its official organ. That journal is published by the China Society of Science and Arts, which was planned as a Biological Society, but, as it was found that there was more need for a general society, its scope was extended to include the pure sciences and arts. The journal of this society has issued four numbers containing many valuable and interesting contributions. The articles are partly popular and partly technical. The combination of original memoirs with popular articles has obvious drawbacks which may lead to its subdivision into a general magazine and a technical journal.

The Geological Society of China has begun on more normal lines. Its regular meetings are held at Pekin. It has issued the two first volumes of its Bulletin, which contain many important additions to Chinese geology. The Journal of the Chinese branch of the Royal Asiatic Society is available for the publication of technical articles both on science and arts; the volume for 1922 contained seven biological and two geological memoirs, showing the increasing attention paid by that society to natural science.

Much of the new scientific work of China is naturally centred at Pekin, but Shanghai, in addition to being the headquarters of the Chemical Society and the Faculty of Commerce of the University of Nanking, is projecting a first-class science museum, which is being organised by the Shanghai Museum Association.

It may be felt that the outlook for these schemes is not promising and that the existing political chaos in China may bring them all to naught. But Chinese history encourages confidence as to their future. Its general story has been of the gradual decadence of a ruling dynasty until it has become incompetent and corrupt and has been swept away. Then follows a confused interregnum which may be passed through in a decade or may last for a couple of centuries; it ends when some strong-man establishes a new dynasty. Though the present disorders may last for years, peace will assuredly be restored. In the meantime, the new Chinese Renaissance promises to make good progress in spite of political turmoil and military misgovernment.

The Serum Diagnosis of Syphilis.

THE Wassermann test for syphilis was discovered by the logical pursuit of a coherent series of observations. From the first it has proved of the highest value for the diagnosis of an infection which is often obscure. But it soon turned out that it was simply an empirical trick and not an application of the general principle which it was originally supposed to illustrate. If the typhoid bacillus, typhoid antibody, and fresh blood serum are mixed together, the three will combine in such a way that the substance in (or property of) fresh serum known as "complement" will disappear. If typhoid antibody is not present, the complement remains and its presence or absence can be determined by a test mixture of red blood corpuscles and red blood corpuscle antibody, in which the red cells will be dissolved if complement is also present. Supposedly the same would apply to a mixture of the spirochæte of syphilis, syphilitic antibody, and complement; and just as typhoid antibody, and therefore typhoid infection, can be detected by this Bordet-Gengou reaction, so was it thought that syphilitic antibody could be found in a patient's serum and syphilitic infection thereby inferred. In practice the idea seemed to work excellently, until it was found that an alcoholic extract of, *e.g.*, normal heart muscle would do as well as spirochætes. The reaction is therefore not specific, and as a matter of fact it is given by the blood in a proportion of cases of many protozoal infections. But it is specially constant in syphilis, and, as other protozoal infections are rare in Great Britain, it comes to be a splendid empirical method of diagnosing that disease.

The widespread use of the method in practical medicine has led the curious to come across a further series of phenomena in which the serum of syphilitics is quantitatively different from that of normal people. Thus it more easily becomes opaque on dilution with water or by admixture with the suspension of lipoids made by adding an alcoholic extract of heart muscle to salt solution—facts which have formed the basis of a number of simplified methods of diagnosis, all of which indicate that the proteids in syphilitic serum aggregate into masses more easily than do those of normal serum. It is doubtless in this formation of aggregates or precipitates—visible or invisible to the bare eye—that the serum loses its property of acting as complement. A number of observations on the opacity of these mixtures of serum and lipoids in the presence of various concentrations of electrolytes have recently been described by Holker,[1] and illustrate the complexity of phenomena which have at present no rational explanation. The whole theoretical basis of the original Wassermann test and its almost innumerable progeny badly needs investigation. The problem is beyond the interests of the practical empiricism which has raised it.

Of the practical modifications of the original procedure, that introduced by Sachs and Georgi has proved one of the best. In this a solution of the alcohol-soluble acetone-insoluble lipoids of heart muscle, to which a small amount of cholesterin has been added, is diluted with salt solution. This opaque suspension is then added to the serum under examination: syphilitic sera give a flocculent precipitate more easily (*i.e.* with less serum) than normal. Experience showed that this simplified procedure was almost or quite as useful in diagnosis as the original more elaborate method.

In 1921 Dreyer and Ward made an ingenious attempt to standardise what at first sight seems rather an uncontrollable reaction, and so reduce it to comparable quantitative terms. The Medical Research Council has lately published[2] an exhaustive account of the method, with an elaborate analysis of the results obtained in a long series of cases in comparison with the more classical procedure. The value of the new "sigma" method is fully confirmed. But the account of the procedure should be studied by others who are concerned with colloids rather than medicine; it evidently raises larger problems than the diagnosis of syphilis.

[1] *Journ. Path. Bact.* vol. xxv. pp. 291, 522; *Proc. Roy. Soc., A*, vol. cii. p. 710.

[2] *The Serum Diagnosis of Syphilis: the Wassermann and Sigma Reactions Compared.* Medical Research Council: Special Report Series, No. 78. (London: H.M. Stationery Office, 1923.) 5*s.* 6*d.*