

of thin solid films are next treated, including Quincke's experiments on the range of molecular action. Chapter ix. is devoted to the behaviour of homogeneous mixtures, both liquid and solid, and chapter x. to heterogeneous mixtures, such as alloys and mixtures of salts. The concluding chapter concerns colloidal solutions, their preparation, structure, &c.

The book, as a whole, is very good. It contains a large fund of information, clearly put and in logical order. It is therefore both readable and instructive.

Aids to Microscopic Diagnosis (Bacterial and Parasitic Diseases). By Capt. E. Blake Knox. Pp. viii+156. (London: Baillière, Tindall and Cox, 1909.) Price 2s. 6d. net.

THIS little book is a *résumé* of clinical methods as applied in the diagnosis of bacterial and parasitic infections of man, and contains a large amount of useful matter in a small space. It is not meant to take the place of the ordinary text-books on these subjects, but to be used for revision purposes, and will be found handy by travellers who are unable to burden themselves with many books. Protozoal organisms, such as malaria, trypanosomes, and spirochætes, filaria, pathogenic bacteria, and the diseases they cause, pathological secretions, the opsonic index, and vaccine therapy are all dealt with, together with the methods required to demonstrate and isolate the causative organisms.

We have noticed a few slips and omissions, e.g. the *Streptococcus pyogenes* is spoken of as the *S. pyogenes aureus*; no mention is made of the fact that the *Staphylococcus pyogenes* group liquefies gelatin, while the *Staph. cereus* group does not; it is questionable if the tubercle bacillus can ever be detected in the blood; the term "subtertian," now commonly applied to the malignant form of malaria, is not mentioned; toxin and not dead culture is used for the preparation of diphtheria antitoxin; prophylactic vaccination in cholera is given under the heading "serum therapy," &c. Within the limitations stated by the author, we think a useful purpose will be served by this little book.

R. T. HEWLETT.

Lift-Luck on Southern Roads. By Tickner Edwardes. Pp. xv+301. (London: Methuen and Co., 1910.) Price 6s.

HERE is a pleasantly written description of a journey, of some two hundred miles, through five southern English counties, on an unusual plan. Mr. Edwardes says, "My plan consisted in waiting by the roadside or strolling gently onward, until something on wheels, it mattered not what, overtook me . . . by dint of laying under use the whole gamut of country perambulation, at length, after many days of travel, I found myself at my journey's end." Having only a camera and a pack, the author was able to go into every byway he fancied and investigate any subject which presented itself. His account of his wanderings and his illustrations will delight all lovers of the country.

Praenuciae Bahamensis. II., Contributions to a Flora of the Bahamian Archipelago. By C. F. Millspaugh. (Chicago: Field Museum of Natural History, 1909.)

THIS is the second fascicle of a contribution to a flora of the Bahamian Archipelago, issued by the Field Museum of Natural History. It contains observations on old species, the establishment of the new genus *Euphorbioidendron*, and the description of eleven novelties distributed among the genera *Dondia*, *Portulaca*, *Chamæsyce*, *Croton*, *Centaurium*, *Heliotropium*, *Varronia*, *Catesbæa*, and *Callicarpa*, collected in fifteen different islands of the group.

LETTERS TO THE EDITOR.

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Halley's Comet and Magnetic and Electrical Phenomena.

HALLEY'S comet has been a source of interest to magneticians as well as to astronomers. The question was: Would the proximity of the comet's tail occasion a magnetic storm or would it not? If the tail consists of electrified particles, and if it were to envelop the earth, then a magnetic storm appeared a reasonable concomitant. It was thus with some expectancy that I consulted the magnetic curves recorded at Kew on May 19. The conclusion that will be drawn from these and similar records will, I suspect, depend somewhat on the temperament of the inquirer. A large magnetic storm unquestionably there was not, but there was disturbance.

The position may perhaps be best explained by reference to the international lists that are published as to the magnetic character of individual days. Days are classed as "0," "1," or "2," according as they are magnetically quiet, moderately disturbed, or highly disturbed. Taking the three years 1906, 1907, and 1908, the Greenwich and Kew lists, while differing in details, agreed in putting 39 per cent. of all the days in class "0," 58½ per cent. in class "1," and 2½ per cent. in class "2." No day practically is absolutely quiet, and a good many days are so near the line of demarcation of classes "0" and "1" that it is a good deal a matter of chance to which they are assigned. Again, there are an appreciable number of days so near the common margin of classes "1" and "2" that they may well be assigned to either. Thus while the Kew and Greenwich lists for the three years mentioned each assigned twenty-nine days to class "2," only nineteen days were common to both lists. If, then, a day is chosen by haphazard, it is most likely to be of disturbance class "1," while the odds against its being of class "2" are not so great that if it should prove to be of that class one is compelled to accept the coincidence as necessarily more than accidental.

In the present instance what was *a priori* the most probable event has happened; May 19 was undoubtedly of disturbance class "1." So far, indeed, as the declination curve was concerned, the choice between classes "0" and "1" was not very clear, but the horizontal force curve—while very far from being *highly* disturbed—was unquestionably up to the average class "1" level. The most rapid horizontal force changes occurred between 10 a.m. and noon, the range of the largest oscillation being about 50γ (0.0005 C.G.S.). There were also changes of nearly the same size between 0 and 2 a.m., and again between 3 and 5 p.m. The largest irregular declination movements occurred between 0 and 3 a.m., the range being about 9'. Later in the day there were some oscillatory declination movements synchronous with those shown in the horizontal force curve, but their amplitude was only 2' or 3'.

As a rule, days of class "0" and days of class "1" disturbance occur in groups. The present occasion follows the general rule. From May 13 to 20 no day, except possibly May 16, was of class "0," May 13 being the most disturbed. There were horizontal force changes on the afternoons of May 17 and 18 similar in size to those on May 19. The afternoon of May 20 was also disturbed, though less so. The disturbances on May 18 and 19 were similar in magnitude to those which in 1902-3 accompanied what Prof. Birkeland termed "polar elementary" magnetic storms in the Arctic, and if Prof. Birkeland expected no more than a "polar elementary" storm from the passage of Halley's comet, then I have little doubt that the special observations he has been making in the Arctic will have supplied him with what he was looking for.

As it was conceivable that the intrusion of a comet's tail into the earth's atmosphere might exert a visible effect on the electric potential, I have also examined the Kew electrograms. The electrograms from May 19 to May 20