## Ribosenucleic Acid in Snake Erythrocyte Nuclei

In a recent paper[1], I described the isolation of nuclei of erythrocytes from the blood of some Brazilian snakes and reported their content in desoxyribosenucleic acid and other constituents. Hammarsten[2] found that the nuclei of the erythrocyte of the hen contain a small percentage (values not reported) of ribosenucleic acid. Therefore it seemed to be of interest to know whether ribosenucleic acid is also present in the nuclei of the blood of snakes.

The erythrocyte nuclei were obtained by the method previously described[1], and the nucleic acids were separated according to the method of Schmidt and Thannhauser[3]. Desoxyribosenucleic acid was determined using the well-known diphenylamine colour reaction of Dische and the phloroglucinol reaction recently proposed by von Euler and Hahn[4]. The filtrate, after the precipitation of desoxyribosenucleic acid, was used for the determination of the ribosenucleic acid by means of the orcinol reagent of Mejbaum[5], and the colour measured in a Beckmann quartz spectrophotometer at 620 mμ. The average values expressed in mgm. per cent of dry weight of nuclei are shown in the accompanying table.

| Name of the snake | Number of samples | Desoxyribosenucleic acid | | Ribosenucleic acid |
|---|---|---|---|---|
| | | Phloroglucinol reaction | Dische's reaction | |
| *Crotalus terrificus* | 2 | 48 | 52 | 0·5 |
| *Bothrops jararacussu* | 1 | 37 | 38 | 0·6 |
| *Xenodon merrimi* | 3 | 38 | 41 | 0·7 |

The statement of von Euler and Hahn that the phloroglucinol reaction is more suitable for the determination of desoxyribosenucleic acid was confirmed, since no colour was obtained in the filtrate free from it, whereas the Dische reaction always produces a slight but visible colour. Consequently, the values obtained with the phloroglucinol reaction should be considered as representing the real ones rather than those determined by the Dische reaction. As shown in the table, the nuclei of the erythrocytes of all the snakes examined contained ribosenucleic acid in a small amount not exceeding 0·7 mgm. per cent.

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## Isolation of *Nitrosomonas* from Rothamsted Soil

Since *Nitrosomonas*, a bacterium which oxidizes ammonia to nitrite, was discovered by Warington[1] and the Franklands[2] and first isolated by Winogradsky[3], nearly sixty years ago, there are only a few records of its isolation in pure culture.

Boullanger and Massol[4] obtained *Nitrosomonas* from a sewage filter bed, and Bonazzi[5], Gibbs[6], Nelson[7] and Hanks and Weintraub[8] isolated it from North American soils. Rubentschik[9] isolated a halophilic variant from a salt lagoon near Odessa. Kingma Boltjes[10] obtained pure cultures from soil in the Netherlands, Engel and Skallau[11] and Bömeke[12] from German soil, and Tchan[13] in France. There is no record of its isolation in the British Isles since the pioneer work of Warington.

I have recently isolated *Nitrosomonas europœa* Winogradsky[3,10] in pure culture from the soil of the farmyard manure plot on Broadbalk Field, Rothamsted. The organism has oval cells, 1·2–1·7 μ long and 1–1·2 μ broad. It is Gram-negative. I have not observed a motile form. On silica gel plates it forms brownish colonies, circular or star-shaped, about 100 μ across. It oxidizes ammonia to nitrite in a mineral medium, and will not grow on media containing peptone. In liquid cultures with excess of calcium carbonate, the cells adhere in masses to the carbonate at the bottom of the culture, and the supernatant fluid remains clear.

Details of the method used for isolation will be published later.

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## Lysogenic Strains of Lactic Streptococci

During the propagation of starter cultures of lactic streptococci for cheese-making, the persistent appearance of phage in the bulk starter under certain conditions, after all known precautions had been taken against phage contamination, indicated that the presence of lysogenic strains was the probable explanation for the presence of bacteriophage.

Nichols and Hoyle[1] realized the importance of such strains, if detected, in the selection of lactic streptococci for cheese-making, but their attempts to demonstrate lysogenic strains among starter strains failed. They tried to show lysogenicity by growing pairs of strains together in broth after the method used successfully by Burnet[2] for *salmonella* strains and by adapting a method used by Fisk[3] for staphylococci strains on solid media. They found one strain, *C*30, which invariably produced innumerable plaques on agar, but they failed to find a suitable indicator strain on which the phage could be propagated so that *C*30 could be shown irrevocably to be lysogenic.

Hunter[4] reported that some strains of *Str. cremoris* exist in a symbiotic state with a phage, but these strains do not appear to be truly lysogenic because the organism can be freed from the phage 'carried' by plating and re-picking from solid media. This occurrence of phage resistant-carrier strains has been