discovery, some of the sections were sent to Dr. Julius Pia, of the Natural History Museum, Vienna, and he has identified the form as *Archæolithothamnion* (Fig. 1), and some of the sections appear to be identical with *A. torulosum*, which he has figured in his chapter on Algæ in Hirmer's "Handbuch der Paläobotanik". The form has been recognised in quite a large number of sections, and it is certain that a detailed study of these will reveal not only more than one species of *Lithothamnion* but also the presence of several other types of Algæ. As regards the age and locality of these rocks now under study, they all belong to the Niniyur stage, which is the youngest subdivision of the Trichinopoly Cretaceous and corresponds to the Danian of the European stratigraphical scale.

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[1] *Mem. Geo. Sur. Ind.*, vol. 36, pt. 2, p. 45.

The Energy of Horizontal Atmospheric Motion.

WITH reference to my note on atmospheric structure in NATURE of June 27, it should be remarked that for any part of a horizontal field of isobars at which the velocity of the air is in geostrophic accord with the gradient the energy of a layer of air of uniform thickness contained within a square lying between a pair of consecutive isobars is the same for any part of the field, due allowance being made for variation of density and latitude. Hence the energy of the field can be estimated by counting the number of squares which are accommodated in the field.

The proof of this assertion is as follows:

Let the isobars be drawn for intervals of b millibars; let the distance between a pair of consecutive isobars be l, and let h be the thickness of the layer for which the geostrophic equation holds.

Let V be the velocity of the air, ρ its density, ϕ its latitude, ω the earth's angular velocity.

Then the mass of the layer of air within the square of which the side is l is $\rho l^2 h$, and the velocity V is $\frac{b}{2l\omega\rho}\operatorname{cosec}\phi$.

Hence the energy is $\frac{1}{8}\frac{hb^2}{\rho\omega^2}\operatorname{cosec}^2\phi$.

It is consequently the same for every square, whatever its size may be, which lies between isobars with the same pressure interval. If we take as our unit of energy $\frac{1}{8}\frac{hb^2}{\omega^2}$ and denote it by N, the energy for any square within the layer is $\frac{\operatorname{cosec}^2\phi}{\rho}N$. If any portion of the field be made up of such squares and their number n counted, the energy of that portion of the layer, expressed in terms of the unit N, is $n\operatorname{cosec}^2\phi/\rho$.

The value of the unit N for a layer 100 m. thick with a pressure interval of 2 mb. is about 26,000 kilowatt-hours, worth £100 at a penny per B.T.U.; or with ρ 1000 gm./m.^{3} (nearly normal at 2 km. height) the energy is 35 million kw.-hr. in latitude 60°, 104 million kw.-hr. in latitude 30°.

The number n can be obtained by inscribing successive circles tangent to the pair of isobars and to each other and counting their centres.

When isobars are curved, computation is still possible, but the formula requires modification.

This reasoning enables us to compute the energy of the horizontal motion of a 100-metre layer, shown on the maps of isobars at various levels in the troposphere. The energy between 30° N. and 60° N. clearly increases with height up to 8000 metres at least.

NAPIER SHAW.

July 4.

Jubilee Celebrations of the Society of Chemical Industry.

PLEASE allow me to amend that portion of the account of the jubilee celebrations of the Society of Chemical Industry, published in NATURE for July 25 (p. 157), which refers to the development of the chemical autoclave as illustrated by "a series of drawings and exhibits by the National Physical Laboratory". The actual origin of these illustrations and specimens is entirely otherwise. The drawings were made by Mr. H. Tongue, principal technical assistant of the Chemical Research Laboratory, Teddington. The collection of autoclaves included representative examples of various types constructed at my suggestion over a period of fifteen years, first at the Finsbury Technical College, then in the University of Birmingham, and recently in the Chemical Research Laboratory, the cost of production having been met in all cases by the Department of Scientific and Industrial Research.

The account also refers to "reduction products of fluorine compounds"; the substances exhibited were reduction products derived from the hydrocarbon, fluorene.

Full particulars regarding the exhibits from the Chemical Research Laboratory are given in a very serviceable handbook to the Exhibition, published by the Chemical Engineering group of the Society of Chemical Industry.

About forty members and guests of the Society of Chemical Industry visited both the Chemical Research Laboratory and also the Departments of Metallurgy and Metrology in the National Physical Laboratory, this being the first occasion on which the former institution has been inspected by a large party of visitors.

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Control of Prickly Pear by the Cochineal Insect.

As a result of a long series of tests carried out in Australia under the Commonwealth Prickly Pear Board, it was ascertained that the cochineal insect, *Dactylopius tomentosus*, could only live on certain species of *Opuntia*, among which was *O. dillenii*. As this species was reported to be a pest in India and Ceylon, I was authorised to offer strains of this cochineal bred in the laboratory free from parasites to the Government entomologists of those countries. The offer was accepted by Ceylon, and the insects were successfully established there in 1924 or 1925. In India, the offer was considered at a conference of the entomologists of the various provinces, and it was decided not to accept it, on the ground that prickly pear was largely used for hedges, and that, where it threatened to become a pest, it could easily be eradicated, as abundant cheap labour was available.

It appears from his letter in NATURE of July 18, p. 117, that Mr. C. T. Jacob has introduced the insect from Ceylon to South India "to destroy clumps of *O. dillenii* in which dangerous snakes were harbouring around business premises".

The last sentence of the leading article in the same issue of NATURE, p. 86, "that more may be involved in the thoughtless importation of strange animals than the importer can possibly conceive", seems appropriate to this instance.

W. B. ALEXANDER
(Officer in charge of Prickly Pear Investigations in Australia, 1923–25).

University Museum, Oxford,
July 21.