

### Absorption Bands in Nitrogen.

SOME time ago the critical potentials in nitrogen were determined by the present writer (*Zeit. f. Phys.*, 34, 622, 1925) by measuring the excitation potentials of the 0-0 band of the second positive group and of the negative bands. The results were 13.0 and 19.6 volts respectively. Having the absolute value of 13.0 volts, and using the term scheme of  $N_2$  given by R. T. Birge (*Phys. Rev.*, 23, 294, 1924), the excitation potentials of the first and fourth positive groups of nitrogen could be calculated, and a value of 8 volts was obtained for the resonance potential, as was predicted by R. T. Birge (*NATURE*, 114, 642, 1924). The band system belonging to the transition between the first excited and the normal state was, however, not known. In order to settle the question about the normal state of the nitrogen molecule, absorption plates have been taken. It is extremely difficult to get the right conditions for this experiment. The final pictures were taken with the vacuum spectrograph of Prof. J. J. Hopfield, which he kindly offered to me for that purpose.

We filled the whole spectrograph with carefully prepared nitrogen to about 20 cm. pressure and used Lyman's capillary method (*Astrophys. J.*, 60, 1, 1924, and *NATURE*, 118, 156, 1926) for the continuous light source. The plates show a band system with frequency differences which have the same values as those of the final state of the first positive group, proving definitely that the first positive group is going out from the first excited state of the molecule. The 0-0 band of the new system corresponds to an excitation potential of 8 volts, confirming the prediction of R. T. Birge and my critical potential measurements. In the detailed paper which will be given soon, these and other bands appearing on the plate will be discussed.

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### The Reaction to Flea Bites: Anaphylaxis and Louse Infestation.

I WAS much interested in Prof. Boycott's letter (*NATURE*, October 23, p. 591) dealing with anaphylaxis consequent upon the bites of fleas, as I have in mind an interesting case illustrating the same phenomenon after infestation by lice. The case came under my notice in 1918 whilst I was serving as entomologist with the American Red Cross Trench Fever Commission in France under Prof. (then Major) Richard P. Strong, of Harvard University, U.S.A. During the experimentation a number of volunteer subjects were injected intravenously with filtered extract of louse excrement from insects which had fed upon trench fever cases. One such volunteer was inoculated at 3.25 P.M., and, to quote, "Z. showed very marked anaphylactic phenomena at 3.40 P.M., severe oedema of the face, and very marked general urticaria and much discomfort. The symptoms slowly subsided. Z. had previously been used for the feeding of normal lice from May 31 to June 10. During this period over one hundred lice were fed upon him twice daily. His case illustrates a very unusual form of anaphylaxis" ("Trench Fever," Oxford University Press, 1918, p. 278).

Again, from the case report (p. 430, *ibid.*), Z. showed "marked generalised oedema, beginning half an hour afterwards and temperature of 99.8° F., gradually decreasing, and lasting two days, except around previous bites of normal lice, where it lasted five

days." It remains to mention that the man had been used as a 'foster nurse' for uninfected lice used in other experiments, and that the injection work and clinical observations were carried on by Prof. Strong and Prof. (then Major) Homer F. Swift.

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### The Antiquity of the Labiatae or Mint Family.

IN Knowlton's recent catalogue of the Mesozoic and Cenozoic plants of North America, there is not a single species of Labiatae. Schenk, in Zittel, refers only to interglacial *Lycopus europaeus* and *Stachys palustris*. More recently Reid has recorded preglacial Labiatae, such as *Lycopus*, *Stachys* (two species), and *Mentha* from England. The fruits and calyces are distinctive, and should be easily recognisable; but owing to the specialised character of the family, and the prevalent opinion concerning the late evolution of herbaceous plants, it has seemed unreasonable to expect very ancient fossils of this type.

Nevertheless, among some fossils collected in the Green River Eocene of Colorado in 1923 is a characteristic labiate calyx. The specimen was obtained in the Roan Mountains by Prof. Junius Henderson and Mr. John Byram, high up on the plateau. The calyx is dark, the tube 3.3 mm. long and 1.3 mm. broad, with five slender, spreading teeth which are about 2 mm. long. There are twice as many striæ as teeth; these are quite distinct. The general aspect is nearly that of *Mentha*, but the spreading of the teeth rather suggests *Leonurus cardiaca*, in which, however, the teeth are much broader at the base. Two of the teeth seem to be united a trifle higher up than the others, but there is scarcely any departure from strict radial symmetry. As it is impossible to refer this with any assurance to a particular modern genus, it may be placed under a new generic term *Menthites*, as *Menthites eocenicus*.

Evidently we must look in the Mesozoic for the origin of the Labiatae. T. D. A. COCKERELL.

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October 14.

### Early Egypt and the Fayum.

THE statements about the Fayum question in *NATURE* of October 30, pp. 624-5, were already familiar to me, but they do not appear to invalidate the six reasons which are as I have stated (p. 514) for the received view of the Nile-fed lake. For example, the sandy island flagged over with stones for a quay is exactly what fishermen need for drying fish away from the jackals. A discussion of details would much exceed a journal correspondence. But the appeal to "hard geological facts" involves, to begin with, a solution of the problem of interpretation. There must first be some common understanding about the traces of a Nile-fed lake level, which would appear from (1) a lake rising and falling 8 or 10 feet every year, with margins varying over about a furlong of sands; (2) with a general rise of level 4 or 5 feet every 1000 years; and (3) the ground being later dried up and subjected to 2000 years of high-wind denudation without any vegetation covering it, and some hundreds of rain storms. At least it is certain that the traces of it would be quite different from those of the old permanent estuarine lake of pre-human date, both physically and biologically. When we know what to expect, we may then know how to interpret the present appearances.

FLINDERS PETRIE.