been made of giving to the new groupings of species thus revealed names which are so dissimilar from that of the orginal genus, and from each other, as to hide the genus-relationship. The latter is shown when the genera are grouped as a family.

The subdivision of the animal kingdom into groups that receive independent names should not be carried further than is necessary to ensure ready diagnosis of the species. When carried beyond that point the classification is weakened.

What is required at present is the extinction of probably half at least of the genera. The present family-group should in many cases be the genus.

H. CHAS. WILLIAMSON.

Marine Laboratory of the Fishery Board for Scotland, Aberdeen, March 23.

The Dublin Gorilla.

LIVE specimens of the gorilla are still rarities in British zoological gardens, and it is believed that except for one that has lived for several years at Stuttgart, there is no example at present to be seen on the European continent. A few notes on a young female —probably about a year old—that has now lived for three months in the ape-house of the Royal Zoological Society of Ireland, in Dublin, may therefore be of interest to readers of NATURE.

This little ape—"Empress" is her name—was brought to Europe in company with a young male chimpanzee; in consequence of this companionship she is much tamer and livelier than captive gorillas usually are. In the constant sports which the two young creatures enjoy, the chimpanzee is the more active and spirited, frequently cuffing the gorilla playfully or dragging her along the floor of the house. The gorilla, however, is able to hold her own, and has already developed the habit of drumming on her chest as a challenge; usually she is good-tempered both to her companion and to human visitors. She often climbs leisurely but confidently to the top of the house. The photograph (by Mr. W. N. Allen) shows the little ape in a characteristic attitude, and brings out the distinctive shape and pose of the leg and hindquarters. Her eyes are very expressive, and her almost black face is a great contrast to the pale pink skin of her companion chimpanzee. Both the apes have completely recovered from an epidemic cold that ran through the house in February, and it is hoped that "Empress" may survive in the Dublin Gardens for several years.

G. H. CARPENTER.

Royal College of Science, Dublin.

A Property of Chain-Fractions.

FOR convenience, let $(1; a, b, c, \ldots)$ mean the chain-fraction of which $1/a$ is the first convergent, and a, b, c, etc., are the partial quotients. Consider all such fractions which have no partial quotient greater than 9: the greatest of these is the periodic fraction $(1; \dot{1}, \dot{9})$, and the least is $(1; \dot{9}, \dot{1})$. We have,

$$\alpha=(1; \dot{1}, \dot{9})=(-9+\sqrt{117})/2=0{\cdot}9083,$$
$$\beta=(1; \dot{9}, \dot{1})=(-9+\sqrt{117})/18=0{\cdot}1009,$$

and any proper fraction outside the limits (α, β) will have at least one partial quotient greater than 9. (The converse is not true.) More generally, one partial quotient at least will be greater than an assigned integer n, if the chain-fraction represents a quantity outside the interval determined by the positive roots of the equations:—

$$\alpha^2+n\alpha-n=0, \quad n\beta^2+n\beta-1=0.$$

As n increases, α becomes more and more nearly equal to 1, and β more and more nearly equal to 0. The curious point is that if we take a proper fraction sufficiently near to 1 or zero, its chain-fraction expansion must contain a partial quotient greater than any integer assigned beforehand, and we can actually (when n is given) assign intervals containing such fractions *and no others*. For instance, when $n=9$ the intervals are

$$\{1, (-9+\sqrt{117})/2\} \text{ and } \{0, (-9+\sqrt{117})/18\}.$$

Thus 0·9089 is within the first of these intervals, and its expansion is $(1; 1, 9, 1, 42, \ldots)$.

G. B. MATHEWS.

New Units in Aerology.

IN NATURE of March 19, p. 58, Prof. McAdie discusses the question of the new units in aerology, and says that now is the time to agree upon a logical and available system, considers the megabar atmosphere the more appropriate, and thinks that some of the readers of NATURE may suggest something better.

I have not the ambition to respond to the last suggestion, but, in order to avoid confusion in the future, I beg to direct attention to what has been done in this respect very recently. According to an official report, M. Pérot has presented to the French Minister of Commerce a report upon the reform of the legalised measures and weights. In this we find among the derived units the *Newton* as a unit of force $=\text{Kg m/sec.}^2$, which equals 10^5 dynes. From this is derived another new unit, *Pascal*, as a unit of pressure, 10 Newtons per sq. cm. (10 Newtons = 1 megadyne). I may add that the *Calorie* is proposed at 15° and 1·02 Pascal (=765·1 cm.).

As France may be called the mother-country of the c.g.s. system, the question arises, whether the name *Pascal* might not be substituted for the *modern* megabar (*not* for *ten* absolute atmospheres)?

BOHUSLAV BRAUNER.

Bohemian University, Prague, March 24.

WINELAND THE GOOD.[1]

THE evidence for the pre-Columbian discovery of North America by Norsemen depends essentially on two sagas: the Saga of Eric the Red, the Saga of Thorfinn Karlsefni in Hauksbook; both of which are repeated with modifications in the Flateybook. The dates of the extant MSS. lie between 1300 and 1400 A.D.; the sagas themselves were probably composed about a century earlier; the main event, the discovery of Wineland by Leif the Lucky, occurred in or

[1] "Early Norse visits to North America." By William H. Babcock. Smithsonian Miscellaneous Collections, vol. lix., No. 19. Pp iv + 214, x plates. (1913.)

about 1000 A.D. Collateral evidence consists mainly in the references by other writers to the events recorded by the sagas, which, it is plain, were regarded as historical narratives.

The numerous vague rumours of a world in the west, as embodied in strange maps and stranger stories, have little bearing on the relatively precise and plain tales of the Norse sea-kings. Those tales which, where not distorted by later fancy, are straightforward as a sailor's log, must be checked by reference to the geographical data recorded in them. This is the most valuable part of the task essayed by Mr. Babcock in his interesting and well-written volume. He is not the first to make the attempt, but the originality and the strength of his attack lie in his reconstruction of the geographical conditions as they probably were nine hundred years ago. Then the seaboard north of the Gulf of Maine was lower than now, whereas south of that point it was higher. The change, which is still in progress, is due to the oscillation of the earth's crust initiated by the withdrawal of the great ice-sheet. By taking this movement into consideration, Mr. Babcock has been able to identify with much plausibility the features and localities mentioned in the sagas.

Let us take only one point in illustration. Karlsefni and his wife Gudrid on their southward voyage saw to the starboard "a bleak coast, with long and sandy shores . . . they called them Wonder Strands, because they were so long to sail by." The interminable sand-dunes of New Jersey and Maryland supply a modern parallel to these cheerless "Furdustrandir," but the voyagers cannot have been further south than Nova Scotia, and no such wonder-strands are found there now. "Conceive," however, says Mr. Babcock, "the Nova Scotia seaboard lowered by the 25 feet or more of its present height, that is, brought down to water-level and dipped a little under—with slight narrowing of the peninsula in its mainland part, and partial obliteration of the eastern side of the now hollow insular terminal part called Cape Breton Island—and you will have something not wholly unlike the long strands of New Jersey or the peninsula east of the Chesapeake, only with the hill country much nearer. It was the first introduction of the surprised northern visitors to the characteristic American coast line."

By such ingenious but not unwarranted use of the scientific imagination does Mr. Babcock identify the various localities of the saga, thus confirming its essential accuracy. The vines that gave a name to Wineland are the fox-grapes of to-day and the apparent wheat "self-sown wherever there were hollows," is interpreted as wild rice, still a conspicuous feature.

It is maintained, then, that Leif Ericsson chanced on America circa 1000 A.D., and coasted as far south as New Jersey; that Eric the Red dispatched Thorfinn and Gudrid three years later, as leaders of a large colonising party; that they passed Helluland (Labrador), Markland (Newfoundland), the Wonder-strands (Nova Scotia), and settled near the mouth of Straumfjord (Bay of Fundy), where Gudrid gave birth to Snorri, the first American-born white man. Disappointed in the hard winter, Thorfinn and a party sailed further south about as far as Mount Hope Bay, but were driven back by Indians. After another winter at Straumfjord, all returned to Greenland.

THE IMPERIAL BACTERIOLOGICAL LABORATORY, MUKTESAR, INDIA.[1]

THE Imperial Bacteriological Laboratory, situated at Muktesar in the United Provinces, has been established, and is maintained for the investigation of the diseases of stock in India, and for the preparation of anti-sera and vaccines used for the control of epidemic diseases among animals. The history of the laboratory dates from 1890, when Dr. Lingard was appointed Imperial Bacteriologist, and for some years the work in connection with the diseases of animals in India was carried out at Poona. It was decided, however, to establish a separate institution for this purpose in the hills, and in 1895 a laboratory and a few additional buildings were completed. This first laboratory was destroyed by fire in 1899. The re-building was taken in hand at once, and the present laboratory, much larger than the original structure, was erected and ready for occupation in 1901. The work of the laboratory has increased very rapidly, and it was found necessary to add a wing to the main building four years ago. In addition to the large laboratory there are three smaller buildings for the study of separate diseases, and other buildings for the accommodation of animals, post-mortem examinations, etc., have been added from time to time.

One of the earliest problems to be studied at Muktesar was the preparation of a prophylactic for rinderpest. In 1896 Koch visited Muktesar, and demonstrated his bile method of inoculation against rinderpest. An anti-serum for the disease was first prepared in India by Lingard, and it was first used in field epidemics in 1899, when about 2000 doses were issued. Rinderpest anti-serum is one of the most effective prophylactics known to science, and a striking tribute to its value is to be found in the records of the Muktesar Laboratory. Ten years after its introduction into India half a million doses were issued annually. In 1910 improved methods for the preparation of the serum were discovered, and in the following year a million doses were manufactured. The serum is now supplied to all the provinces of India, to Burma, Ceylon, and the Native States, to the Federated Malay States, and to Egypt. In addition to rinderpest anti-serum, a serum and vaccine for the control of epidemics of hæmorrhagic septicæmia are prepared, as well as a vaccine for black quarter and a serum for anthrax. About 20,000 doses of mallein are issued annually. Pathological specimens are examined, and instruction is given to native veterinary graduates in the practical application of serum and vaccines.

[1] "A Description of the Imperial Bacteriological Laboratory, Muktesar: its Work and Products." By Major J. D. E. Holmes. (Calcutta: Superintendent Government Printing, 1913.)