

metry, and co-ordinate geometry as are requisite for a study of the calculus. Differentiation and integration are taken separately, on ordinary lines. Applications are then made to Fourier series, moments of inertia, pressure, electricity, etc., and the concluding chapters deal mainly with differential equations and their use in physics. There is not any particular note of originality, but the treatment is good, and should enable engineering students to acquire a satisfactory acquaintance with infinitesimal methods.

(4) The aim of this text-book is to bring the subject of trigonometry into as intimate a relation as possible with those problems of modern life which are most likely to interest the ordinary student. The author believes that too much importance is attached to surveying and ship-problems and too little to technical industries. Consequently many of the questions, and a number of excellent diagrams, deal with different forms of machinery and scientific instruments.

(5) This is a German translation of a Russian treatise. It is intended to form one of a series of investigations into the early development of mathematics in Europe. The present volume deals mainly with the evolution, structure, and use of the abacus. The author has made a careful study of the writings of Gerbert, and has attempted to remove some of the many obscurities they contain. Two other volumes are promised, one dealing with the history and origin of our figures, and the other with the history of Euclidean geometry in Latin civilisation.

BY-WAYS OF MEDICINE.

- (1) *The Ileo-Cæcal Valve*. By Dr. A. H. Rutherford. Pp. vi+63. (London: H. K. Lewis, 1914.) Price 6s. net.
- (2) *I.K. Therapy: with Special Reference to Tuberculosis*. By Dr. W. E. M. Armstrong. Pp. x+83. (London: H. K. Lewis, 1914.) Price 5s. net.
- (3) *Clinical Examination of the Blood and its Technique: a Manual for Students and Practitioners*. By Prof. A. Pappenheim. Translated and adapted from the German by R. Donaldson. Pp. viii+87. (Bristol: J. Wright and Sons, Ltd., 1914.) Price 3s. 6d. net.

(1) **T**HE contents of this book constituted a thesis for the M.D. degree submitted to the University of Edinburgh. The term ileo-cæcal valve is applied to the orifice between the small and large intestines and the anatomical structures immediately adjacent and intimately concerned with this orifice. The author shows that divergent views have been expressed regarding the form and structure of this valve, diver-

gences due partly to the method of preparation of the specimens and partly to variations in the valve itself. From an examination of a living subject, and from a series of thirty-two specimens removed soon after death and suitably treated, the author believes that he is able to describe the normal appearance of the valve, the function of which is to regulate the flow of semi-fluid bowel contents through the orifice and to prevent regurgitation. The book is illustrated with coloured diagrams and a number of excellent half-tone plates.

(2) "I.K." therapy has been evolved as the result of many years' labour by Carl Spengler, of Davos. It is chiefly directed against tuberculosis, but is being extended to other bacterial infections. The exact details of the preparation of the remedy have not been published, but the principle employed is the immunisation of a rabbit by means of intra-muscular injections of tubercle virus. The animal is then bled and the *whole* blood (not the serum only) is taken, laked, and high dilutions are prepared, it may be up to one hundred million. Spengler maintains that the red-corpuscles are carriers of the immune substances to a degree far exceeding that of the serum. These immune bodies ("Immunkörper," hence the title "I.K.") are the active therapeutic constituents. They possess partly lytic or solvent action on the tubercle bacillus and partly antitoxic or antidotal action against the tuberculous toxins.

The author describes in detail the above considerations and discusses the treatment of tuberculosis with I.K. serum. As regards the results obtained with it, the statistics are few and incomplete, though those who have employed it claim that cure of pulmonary consumption may be anticipated in all but the most advanced cases. Unfortunately, in estimating the gravity of a case of pulmonary consumption, it is impossible to allow for the extraordinary spontaneous improvement and recovery which sometimes occur in these patients, and more or less selection, in some instances unconscious, is practised by the physician, so that we believe that the only true test of *any* form of treatment lies in treating alternate cases only of a long series—a mode of trial which has yet to be applied to tuberculin and all other forms of treatment.

Dr. Armstrong has given a very useful summary for those who may desire to apply I.K. treatment, and has also included details of some beautiful staining methods for the tubercle bacillus and of the precipitin reaction for the diagnosis of tuberculosis which have likewise been devised by Dr. Carl Spengler.

(3) This little book, while forming a useful guide to the clinical examination of the blood, contains little that cannot be found in several well-known manuals on this subject. The only novelty, in fact, which we notice in it is the particular technique employed by Prof. Pappenheim. In some respects, indeed, it is lacking. Thus we find no mention of a common method of enumerating the leucocytes by an examination of microscopic fields in the preparation employed for a red-cell count, and there is no connected account of the blood-picture of pernicious anæmia and of the leukæmias. The nomenclature of the blood-cells and their variations is also unusual and difficult to follow by those accustomed to British nomenclature. In some respects the book is interesting reading, *e.g.* Prof. Pappenheim's views on the derivation of the leucocytic cells. The book contains two beautiful coloured plates of the blood-cells and numerous figures in the text.

R. T. HEWLETT.

OUR BOOKSHELF.

The Annual of the British School at Athens. No. xix. Session 1912-1913. Pp. viii+314. (London: Macmillan and Co., Ltd., 1914.) Price 25s. net.

THE most valuable contribution to this issue of the annual is the report by Messrs. R. M. Dawkins and M. L. W. Laistner on the famous Kamares Cave in Crete. This has been known for more than twenty years as a prehistoric sanctuary, but its complete investigation was carried out only in 1913 under the auspices of the British School at Athens. The early fame of the cave was due to the discovery in the early 'nineties of a number of vases and a few figurines. The work has now been successfully accomplished under considerable difficulties. The general result is that the votive objects which form so striking a feature of other caves and mountain sanctuaries in Crete—the libation tables of Psychro, the shields and bronzes of the Idæan cave, and the figurines of Petsofá—are conspicuously absent. The question then arises whether the Kamares Cave was really a sanctuary or only a shelter. The writers conclude that its position renders its use as a shelter improbable; the finds themselves, if they do not positively suggest a sanctuary, equally negative the idea of a dwelling, because houses of the Bronze Age in Crete invariably yield obsidian, while not a single flake was found in this cave. The pottery, again, does not suggest domestic uses. On the other hand, the restricted range of the pottery shapes suggests a sanctuary in which votive vessels were deposited. The cave, in short, was probably a sanctuary of the tutelary divinity of the mountain.

Another side of the subject is illustrated by a report in the same issue of the Journal by Dr. J.

Hazzidakis, of an early Minoan sacred cave at Arkalokhori. Here some interesting vases were unearthed with remarkable bronze swords or daggers. Double axes, undoubtedly symbols of the deity worshipped by the Cretans in the prehistoric period, lead to the conclusion that during the whole of the long period of the Bronze Age, the Minoan periods of Sir A. Evans, the Cretans practised one and the same cult, and this is as much as to say that they were, all through, one and the same people.

The Fauna of British India, including Ceylon and Burma. Edited by Dr. A. E. Shipley, assisted by G. A. K. Marshall. Orthoptera (Acridiidae). By W. F. Kirby. Pp. ix+276. (London: Taylor and Francis, 1914.) Price 10s.

THE lamented death of Mr. W. F. Kirby left his memoir on the locusts of British India not quite completed. So far as completion was possible it has been effected by the kind offices of Mr. C. O. Waterhouse, who has compiled many of the diagnostic keys. The memoir, which is an admirable piece of systematic work, deals with no fewer than 329 species of Acridiidae.

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.]

Wet Bulb Temperature and Climatology.

IT is rather disappointing to find, according to your report of the proceedings of the Section of Physiology of the British Association, the discussion upon climate had to be abandoned because no one was prepared to follow up Prof. Osborne's contribution to it. For the points raised by Prof. Osborne, according to what we gather from your short report (p. 322), are of great and vital interest. He emphasises the importance of the readings of the wet-bulb thermometer as indications of what one might call the evaporative quality of the atmosphere as it affects the economy of the human body. Unfortunately the wet-bulb thermometer is untrustworthy for several reasons, and it is well known that physicists treat it with scant respect. Its indications depend in an uncertain way on the physical condition of the air surrounding it, and no one has been able to give a satisfactory method of deducing from its readings the value of the vapour pressure of the atmosphere. Recent experiments of ours with the Kata thermometer prove beyond question that the rate of evaporation from the skin depends directly on the defect of the actual vapour pressure in the surrounding air from the vapour pressure in contact with the skin, and the value of the air vapour pressure can be determined very easily by means of a couple of readings of the dry and wet Kata thermometer.

In order to investigate fully the relation between the climatological condition obtaining in different parts of the United Kingdom and the cooling and evaporative power of the air as measured by the Kata thermometer, we would welcome the help of