

Carter has given a good description of his species *theobaldi* and mentioned all its diagnostic characters. The species is readily recognizable in the Tondaung limestone. The name proposed by him is therefore valid and has priority over *elephantina*, which is, however, too well established to be suppressed. The species occurs in the Upper Nari (Chattian) of North West India (Vredenburg²), Aquitanian of Persia (Böckh, Lees and Richardson³), Upper Oligocene of Palestine, Burdigalian of Syria (Henson⁴) and the Aquitanian of France. The species has so far not been reported from the zone of reticulate *Nummulites*.

Eu. formosa shows considerable variation both in its external and internal features. The nephrolepidine-type of embryonic apparatus is occasionally met with and there seems to be little doubt that *ephippoides* J. and Ch. is identical with *formosa*. *Eu. blanfordi* Nuttall¹⁰ described from the Gaj of North West India appears to be the microspheric form of *formosa*. The American species described by Thiaidens¹¹ as *formosa* has polygonal lateral chambers and is not to be confused with the oriental species, in which the lateral chambers are always circular or sub-circular.

Neph. sondaica is a small form of the *marginata*-type and shows resemblance to *Lep. (L.) formosensis* Hanzawa¹² and the American species *Lep. (L.) yrnagunensis* Cushman¹³. Study of the developmental stages of the microspheric and megalospheric forms of nephrolepidines of India and Burma demonstrates that *sondaica* is an early type and intermediate between *Lepidocyclina* (s. str.) *formosensis* of the older beds and nephrolepidines (*sumatrensis* and *tournoueri*) found in the younger Upper Gaj (Burdigalian) beds. The distinction which Douville recognized between the *marginata*-type and the *sumatrensis*-type seems to be justified. It is interesting to note that the genus *Tryblitepidina* characteristic of the higher Miocene beds in the Indo-Pacific region is a stellate form (Crespin¹⁴). A stellate test among orbitoids and discocyclines appears to represent a late stage in their evolutionary development. We thus recognize three groups of nephrolepidines both on structural and stratigraphical grounds: (1) *sondaica*-type, (2) *sumatrensis*-type, and (3) *rutensis*-type (*Tryblitepidina*).

The following points are made out regarding the age of the fauna. The presence of *Nephrolepidina* and *Eu. elephantina* definitely rules out a Stampian age. The fauna is older than the Upper Gaj (Burdigalian) fauna from Surat¹⁵ in which I have identified: *Neph. sumatrensis*, *Neph. tournoueri*, *Neph. praetournoueri*, *Miogyssina* sp., and *Trillina houckini*. The choice therefore lies between Chattian and Aquitanian. A Chattian age seems to be most probable because: (1) of the presence of *Neph. sondaica*, which I recognize to be an early primitive form, (2) of the absence of *Miogyssinidae*¹⁶, and (3) of the field evidence, which places the *Lepidocyclina* horizon in the Oligocene and not in the Lower Miocene. (I have noticed *Miogyssina* in a *Lepidocyclina*-limestone of Lower Miocene (Aquitanian?) age from the Andaman Islands; it is also clearly seen in a photo given by Mr. Gee in his paper on the geology of the Andaman and Nicobar Islands¹⁷.)

The fauna listed by me does not fit into the 'd' stage of the East Indies. The 'd' stage is characterized by reticulate *Nummulites*, *Eulepidina* and *Lepidocyclina* s. str. It is curious that while reticulate *Nummulites* are found in Java, Borneo and Papua, they have not so far been found in Burma. The Tondaung fauna has to be correlated with the lower 'e' stage. The 'e' stage, according to Van der Vlerk¹⁷ and Miss Crespin¹⁴, corresponds to the Aquitanian of Europe, and according to Tan and Glaessner¹⁹ it contains both the Chattian and the Aquitanian.

S. R. NARAYANA RAO.

Geology Department,
Intermediate College,
Bangalore.
Sept. 12.

- ¹ Rao, S. R. N., *Rec. Geol. Surv. Ind.*, **77** (Prof. paper 12), 1 (1942).
- ² Carter, H. J., *Ann. Mag. Nat. Hist.*, **2**, 342 (1888).
- ³ Vredenburg, E., *Rec. Geol. Surv. Ind.*, **34**, 91 (1906).
- ⁴ Vredenburg, E., *Rec. Geol. Surv. Ind.*, **51**, 326 (1920).
- ⁵ Cotter, G. de P., *Mem. Geol. Surv. Ind.*, **72** (1), (1938).
- ⁶ Lepper, G. W., *Proc. World Pet. Cong.*, **1** (1933).
- ⁷ Evans, P., *Geol. Mag.*, **78**, 332 (1941).
- ⁸ Böckh, H. de, Lees, G. M., and Richardson, F. D. S., "The Structure of Asia", 157 (1929).
- ⁹ Henson, F. R. S., *C.R. Acad. Sci., Paris*, **202**, 2 (1936).
- ¹⁰ Nuttall, W. L. F., *Ann. Mag. Nat. Hist.*, **17**, 11 (1926).
- ¹¹ Thiaidens, A. A., *J. Pal.*, **11**, 105 (1937).
- ¹² Hanzawa, S., *Proc. Imp. Acad., Tokyo*, **15**, 182 (1939).
- ¹³ Vaughan, T. W., *Quart. J. Geol. Soc.*, **82**, 391 (1926).
- ¹⁴ Crespin, I., *Proc. Roy. Soc. Victoria*, **55** (2), 157 (1943).
- ¹⁵ Rao, S. R. N., *Curr. Sci.*, **8**, 167 (1939). *J. Mys. Univ.*, **2**, 5 (1941).
- ¹⁶ *Rec. Geol. Surv. Ind.*, **50**, pl. 15, fig. 3 (1926).
- ¹⁷ Van der Vlerk, I. M., *Leid. Geol. Meded.*, **5**, 207 (1931).
- ¹⁸ Crespin, I., *Proc. 6th Pac. Sci. Cong.*, 529 (1939).
- ¹⁹ Glaessner, M. F., *Proc. Roy. Soc. Victoria*, **55** (n.s.), Table (1943).

Nepalese Blood Groups

A RECENT tour of duty with the Army in India provided me with an opportunity of testing the blood groups of a number of Gurkha troops, natives of Nepal.

Tests were made on 2,869 men and the results were:

Group	AB	..	..	..	9.2 per cent
"	A	..	..	..	33.8 "
"	B	..	..	..	25.2 "
"	O	..	..	..	31.8 "

The calculated gene frequencies are $p = 0.245$, $q = 0.190$, $r = 0.564$. This distribution is of Mongolian type, a result to be expected from the strongly Mongolian appearance of the Gurkhas. It differs considerably from the distribution in the contiguous Indian population, in whom the above frequencies of groups A and B are roughly interchanged.

W. T. AGAR.

University, Melbourne, N.3.

Science and Reconstruction

THE lecture by Sir John Anderson published in *Nature* of December 22, p. 733, does but scant justice to British chemical industry prior to the First World War. The statement that "the only industrial openings one heard of were occasional vacancies in breweries" is not in accordance with the facts, and takes no cognizance of the existence of a great inorganic chemical industry represented by such firms as Brüner, Mond and Co. and the United Alkali Co., and numerous manufacturers of acids and phosphatic fertilizers and a considerable organic industry represented by the works of Read, Holliday, Levenstein, British Alizarine, Clauss and Co., and many others, not to speak of the explosives manufacturers of Nobels in Scotland and Kynochs in Ireland.

All these firms employed chemists, and a considerable proportion of those turned out by the universities each year obtained employment in industry. To quote one small example well known to me, the Royal College of Science for Ireland turned out each year ten to twelve qualified chemists, and on the average sixty per cent of these obtained employment in industry. The great and spectacular growth of the British chemical industry which took place subsequent to 1914 was no spontaneous generation from nothing, and the magnitude of the achievement is not lessened by giving full and fair recognition to the work that was being done before that date.

HENRY W. MOSS.

Sandbeds, Honley,
Huddersfield.
Jan. 1.

SIR JOHN ANDERSON states in *Nature* of December 22, p. 733, that "a good grounding in natural science can be a passport to the higher Civil Service, equally with the more usual training in the humanities, or in the history schools", and that "public administration does provide scope, apart from the professional or specialist grades, for men with a scientific training". Sir John is, of course, quite correct in the sense that the entrance examination for the Administrative Class of Civil Servants can be taken in almost any subject. But in spite of the theoretical possibility, there are very few successful entrants to the Administrative Class with a grounding in natural science. Some figures on this point may be of interest.

For the years 1925-38, the reports of the Civil Service Commission give the successful entrants with details of their academic training, and I have also been allowed to consult the records for 1939, a year little affected by the War for present purposes. Taking the Administrative Examination proper, that is to say, excluding entrants to the Northern Ireland Civil Service, the Indian Civil Service and the Foreign and Diplomatic Services, I find the following for the fifteen years 1925-39 inclusive:

Successful candidate reading	Number
Natural science	14
Geography	8
Mathematics	48
Humanities (History, Languages, Classics, Philosophy, Economics, etc.)	421
Total	491

Entrance to the administrative grade otherwise than by examinations is also possible; but the proportion among such entrants of Civil servants who have had a scientific training is probably smaller still.

I am not concerned to argue whether a training in natural science is better or worse than a training in any other subject for the purposes of administration. I merely point out that, whatever the possibilities, there are in fact only a very small minority of Civil servants in the administrative grade who have had a training in natural science.

MAURICE KENDALL.

507 Hood House,
Dolphin Square, S.W.1.

A Recurrent Nova

ON February 10 the variable star *T* Coronæ Borealis, normally of magnitude 9, was seen to have blazed out to magnitude 3. This star had a typical nova outburst in 1866, when it was the first nova to be examined spectroscopically. Unlike other novae, its spectrum after fading was of late type with strong absorption bands of titanium oxide. During the last twenty years, its spectrum has varied considerably mainly through the appearance in varying strength of emission lines due to hydrogen, neutral and ionized helium, oxygen and nitrogen. In addition, forbidden lines of oxygen and neon commonly observed in nebulae have been observed.

It is now generally accepted that these lines come from a faint blue companion to the giant red star, which gives the late type spectrum generally observed. This blue star varies in magnitude and is presumably the star responsible for the nova phenomena of 1866 and 1946. It appears to be surrounded by a stationary gaseous shell, which emits the bright lines referred to above. After eighty years of unrest, this star has once again blown away its outer layers.

Two spectrograms were secured at Cambridge on the morning of February 11, during the only short interval when observations have been possible since the outburst. The spectra show the usual broad emission hydrogen lines with absorption lines displaced to the violet. These lines are also broad, and measures of their edges show that the velocity of outflow of the hydrogen from the star ranges from 500 to 1,475 km./sec. In addition, broad emission lines of helium, oxygen, nitrogen, silicon and possibly sulphur are present. They are very hazy and difficult to measure, but their average widths give a rate of expansion for the shell containing them of less than 350 km./sec.

This nova is of special interest because the variable spectrum of the star has been observed for some years before the outburst.

F. J. M. STRATTON,
H. E. BUTLER.

Solar Physics Observatory,
Cambridge. Feb. 14.