the results were unsatisfactory, and the stained preparations were not comparable with the intensely stained bacterial nucleoproteins. It was clear that in the Gram-positive complex the linkage of the protein with the ribonucleic acid is not of the simple electrovalent type, and the mechanism of the retention of the dye is more fundamental than its mere combination with a basophilic salt-like molecule; sulphydryl groups and magnesium ions do appear to play an important but as yet undetermined part.

So far we have not been able, by using an analogous autolytic procedure, to obtain nucleoproteins from Gram-negatives. By chemical extraction methods, however, using bile salt derivatives, saline, etc., we have obtained nucleic acids of both ribo- and deoxyribo-types from certain Gram-negatives. Some fractions contained both proteins and nucleic acids, and when solutions of these were adjusted to *p*H 5, there separated protein nucleates which were able to retain the Gram stain in a manner comparable with that described above for the 'artificial' protein nucleates. Thus it appears that this amount of dye-retaining character is a non-specific property of such salts which, as isolated from Gram-negatives, we regard as artefacts. It was also of interest to note that, in the Gram-negatives so far examined, the ratio of deoxyribonucleic to ribonucleic acid is considerably higher than in Gram-positives. Thus we consider that there are fundamental differences between the basic proteins of Gram-positives and Gram-negatives, and between their mode of combination with nucleic acids; so that an understanding of these is desirable in order to give an insight into the mechanism of the selective attack of some antibiotics.

Mirsky[4] has pointed out that in deoxynucleohistones the nucleic acid content is about 40 per cent, whereas in ribonucleoproteins it is of the order of 10 per cent. It will be noted that in our Gram-positive ribonucleoproteins the amount of ribonucleic acid (25 per cent) falls midway between the two, and it is possible that the protein constituent represents one type of cytoplasmic protein of which but little is yet known. Moreover, this protein appears to differ from that of the histone or protamine type which was obtained from pneumococcal nucleoprotein[5].

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[1] Henry and Stacey, *Nature*, **151**, 671 (1943); *Proc. Roy. Soc.*, B, in the press.
[2] Kossel, "The Protamines and Histones" (Longmans, 1928).
[3] Cohen and Stanley, *J. Biol. Chem.*, **144**, 589 (1942).
[4] Mirsky, "Advances in Enzymology" (Interscience Pub.) (New York, 1943).
[5] Thomson and Dubos, *J. Biol. Chem.*, **125**, 65 (1938).

Late Flowering of Horse-Chestnut

Dr. Julian Huxley's letter[1] describing the late flowering of horse-chestnut in Paris this autumn brought back to me a vivid memory of autumn 1912. I turned up my youthful diary and found this entry: "Paris, 3rd September, 1912. The trees are in a queer state here; the old leaves are dead and falling as in autumn and at the same time new shoots and flowers are borne on the same trees, particularly on the horse-chestnuts in the Champs Elysées." There are few records of weather in the diary but an earlier entry of the same day reads: "We went through the Luxembourg Gardens where the lawns were being watered! (the first time I have seen grass watered this year!)". And on the day before, it had seemed worth while to enter: "It rained a little".

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[1] *Nature*, **156**, 574 (1945).

The publication of the note by Dr. Julian Huxley prompts me to record some observations of a similar phenomenon in 1944.

At the beginning of October flowering was noticed on a tree of *Aesculus hippocastanum* at Twickenham, Middlesex, in circumstances similar to those described by Dr. Huxley. This tree had been damaged severely by the frosts of May 3–8. The opportunity was taken of comparing its behaviour with that of two trees of the same species in Sunbury-on-Thames which were defoliated almost completely by blast from a flying-bomb in early August. They were in flower for the first three weeks of October until the blossoms were killed by frost. Small fruits were formed but did not mature. These dates are later than those commented upon by Dr. Huxley.

In 1945, the three trees mentioned produced fewer leaves than usual and very few inflorescences. Most of the buds containing inflorescences must have been used in the autumn flowering.

It is interesting that, although the defoliation of the frost-damaged tree was in May and the bomb-damaged trees in August, all were in flower together in October. Similarly the trees observed by Dr. Huxley were damaged in spring but did not flower again until the autumn, the buds opening at the usual time for leaf-fall.

The mild autumn weather experienced in 1944 may be connected with the second flowering, as this was seen, also, at Sunbury-on-Thames in a species of *Aesculus carnea* Hayne which was not noticed to be damaged in May. It would appear that it is the already defoliated condition of the trees of *Ae. hippocastanum* at the usual time for the commencement of leaf-fall which stimulates the opening of the buds at that time, the production of new leaves and inflorescences in the buds proceeding at the same rate during the summer whether mature leaves are present or not. A comparison between the autumn condition of such a tree and that of a normal tree in the similar temperature and light conditions of spring is tempting.

In view of the fact that some of the species of *Aesculus* flower normally as late as August it would be interesting to observe the behaviour of those trees of European, Asiatic and American ancestry which are collected close together, in virtually the same environment, at the Royal Botanic Gardens, Kew, in any season when second flowering takes place.

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