

accomplished, but also in the attitudes of mind of researchers to their work.

The continued use of cultural terms—Clacton, Azilian, and the like—for cultures in Russia and the Crimea is also a matter needing discussion. The tendency in the West is to consider that these cultures have no wide distribution and that elsewhere at the same time other, sometimes allied but not identical, cultures occurred. The Gabrielle de Mortillet system was created for the situation in France; it strains and creaks when it is extended to apply to the whole world. Up to the recent War, the Roumanians took their culture in large part from France; but the resulting culture and the people of Roumania were not French. So many of these problems could be settled if greater contact with our Soviet colleagues was possible, and therefore we are indeed grateful to Mr. Henry Field, who has at least, in part, made liaison.

The volume deals first with the archaeological situation in the Soviet Union, and later with the physical anthropology. It opens with an account of a conference called by the Academy of Sciences and held in Moscow during 1945, and which was attended by Mr. Field as the delegate of the Smithsonian Institution and other learned bodies in America. There follows an account of more than three hundred Stone Age sites recently investigated. Not all these are of world-shaking importance, of course; but many of them were entirely unknown to students outside the Soviet Union heretofore. The anthropological side, too, has not been omitted, and, besides a general account of recent work on the origin of the various inhabitants, there is a more detailed discussion arranged geographically of the different folk who people that vast area of the world's surface.

Certainly it is a volume to possess, and one can only hope that the author will continue to act as a 'liaison officer' until the happy day dawns when more direct contacts become easier. M. C. BURKITT

VIA SULPHONAMIDE

The Sulphonamides and Allied Compounds

By Dr. Elmore H. Northey. (American Chemical Society, Monograph Series, No. 106.) Pp. xxvii+660. (New York: Reinhold Publishing Corporation; London: Chapman and Hall, Ltd., 1948.) 75s. net.

THE chemists, Fritz Mietzsch and Joseph Klarer, and the pharmacologist, Gerhard Domagk, all working in the laboratories of the I.G. Farbenindustrie in Wuppertal-Elberfeld, synthesized and tested the first chemical compound to show specific chemotherapeutic protection in mice infected with lethal doses of hæmolytic streptococci. This historic occasion was probably early in 1931, since the German patent covering it is dated November 7, 1931. About a year later, on December 24, 1932, a patent was applied for to cover prontosil rubrum, a more effective compound, and this very great discovery must have taken place earlier in the same year. The first clinical report appears to be that of Dr. Foerster at the monthly meeting of the Dusseldorf Dermatological Society on May 17, 1933, and records the cure of a staphylococcal septicæmia in a ten-month-old boy by the use of prontosil ('Streptozon'). Late in 1935, Tréfouël, Tréfouël, Nitti and

Bovet, at the Pasteur Institute, discovered that the chemotherapeutic action of prontosil, and of many similar molecules, was due to *p*-amino-benzene-sulphonamide, a metabolic product of prontosil. They went on to say, "The therapeutic activity of such a simple molecule which is itself not a colouring matter, opens the way to a systematic study of chemotherapy comparable to that which has been followed in the case of pentavalent arsenic". Time has clothed this scientific appraisal in the garb of classical understatement.

Domagk must have appreciated the significance of his great discovery, but he could scarcely have realized that he was ushering in a new era of bacterial chemotherapy. In a short span of twenty years the stimulus has produced important reactions in the allied field of protozoal disease and, in a broader sense of chemotherapy, in the allied fields of non-infectious disease.

By 1939 the literature of sulphonamide drugs had become enormous and the nomenclature chaotic, so that a grateful scientific world welcomed the original Northey review on sulphonamide drugs published in *Chemical Reviews*, 27, 85 (1940). The present monograph is the outgrowth of this review, revised and amplified; the new compounds now number 5,400. The system of nomenclature used in the original review and which received world-wide approval is used in the book, and is that developed by the author in collaboration with Austin M. Patterson. The general classification is a sensible compromise with Beilstein's "Handbuch der organischen Chemie".

There are twelve chapters, the first seven of which describe the nomenclature, classification and synthesis of sulphanilamide derivatives, related derivatives and sulphones. Chapter 8 is by Dr. H. J. White, of the bacteriological department of the Stamford Research Laboratories, and deals capably with the 'standard methods' and their pitfalls. There is a sound helpful chapter (10), by Dr. J. T. Litchfield, on the pharmacology, with special emphasis on absorption and distribution and which reflects, almost audibly, the teachings of the master, E. K. Marshall. There is also a comprehensive clinical survey by Dr. B. W. Carey, of the Lederle Laboratories Division. Chapter 11 is devoted to an unusually complete survey of the theories of the mechanism of action of sulphonamide drugs. The author has some sound and pleasing general observations, and he notes "that all theories are at best mere abstractions from reality which are approximately true under special conditions", and "new fundamental discoveries in the field are usually made by men able to think outside of the prevailing theories, or astute enough to recognize phenomena not conforming to the theories".

The formidable task of reducing to orderly dimensions the very heterogeneous collection of sulphanilamide derivatives and related sulphones is extremely well done. Beginning with a clear and logical nomenclature, some thousands of derivatives are listed and classified, the various categories being tabulated in the table of contents and the index. Having mastered the (simple) rules of Chapter 2, the reviewer made several trial excursions and emerged, to his satisfaction, with the compound sought. A random sample (2 per cent) of the 2,668 references quoted found meticulous accuracy.

The book is well printed on good paper, but the tables are indifferently set; it is expensive.

GEORGE BROWNLEE