

to breed against  $G_2$  kemp in N-type have, however, achieved little, but the rams hitherto available have not been so free from  $G_2$  kemp as one would have wished. There is also an argument by analogy from the inheritance of birthcoat characters. Abundance of halo-hairs and fibre type array, as stated earlier, are strongly inherited. The freedom from chalkiness, that is, no medulla or no appreciable medulla, in the post-natal region and, besides, in the sickle-end, of all sickle-fibres in numerous Wensleydale specimens sent from England by Dr. K. M. Rudall, is manifestly inherited. These facts, and especially the last detail, suggest that the hairiness (chalkiness) of the tips of fibres of the curly-tip group in N-type is likewise genetically determined, and consequently that the abundance of secondary kemp is inherited. Bryant secured direct evidence from a Scottish Blackface flock.

Our fundamental aim is to understand the interaction of forces at work in the follicles. Our present purpose is to point to possible application of our findings in selection against later kemp in mountain sheep in which a kempy birthcoat is accepted and desired. In particular, it may prove practicable to judge very young lambs for later kempiness. Biological work on the fleece is slow, especially when breeding is involved, and we are therefore presenting this preliminary report on new facts about secondary kemp in N-type Romney lambs.

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by a pronounced decrease in fertility as compared with the diploid plants. However, our extensive initial material, hereditarily different both as regards the nine varieties and within each variety as well, made it possible to select for reproduction those plants which were marked by the largest seeds and by greatest fertility. Subsequent selection of their progeny (for some stocks four generations of tetraploids were obtained for two years) already in 1943 showed a number of autotetraploid highly fertile buckwheat stocks with large seeds.

In the progeny of the best tetraploids of the variety 'Bolshevik', we obtained on the average from double to four times more seeds than from the diploids. Thus along with the greater weight of the seeds (1.5 times heavier) this latter fact increased the crop from the tetraploid plants from three to six times as compared with the normal diploids. Alone, 'Bolshevik' had produced in 1943 more than 15 kgm. of seeds.

The main theoretical importance of the data obtained consists in the fact that buckwheat is the first case illustrating high fertility of an experimentally produced, agriculturally valuable autopolyploid form. Of practical importance is the fact that during the shortest possible period (two and a half years) highly fertile buckwheat forms with large seeds have been produced, non-crossable with the initial diploid plants.

Some data point to the assumption that owing to their vigorous growth tetraploids show a higher percentage of germinating seeds under field conditions, as compared with the diploids. They are more frost-resistant and they show more pronounced self-pollination, which is seldom noted for normal buckwheat forms.

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## High Fertility of Buckwheat Tetraploids obtained by Means of Colchicine Treatment

In the summer of 1941, extensive experiments were performed on producing buckwheat tetraploids by means of colchicine treatment. In 1942 the root tips of a thousand seedlings grown from seeds of the initial experimental plants were studied cytologically. Among the seedlings verified cytologically, 250 bore the tetraploid chromosome set (32 instead of the normal 16). Tetraploids were obtained from 79 initial plants of the following nine buckwheat varieties: 'Bolshevik', 37 initial plants; 'Kharkovskaya', 10; 'Bogatyr', 6; 'BTSKA' (-Timiriasev Agricultural Academy), 6; 'Altayskaya', 5; 'Ispan-skaya serebristaya', 5; 'Kazanskaya', 5; 'Belorusskaya', 3; and 'Buriat-Mongolskaya', 2.

In the summer of 1942, the non-crossability of the buckwheat tetraploids with buckwheat diploids was confirmed, this fact being of outstanding importance for selection.

The comparative study of tetraploid plants carried on in 1942 and 1943 invariably showed a marked increase in size of seed (on the average surpassing the weight of the diploid seeds by 42-85 per cent along with general enlargement of the plants).

As is usually the case in autopolyploidy, the majority of the new buckwheat forms were marked

## Lunar Coronæ

A DISPLAY of lunar coronæ was seen here in altocumulus cloud on October 2 between 10.30 and 11.30 p.m. At its greatest extent the red ring of the third order was visible, but those parts of the corona outside the second red ring were fragmentary. On at least one other occasion the whole corona up to the green of the second order was seen.

Some measurements were made towards the end of the observations, and these and the calculated diameters of cloud droplets are recorded in the accompanying table. The unit of angular measurement is the moon's radius.

Cloud	Aureole radius	Droplet size (mm.)	Second red ring radius	Droplet size (mm.)
A	13 ± 1	0.012 ± 0.001	—	—
B	6 ± 1	0.025 ± 0.004	12½ ± 1	0.022 ± 0.002
B	7 ± 1	0.022 ± 0.004	—	—

In addition to the error due to the crudity of the measurements, the finite diameter of the moon introduces an uncertainty about which little appears to be known.

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