

OUR BOOK SHELF.

Leitfaden für das mikroskopisch-zoologische Praktikum. By Prof. W. Stempell. Pp. iv+84. (Jena: Gustav Fischer, 1911.) Price 2.80 marks.

THE medical practice of teaching histology in a separate section of the course is, we regret to see from the author's preface, becoming adopted in biological teaching; and to this circumstance Prof. Stempell refers for the origin of his book, since he has adapted its contents to meet the requirements of beginners who wish to traverse rapidly a course in comparative microscopy apart from the dissections, museum work, and naked-eye observations with which microscopic work has been hitherto so usefully associated.

At first all is smooth sailing. A lucid introduction on apparatus paves the way to five lessons on protozoa. The methods of obtaining, examining, and preparing the material are admirably explained. The paragraphs are numbered, so that references to procedure can be made at once, and the most instructive and accessible members are dealt with before those which present greater difficulties. A few pages later, however, we find Anthozoa, Ctenophora, Turbellaria, and Trematodes dealt with in a single section, which we must suppose represents three to four hours' work. On the other hand, far more attention is given to the Nematoda than is usual in an elementary course. The section devoted to vertebrate histology is very incomplete.

The illustrations have a special value, since they are in every case photographic reproductions of actual preparations, but as no attempt is made to explain what they show such figures cannot be said to be useful to the student. The chief use of the book lies in the methods which it suggests for the collection and preservation of material. In this respect it will be of considerable service, but as an attempt to present a working course in comparative histology, we should be sorry to see Prof. Stempell's recommendations carried out without considerable modification.

F. W. G.

Early Essays on Social Philosophy. Translated from the French of Auguste Comte by H. D. Hutton. A new edition with additional notes, and with an introduction by Frederic Harrison. Pp. 352. (London: George Routledge and Sons, Ltd.; New York: E. P. Dutton and Co., n.d.) Price 1s. net.

THESE six essays, written by Comte between the ages of nineteen and twenty-one, appeared in vol. iv. of the "Positive Polity," published in 1877. Their special interest is that they prove the unity of their author's life-work—the coherency and consistency of his scientific philosophy and his social polity—as against the view of Littré, that the two are disparate, the later work a backsliding from the principles of the earlier.

The third essay is the longest and the most important. It contains in exact and decisive form the famous Law of the Three States, which "all subsequent thinkers have regarded as Comte's triumphant discovery," and is the basis and the justification of Positivism. From the nature of man's intellect each branch of knowledge in its development is necessarily obliged to pass through three stages—the theological, the metaphysical, and the scientific or positive.

The fourth and fifth essays give a *résumé* of the entire system of the "Positive Polity" as meaning a social and religious reorganisation of society based upon a scientific study of human nature.

Mr. Frederic Harrison supplies an excellent little introduction to this new edition.

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Technique de Psychologie Expérimentelle de Toulouse, Vachide et Piéron. By Ed. Toulouse and H. Piéron. Second edition, tome i., pp. xii+303; tome ii., pp. xvi+288. (Paris: Octave Dion et Fils, 1911.) Price 10 francs the two volumes.

THIS edition, now expanded to double the former size and comprised in two volumes, is virtually a new book. Far more space is devoted to the description of apparatus than formerly. Pieces of apparatus are illustrated, many of which are quite unknown in the psychological laboratories of this country. Not only for this reason, however, is the work likely to be of little value to elementary students of the subject on this side of the Channel. The authors err in laying no stress whatever on an acquaintance with the psycho-physical methods, and on the importance of obtaining introspective data in psychological experiment. It appears to be their object merely to "describe apparatus," much as the authors of a book on experimental physics would do, leaving on one side methods of procedure as if they could be picked up haphazard in the laboratory, and neglecting the introspective data obtainable from the subject of the experiment as if they did not exist! For the instructor or the advanced student, however, the work is of considerable interest. The apparatus, unfamiliar in this country, is excellently described; and there are several novel experiments which appear to have promising value.

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.]

Rainless Thunderstorms.

FROM the letter signed "E. G." in your issue of August 31, it would appear that the Meteorological Office has not abandoned the ion condensation theory of the origin of atmospheric electricity. Now, there are many difficulties in accepting that theory. For instance, before condensation can take place on ions, there must first be dustless air; otherwise the necessary supersaturation cannot take place; and one naturally asks, Has anyone ever found dustless air in our atmosphere? So far as records go of air up to 10,000 feet, this has not yet been found, and it does not seem likely that it ever will be found, as the hot air carrying up the aqueous vapour to form clouds always carries up with it plenty of dust to act, if one may use the simile, as the return ticket to bring the water back to the surface of the earth. As much of this dust is very fine, only falling a few centimetres in a day at low level, it is likely to go wherever the moist air goes—in even the more rarefied regions of the upper clouds. Further, there is the constant supply of fine dust from the upper regions due to the disintegration of meteors, so that the air at cloud levels is likely always to have plenty of dust and condensation on ions seems impossible.

Another difficulty of importance is, Has anyone ever shown that it is possible for a cloud to form on ions under the conditions in which condensation takes place in the atmosphere? It is true that clouds can be formed on ions under experimental conditions; but in these the expansion must be made with explosive quickness, because if the expansion is made slowly only a few ions become centres of condensation, and these rapidly grow to the size of rain-drops in the highly supersaturated air; and these drops in falling relieve the supersaturation of the air some distance round them all along their path, so preventing other ions becoming centres of condensation, and only rain, not cloud, is produced. It would appear that these and other difficulties are worth considering before accepting the ion condensation theory of the electrification of clouds.

With regard to rainless thunderstorms, though no rain falls, is that a proof that no rain has been formed? May not rain have fallen from the clouds, but evaporated before reaching the earth? One sometimes sees after dry weather clouds passing overhead from which rain seems to be falling, yet not a drop reaches the earth. If the thunder clouds be high and the lower air very dry, such as we have lately experienced, we can easily see that raindrops will undergo evaporation while falling and may be dried up before reaching the earth; and as the horizontal direction of the movement of the thunder clouds is generally different from that of the lower air, the falling rain may not get a chance of saturating the lower air, even though the storm may continue some time.

For the benefit of those who may make a study of thunderstorms, it may be of interest to record, as illustrating the influence of the geographical situation of a place on the formation of thunderstorms, that the district round Falkirk has a strange exemption from such storms. So far as I can remember, there has only been one good thunderstorm within my memory, and that goes back a long way, and on that occasion the storm covered a great part of the country. Once or twice in a year a few distant peals may be heard; and once this year we had a storm which lasted half an hour, with about six peals and some lightning, but that storm was an exception. With the one exception above mentioned, there are no great storms in that district such as are experienced in most parts of the country. It should be mentioned that Falkirk lies in the shallow valley connecting the Firths of Forth and Clyde, through which it is proposed to cut the low-level canal, and that there are no high hills near.

JOHN AITKEN.

Loch Awe Hotel, Loch Awe, Argyllshire,
September 5.

A Pseudo-Aurora.

THE explanation which Sir Lauder Brunton calls for in No. 2183 of NATURE seems to be very simple indeed. On the evening of August 21, which he mentions, thunderstorms of extreme violence came over the region of Lugano and its environs. That region is due south-east of Beatenberg, as is also the Mönch. The flashes seen were most certainly those of lightning, and the auroral appearance is very easily explained. Anybody may, in a mountainous country, whenever there is a slight haziness in the atmosphere, remark the shadows thrown on the mist by a light—sun or moon—when still behind a mountain top, i.e. rather low down in the sky. Such was the case with the storm over Italian Switzerland, and the intense lightning on August 21 was noticed as far away as the Canton de Vaud. The flashes, lighting up the sky through the gaps between the mountains, with the corresponding dark rays of the shadows, following in uninterrupted succession, may well have given an impression of seeing auroral rays.

J. S. GREY.

Gryon-sur-Bex, Canton de Vaud, September 4.

The Destruction of Kingfishers near London.

I HAVE just received a letter from a man who has been very busy amongst the kingfishers that visit his grounds within ten miles of the Bank of England. I enclose the original letter, and now quote therefrom:—"I have caught sixteen quite lately [apparently since the middle of August]. Six went to — alive; the others I have skinned. Would you make me an offer for nine?" Since receiving this letter I have been given three carcasses, and understand that these birds were supplied alive to a dealer by my correspondent; this brings the total up to nineteen birds, at least, removed from the bird-population of the London district by one man. A disagreeable fact is that all appear to have been killed not illegally.

The weapon employed was, of course, the deadly "kingfisher net"; and my chief reason in writing this note is to suggest that steps might well be taken to prohibit both the use and the possession of this instrument. It is practically useless for everything except the capture of kingfishers; and so simple is it to buy, or make, or use, and so secret and so certain in its action, that by its means a man destitute of the elements of woodcraft could,

and frequently does, utterly clear a stream of its chief feathered ornaments. I do not know of any fowling engine more effective against its proper quarry than the kingfisher net, nor can I think of one that needs less actual supervision. This latter point explains why it is so often in the hands of the unprivileged collector and the poacher, and I have heard of it being used while its owner and operator was actually under the constant eye of a keeper—of course, one unaware of the intentions of his suspect.

I cannot think that I exaggerate if I say that the kingfisher is the most defenceless of British birds, for no bird is easier to kill. This is with the net; without the aid of a net an organised kingfisher hunt would be unremunerative, if not quite impossible, for many destructive men do not dare to use a gun. Freed from the danger of the net, the kingfisher would be in a peculiarly secure position, and would certainly increase until perhaps common enough to be familiar by sight to all who have the desire to see one alive. Its food consists of small fishes and other aquatic animals, and the pisciculturist is the only person who would suffer from the increase of the bird. No good can come of attempting to ignore the fact that in and about fish hatcheries the kingfisher is an intolerable nuisance, and its destruction becomes at times an economic necessity, for it is not always possible to protect the fish by wire netting. But the prohibition of the net need not prevent the killing of the birds, for the keeper could easily use a gun. The kingfisher provides a simple target, although, fortunately, its habits protect it largely from the casual or wandering gunner. Without loading this letter (which is no more than a hint or a suggestion) with other details, I must end by saying that I have often considered the matter in all its aspects, and I believe that the total prohibition of the kingfisher net would lead at once to an increase in numbers of this ornamental bird, and that this prohibition would entail no hardship on the pisciculturist, who is the only person likely to be affected by the increase of the kingfisher. Perhaps something could be done in this matter by those who have the leisure to occupy themselves with the laudable work of active bird protection.

Stepney Bowditch Museums.

FREDK. J. STUBBS.

A Bright Meteor.

WALKING northwards on Saturday evening, September 2, I was looking towards the constellation of Cassiopeia when a bright meteor appeared at a point a few degrees west of η Perseus, and moved slowly westwards, gradually increasing in brightness until its disappearance at a point near α Canes venatici.

Its maximum brilliancy was about four times that of Jupiter, and its colour almost pure white.

The time occupied in its transit was between six and seven seconds, and a bright golden trail persisted for about two seconds more.

The time of the phenomenon was 20h. 27m. (G.M.T.).

WILFRED C. PARKINSON.

The Observatory, Eskdalemuir, Langholm,
Dumfriesshire, September 4.

Non-Euclidean Geometry.

I OWE sincere apologies for carelessness in the latter portion of my letter in last week's issue of NATURE.

In hyperbolic space, the area of a circle of very large radius R appears as

$$2\pi K^2 \left(\cosh \frac{r}{K} - 1 \right),$$

i.e. practically

$$\pi K^2 e^{\frac{r}{K}},$$

which is an *exponential* infinitude.

On the other hand, the area of a regular N -gon inscribed therein appears as something less than

$$\pi K^2 N,$$

which is a *linear* infinitude.

Is not hyperbolic infinity paradoxical?

W. B. FRANKLAND.