no major differences in reaction as compared to the first run.

The immune serum, used in the same concentration as before, now produced nuclear degeneration and death of cells in both culture *C.P.* and *A.N.* Culture *C.G.* remained unaffected by the immune serum–nutrient mixture, both morphologically and by successful subculture.

Heating the immune serum for 40 min. at 56° C. destroyed its cytotoxic activity, which was restored on the addition of fresh non-immune human serum.

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PSYCHOLOGY

The Water–Salt Receptor and Preference in the Rat

Zotterman[1] and his co-workers have reported that in the rat and in man the taste of water consists in a reduction of the spontaneous firing of the salt receptors. According to Deutsch's theory[2] of need and reward, satiation of thirst is due to the reception of a certain quantity of messages signalling the ingestion of water. The quantity of fluid ingested would be proportionate to the number of signals generated by it. It follows that as a hypotonic solution of saline reduces the spontaneous firing of salt receptors less than the same volume of water, it would generate less of a 'water signal'. A rat should therefore drink more saline solution even when water is present. This has already been noted by workers such as Richter[3] and Bare[4] and ascribed to a preference for weak saline solutions. But if the above hypothesis is correct, the ingestion of saline by the rat is not due to a preference but to the fact that it has been given 'diluted water', if we can put it that way.

On this theory a certain amount of reward is also proportionate to the total quantity of messages signalling the ingestion of a goal substance. Therefore if this hypothesis is correct, we should predict the opposite 'preference' in a situation where the intake of each fluid is restricted to a certain volume. Thus rats, when they are forced to choose between equal amount of water and saline in a maze, should learn to run to the water arm, as a given volume of saline generates fewer signals than the same volume of water. Accordingly, two experiments were carried out.

The first was carried out in a T-maze. Nine rats, aged 4 months, were given 2 hr. of *ad lib.* water drinking a day and *ad lib.* food except during maze running. Each animal was given 15 runs a day in the T-maze under 20 hr. of water deprivation to rewards of water in one arm and 0·5 per cent saline in the other, four animals receiving water in the right arm and five in the left. The average number of runs to water over the 6 days was 56, and to the saline, 34 (significant at the 0·001 level of probability).

In the second experiment, a group of 10 rats was put on the same schedule as those above. They were presented with two water bottles for half an hour when they were 20 hr. thirsty, one containing 0·5 per cent saline, the other water. The position of the bottles varied. The experiment confirmed that during eight days the average amount of saline drunk was 59 c.c. as against 36 c.c. (significant at the 0·01 level of probability).

The experiment therefore confirms the prediction and also casts considerable doubt on the conventional ways of measuring preference. It is hoped to investigate further the behaviour of species which lack this gustatory arrangement, and other parameters of the ingestion of saline by the rat. Further, the spontaneous rate of firing of the saline receptors should vary with the degree of salt depletion. This should in its turn reduce the level of water intake. Whether such a simple control mechanism does in fact govern the ingestion of water in relation to salt suggests a further line of investigation.

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PALÆONTOLOGY

Precambrian Coelenterata from Australia, Africa and England

Extensive collecting has been carried out during the past two years by private collectors, the South Australian Museum, the University of Adelaide and Mr. R. C. Sprigg and associates, in flaggy quartzites near the base of the Cambrian at the old Ediacara mines, 280 miles due north of Adelaide, South Australia. Sprigg[1] found and described as jellyfishes fossil remains of soft-bodied animals from this locality. The study of the abundant new material[2], which comprises about 800 specimens, has led to the following results. (1) The fauna consists not only of the forms described by Sprigg as scyphozoan and hydrozoan medusæ, but also of Anthozoa representing the Octocorallia, of Annelida[3], and of at least two entirely new types of soft-bodied invertebrates[2,3]. (2) Certainly one and possibly more elements of this fauna belong to genera described from the Kuibis Quartzite of the Nama System in South Africa, and one genus recently described[4] from the Precambrian of Charnwood Forest, Leicestershire, also occurs at Ediacara. (3) New stratigraphical and palæontological evidence indicates Late Precambrian age of the Ediacara fauna.

The most striking and unexpected discovery is the common occurrence of representatives of the South African genus *Rangea* Gürich[5] in the Ediacara fauna. About forty specimens are now known, and one new species has been described, though further finds may indicate the presence of more species in this material. It is preserved in different forms, which can be interpreted as different aspects and stages of preservation of the soft body. Some specimens show a long stalk attached to the leaf-shaped main body. This has either a median field or a median zig-zag furrow, and lateral furrows branching out from it. A spicular structure is seen occasionally in the body and stalk. The details of these structures, which will be described elsewhere[2], clearly establish a close relationship between *Rangea* and the living Pennatulacea In.