaps not so fast as might be desired.

The production of munitions of war goes on apace. Not merely are old and long-established works being driven to their utmost capacity, but large new works are being erected for the manufacture of chemicals required for war purposes. These are being well equipped with modern plant, and will turn out enormous quantities of such materials. But it is to be noted that the apparatus with which they are furnished differs but little from that required in many chemical works; tanks, steam coils, towers, stills, filter-presses, and the like are necessary, and are being provided. Now this raises a serious question. The war will not last for ever, and it would appear to be necessary to make arrangements for the utilisation of such plant and equipment, of labour and superintendence, when there is no longer a demand for thousands of tons of high explosives. The problem is a pressing one, and must not be long postponed. We cannot afford to "wait and see." It would be disastrous if, after the war, all staffs were dismissed, all plant scrapped and sold, and the whole organisation broken up.

The Committee under the Board of Education is a body charged with the furtherance of "industrial research." The object is admirable; but it appears to the writer that it is much more pressing to consider how to utilise these new and extended works in the future than to attempt to develop new and untried industrial processes, unless, indeed, these can be carried on in the munition works after the end of the war. The task is one of great magnitude. First and foremost, it involves coming into touch with every chemical manufacturer in the country and appealing to his patriotism to do his best, in conjunc-

tion with his fellows, to co-operate for the benefit of all. Is this possible? For there exists a feeling of mutual distrust, difficult, if not impossible, to eradicate; and this feeling is not unnatural. Even in well-known processes, improvements are constantly being made which may have the effect of rendering remunerative what would otherwise not pay. Often the "tips" are not patentable; often to patent them would be to give them away to competitors. Little wonder that the successful manufacturer has resolved on a policy of rigorously excluding the public from his works and patenting as few processes as possible. Our patent laws lend themselves to litigation, and litigation means loss of time and annoyance, if not loss of money. For this reason, too, the chemical manufacturer is not willing to co-operate with his fellows. He will tell what he sells; he will not tell what he makes. Yet it might perhaps be possible to induce at least a certain number of manufacturers to draw together for patriotic reasons.

In the uncertainty whether Protection will become the policy of this country, or whether the stocks accumulating in Germany will not be "dumped" in Great Britain at the close of the war, no one feels inclined to risk capital. Propositions for a customs union among the Allies have been hinted at, but are not as yet seriously discussed. Yet without such safeguards, or perhaps an even more drastic policy, German commercial aggression cannot be withstood. It will again be national organisation against lack of organisation. And even though the Hohenzollerns and the Habsburgs may be dethroned, it is too much to expect that the German nation will lose her power of acting as a whole, and bringing all her commercial and manufacturing combinations to bear on the commerce and manufacture of the Allies, with the view of annihilating them. For a time, patriotic societies may refuse to buy German goods; but such goods will be insidiously introduced through neutral countries under faked names, and before long the commercial war will be actively prosecuted. That is what we must look forward to, and it surely demands the most careful planning if we and our friends the Allies are successfully to combat such industrial warfare. The prospect is not pleasing; it is very difficult to face; and if we are to place ourselves in a position to do so, serious political changes are imperative in this country. The practical men *must* obtain control; they *must* be assisted by the highest scientific advice procurable. Moreover, all must co-operate for their country's good and for their own salvation.

It would appear to be the legitimate task of the Committee on Industrial Research to endeavour to make a beginning. If their powers are insufficient, let them be increased. They might add to their number men of affairs and industrial experience likely to be helpful. The most useful form which "research" can take at the present moment is the inquiry how our industries are to meet German attack after the war is over.

WILLIAM RAMSAY.