

hotter, drier, and healthier than that of Zanzibar. Here he did not attempt to strike inland, the weather and the hostility of the native tribes being unfavourable, but returned along the coast southwards to Pangani, and thence inland to Fuga, the capital "city" of Usambara, in the Highlands of Eastern Africa. In order to gain a complete knowledge of the Zanzibar coast, he also paid a visit to the island and port of Kilwa, situated beneath the ninth degree of south latitude. Here are the remains of an ancient town of considerable size, with respect to which many legends are current among the natives; but the gradual sinking of the coast has rendered the ancient site uninhabitable. Although at the present time a miserable and fœtid collection of squalid huts, Kilwa was found in 1500 by the Portuguese a town of great prosperity, the capital of Southern Zanzibar, and ruling the coast as far as Mozambique and Sofala; but the curses of European wars and the slave-trade have desolated the once thriving country. Captain Burton does not think very highly of the so-called "free labour" system, which he terms "the latest and most civilised form of slavery in East and West Africa."

The most important expedition made by Captain Burton was, however, that undertaken between 1857 and 1859 to Kazeih in the Ukimbu district, upwards of 500 miles from the coast, and about 2° south of the southern shore of the great Victoria N'yanza, in company with Captain Speke. But as this journey has already been illustrated in his own "Lake Regions of Central Africa," and the country has been further described by Colonel Grant and Captain Speke, he does not again enter into details respecting it; but thus sums up what he considers its geographical results:—"That the Boringo is a lake distinct from the 'Victoria N'yanza' with a northern effluent the Nyarus, and therefore it is fresh water; that the N'yanza, Ukara, Ukerewe, Garawa, or Bahari y a Pili, is a long narrow formation, perhaps thirty miles broad, and 240 miles in circumference, and possibly drained to the Nile by a navigable channel; that the N'yanza is a water, possibly a swamp, but evidently distinct from the two mentioned above, flooding the lands to the south, showing no signs of depth, and swelling during the low season of the Nile, and *vice versa*; and that the northern and north-western portions of the so-called 'Victoria N'yanza' must be divided into three independent broads or lakes, one of them marshy, reed-margined, and probably shallow, in order to account for the three effluents within a little more than sixty miles."

The botanical results of this journey are about to be illustrated by Colonel Grant, in a magnificent volume, to be published by the Linnean Society, which it is understood will be illustrated by 600 plates, the cost of which will be defrayed entirely by the gallant author.

One chapter is devoted to a sketch of the labours of Captain Burton's old comrade, Captain Speke. Though tribute is here paid to his many excellent qualities, we regret to be again introduced to the details of the estrangement which grew up between the explorers, culminating at the meeting of the British Association at Bath, when the two companions in arms met as strangers, advocates of two rival "Nile-theories," as to the origin of the Father of rivers.

In the Appendices, Captain Burton gives some useful

details of the meteorology, commerce, &c., of Zanzibar. A well-executed map helps to illustrate the author's journeys, without a constant reference to which the narrative is by no means clear; but we cannot commend the style in which the woodcuts interspersed here and there are executed.

OUR BOOK SHELF

Deschanel's Natural Philosophy. By Prof. Everett. Part III., Electricity and Magnetism. (London and Edinburgh: Blackie and Son.)

IN the Preface by the translator of the present volume, it is said, with much truth, that "the accurate method of treating electrical subjects, which has been established in this country by Sir W. Thomson and his coadjutors, has not yet been adopted in France; and some of Faraday's electromagnetic work appears still to be very imperfectly appreciated by French writers." Accordingly we find that the translator has added a considerable amount of matter, and more especially two important chapters, one on the electrical potential and lines of electric force, and the other on electrometers, together with an appendix on electrical and magnetic units. Dr. Everett has thus considerably improved a book, which, in its original form, was already a good one. The ordinary branches of the subject are unfolded, the plates are good, and the explanations are full and clear. The portion devoted to magnetism is in this, as apparently in all such general treatises on natural philosophy, considerably the most defective part, and especially in the sections which relate to terrestrial magnetism. The whole of that question is most insufficiently dealt with. The treatment of the secular changes in the magnetic elements is confined to twelve lines, where it is said that "declination and dip vary greatly, not only from place to place, but from time to time;" but from which we should expect that the unlearned reader would be led into the error that intensity is uniform. Then, again, the vast subject of changes in the elements, such as are not secular, is confined to one short paragraph, headed "Magnetic Storms"! The intrinsic importance of the subject of terrestrial magnetism, and the great and increasing interest attaching to it, no less than the extreme beauty of many of its investigations and results, entitle it to a much larger notice than the very imperfect one in this volume. The chapter on the Telegraph contains useful matter, and especially a description of an autographic telegraph, an instrument which, while interesting and ingenious, has not often found its way into such treatises. We miss such points as how to find the locality of a fault in a telegraph wire, which we might the more expect to see treated of when we consider the full explanation which is given of Ohm's laws, and when we see such elaborate details as to some telegraphic instruments as are entered into in the chapter in question. The chapters on the heating effects of currents, and on electrolysis, are clear. The question of electromotive force, and of the means of determining it, might have been entered into more fully; and, generally, from the character of the chapter on the potential, we might have expected to see a little more introduced concerning points which may be elucidated by the application of the principle of the conservation of energy.

JAMES STUART

Medizinische Jahrbücher, herausgegeben von der k. k. Gesellschaft der Ärzte, redigirt von S. Stricker. Jahrgang 1871. Heft iv. Mit 4 Holzschnitten. (Wien: 1871.)

THIS part, which concludes the first volume of Stricker's Jahrbuch, contains: (1) Researches on the Inorganic Constituents of the Blood, by Adolph Jarisch. Jarisch gives the details of an improved method by which blood can be

collected from the vessels of a dog without the loss of any of the water by evaporation, whilst at the same time, being frozen, it loses its disposition to coagulate, and when subsequently thawed can be readily manipulated. The mean of four analyses gave the following results:—

Phosphoric acid anhydride	0'1103
Sulphuric acid anhydride	0'0358
Chlorine	0'2805
Potash	0'0342
Soda	0'3748
Lime	0'0112
Magnesia	0'0058
Oxide of iron	0'0948
Total ash found	0'8922
Calculated	0'8640

In Verdeil's treatise, the amount of ashes of fresh blood is stated to be on the average 6'45 per cent. Jarisch points out that this must be an error of the press, his own results giving only 0'864 per cent., a difference that is too great to be regarded as an error of analysis. 2. An essay on the Centres of Splanchnic Nerves, by Dr. Soboroff. In this paper Dr. Soboroff shows from the results of experiments performed on frogs that the nerves supplying the vessels of the web of the foot proceed from the spinal cord, and run into the sciatic nerve. 3. On the presence of Fungi in the Blood of Healthy Men, by Adolph Lorstorfer. Lorstorfer drew blood from the fingers of eleven people who considered themselves in perfect health with every precaution to avoid contamination with dirt, and examined the specimens daily with a Hartnack microscope, ocular 3, objective 10. During the first two days he observed nothing remarkable, except in some cases a few scattered groups of small granules. On the third day similar groups were always found, though still scattered. The granules were of equal size, considerably larger than those of the colourless blood corpuscles, but without any definite arrangement. On the fourth day they had increased in size, and were arranged in groups of four, so as to resemble the well-known *Sarcina ventriculi*. On the fifth day the granules had slightly increased in number and size, but after this date no change was observable up to the tenth day, when the preparations became unserviceable. Lorstorfer thinks his experiments render it probable that the germs of *Sarcina ventriculi* exist in the blood as a natural condition. There are three other papers, but they are all of a purely professional nature. One being by Hofmohl on Resection of the Upper and Lower Jaw: one by Bresslauer on Typhus: and one by Popoff on Pneumonia.

H. P.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

Development of Barometric Depressions

I HAVE only just had my attention called to the critique on "The Laws of the Winds prevailing in Western Europe," in NATURE of Jan. 11, which I have seen to-day for the first time. Though it is now rather late to do so, I may perhaps be permitted to point out some unintentional misrepresentations of my views into which the writer appears to me to have fallen.

He considers it improbable in the extreme that the course of baric depressions should be regulated "by one law" in intra-tropical, and by "a totally distinct law" in extra-tropical regions of the globe. I pointed out (pp. 40, 41) that in temperate latitudes the general distribution of atmospheric pressure commonly tends to transfer local depressions in an eastward direction; while the influence of precipitation resulting from the mean distribution of solar heat propagates them in the same direction. Since the reversal of pressure-distribution which accompanies polar periods only retards the eastward progression, I drew the

conclusion that, in temperate latitudes, the most important of the two factors of the progression is the influence of precipitation, and accordingly I devoted the first part of my work to this, with the promise (which I hope shortly to redeem) that the motive effect of the general pressure-distribution shall be described in Part II. All this your reviewer ignores. Had I been engaged in a discussion of the tropical cyclones, I should have proceeded in an inverse order; since the most important factor of their westward progression appears to be the mechanical influence of the distribution of surrounding pressures. It is, however, important to observe that as in temperate, so in tropical latitudes, these two influences are commonly coincident in direction. In the West Indies, e.g.—at those periods when cyclones prevail—mean temperatures are lower on the south, or left, than on the north, or right, of their course; and a similar remark applies, *mutatis mutandis*, to the typhoons of the Indian and China seas.

Briefly, my position is this. The influence of the general distribution of temperatures, and that of the general distribution of pressures, may be practically regarded as two forces, A and B, from which the progression of local depressions results. Both of these commonly act in the same direction—in temperate latitudes producing eastward, and in tropical westward, progression. But of these A is the preponderating influence in temperate, B in tropical latitudes; partly because the influence of precipitation on the surface-currents increases with diminution of temperature, and partly because the currents resulting from the general distribution of pressures are far more constant and of vastly greater extent, in proportion to the extent of the cyclones, in tropical than in temperate latitudes. I am convinced that the attempt to simplify the rules which regulate the progression of depressions by striking out either of these factors, or by the substitution of J. K. L.'s single law, will meet, as it has hitherto met, with failure.

Your reviewer also ignores what I have said (pp. 28, 29) as to the occurrence of heavy precipitations unproductive of baric depression, and thinks it necessary to travel to Khasia or to the Himalayas to find illustrations of a truth which it was never intended to deny. Every one conversant, as he considers me to be, with the meteorology of Western Europe alone, is aware that heavy and extensive precipitation not uncommonly occurs without producing retrograde circulation (and sometimes with generally increasing pressures), where antecedent atmospheric conditions do not favour such developments. The reviewer concedes that the immense precipitation in the Himalayas "probably causes a very great barometric depression;" a concession which is not to be accepted, both because such a reference to antecedent probabilities is inapplicable to empirical science, and because the fact itself may be denied. But supposing this great Himalayan depression to exist, and no retrograde circulation (as J. K. L. maintains) to be developed around it, his discovery of a region in which "Ballot's rules" are contravened, is indeed one of no small importance.

Into the wide question of the influence of the earth's rotation I will not here enter, further than to remark that the hitherto admitted universality of the rules connecting the direction of all atmospheric currents with the distribution of surrounding pressures, and the variation of these rules in the two hemispheres, appears to have been satisfactorily accounted for by attributing it to the earth's rotation; while it has never been, with much plausibility, traced to any other cause or combination of causes.

Hereford, Feb. 17

W. CLEMENT LEY

Zoological Nomenclature

IN the President's address to the Entomological Society of London recently given by Mr. Wallace, one of the points most fully discussed is the rules of zoological nomenclature. These rules are undoubtedly of very considerable, though indirect, importance to science, and it is not very satisfactory to find that great divergence of opinion as to what these rules are, or should be, still prevails amongst recent describers and cataloguers.

Some years ago I was entrusted by the Entomological Society with the task of preparing a synonymical catalogue of the Coleoptera of our islands, to be published under the auspices of the Society; my attention, therefore, has necessarily been directed to the questions under discussion in this matter, and I will here state the conclusions to which I have come.

1st. That a committee to frame and publish laws on zoological nomenclature is not to be desired. Such committee would have