

surface into the atmosphere for a distance of only ten metres would give for the first metre a voltage of 100, for the second 200, for the third 300, and so on, each voltage tending independently to send a current to the lower end of the conductor. So that a total voltage of 5500 would operate to send a current through the end of a conductor ten metres in height. By the same rule, a voltage mounting into the billions would operate to produce a current in a conductor reaching up to the top of a mountain two or three miles high. Yet there is no corresponding current, if indeed any at all. However poor the air may be as a conductor in transmitting the voltage, it would seem that winds would keep it stirred so as to have fresh portions of it continually in contact with the wire, and so cause a continuous current along it.

I know that others besides the writer would be grateful for some explanation of this apparent paradox.

EVAN M'LENNAN.

Corvallis, Oregon, U.S.A., January 14.

**The Upper Trade and Antitrade Winds.**

THE table published by Dr. van Bemmelen in NATURE of October 31, 1912 (p. 250), on an atmospheric sounding over Batavia up to a height of 30,800 metres, compared with Dr. A. Wegener's diagram of gases constituting the atmosphere, reveals a striking connection of the succession of the principal wind-drifts with the principal boundary-planes of the atmosphere.

(1) The surface of the pure nitrogen and oxygen atmosphere, almost free from hydrogen, is situated at a height of nearly 23 km.

(2) The surface of the troposphere is, between the tropics, situated at a height of nearly 17 km.

(3) The third principal surface is situated nearly at 0 km.

The table of the sounding of September 12, 1912, shows over each of these heights a succession of winds having a distinct trade and antitrade character.

Over surface (1), about 24 km., the direction from  $S_3E$ , above 25 km., the Krakatoa winds from  $E_{21}E$  to  $E_{81}N$ . Over surface (2), about 18 km., the upper trade from  $E_8S$  to  $E_{12}S$ , above 19 km., the high westerly winds from  $W_{17}S$  to  $W_{30}N$ . Over surface (3) the common trade from  $S$  to  $E_4N$ , above 4 km., the antitrade from  $E_{20}$  to  $E_{54}N$ .

The formal agreement is more perfect between the wind-directions over (1) and (3); but in any case, the directions over (2) confirm the German proverb: "Die Ausnahme bestätigt die Regel." For the directions from  $E_8S$  to  $E S$  (average  $E_{22}S$ ) are clearer trade-directions, and from  $W_{17}S$  to  $W_{30}N$  (average  $W_{11}N$ ) are clearer antitrade-directions than the directions over surface (1) and surface (3).

This being so, it seems to be useful to compare the averages of these atmospheric layers in a table:—

| Heights, km. | Averages                  |                |                   | Wind-drifts of atmosphere |
|--------------|---------------------------|----------------|-------------------|---------------------------|
|              | Of simple wind-directions | Of wind-forces | Of air-transports |                           |
| { 25-30·5    | ... $E_{18}N$             | ... 20         | ... $E_8N$        | ... Krakatoa winds        |
| { 24         | ... $E_{91}S$             | ... 8          | ... $E_{81}S$     | ... High trade-winds      |
| { 19-23      | ... $W_1N$                | ... 12         | ... $W_4N$        | ... High westerly winds   |
| { 17·5-18    | ... $E_{28}S$             | ... 4          | ... $E_{46}S$     | ... Upper trade-winds     |
| { 4-17       | ... $E_{24}N$             | ... 12         | ... $E_{28}N$     | ... Antitrade-winds       |
| { 0-3        | ... $E_{28}S$             | ... 4          | ... $E_{34}S$     | ... Trade-winds           |

There is a striking agreement of layers (1) and (2) as regards the averages of wind-forces, and a better agreement regarding the real air-transports (averages of directions x forces) than the simple wind-directions.

Here I should like to correct an erratum in the

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letter of Dr. van Bemmelen, vol. xc., p. 250. The antitrade is in the dry season situated *lower* instead of *higher* (compare vol. lxxxvii., p. 415).

WILHELM KREBS.

Holsteinische Wetter- und Sonnenwarte, Schnelsen, January 9.

**Nomenclature at the Zoological Congress.**

CERTAIN proposals regarding zoological nomenclature, circulated by Dr. Franz Poche, of Vienna, and supported by many zoologists, may be worth discussing in the columns of NATURE. An appeal has been made to zoologists in general, because it has proved difficult to get matters submitted to the Zoological Congress through the Commission on Nomenclature owing to the rule that permitted a single member of the commission to block progress in this direction if he so desired. It is therefore proposed that propositions for the amendment of the existing rules must be submitted to the congress if they have been approved by a majority of the commission. There can be little doubt that this plan will receive the support of the congress, and in the absence of anything better, I have willingly voted for it. It must be acknowledged, however, that the vote of the congress, in open session, may not always represent the best considered opinions. I was present when the proposals of the Commission on Nomenclature were submitted to the Zoological Congress at Boston, and it seemed evident that the time and place were ill-suited for the careful consideration of the subject. The commission had, indeed, held a special session during the congress, to which all zoologists were invited, but the attendance was sparse and not very representative.

At the coming congress at Monaco, owing to the change of date, it is probable that few Americans will be present, and probably many others, who are teachers, will be unable to leave their classes in the midst of the spring term. The plenum vote is therefore likely to be even less representative than usual; but, on the other hand, the active discussion of the last few years will undoubtedly stimulate more intelligent and widespread interest than was manifested at Boston. Is it not possible to adopt an entirely different and more representative plan, which will give all the results desired by Dr. Poche and his supporters? Why not circulate in advance the arguments for and against proposed amendments, prepared by prominent representatives of the two sides, and then reach a decision by votes received through the mails? Each country could be assigned a certain number of voters, according to its zoological strength; or it would perhaps be simpler to permit all those to vote whose works had been cited in as many as five different issues of *The Zoological Record*. In this way we should obtain a very accurate representation of zoological opinion throughout the world, every zoologist of any long standing having a vote, and all having plenty of time carefully to consider the questions involved. In the long run, the majority of working zoologists will have their way, and it will be a great saving of time and annoyance to permit them to do so as soon as possible. The same method could be adopted by the Botanical Congress, where it is perhaps even more needed, owing to the less settled state of botanical nomenclature.

A second of Dr. Poche's proposals relates to generic names published by authors who do not apply "the principles of binary nomenclature." Some of the decisions of the commission on this question have seemed to many of us contrary to the true meaning