

abnormal flowers and leaves than the tetraploids and diploids. Modifications of the organ dimensions and larger percentages of anomalies of the tetraploids have the tendency somewhat to decrease with the increase of the polyploid generations, but in the majority of the cases both were still greater in the tetraploids than in the diploids.

F_1 species hybrids of distantly related species had, in the majority of the cases, more variable cell and organ dimensions than the parental species; they also formed abnormal leaves and flowers more often. Cell dimensions of the majority of the amphidiploids that were studied were also more variable than those of F_1 species hybrids from which they were produced. They also formed abnormal organs more frequently. An amphidiploid, however, did not show greater modifications of the cell and organ dimensions and did not form many more abnormal flowers and leaves than the F_1 hybrid from which it originated, but the latter was a cross product of distantly related species, showing very great modifications of cell and organ dimensions and forming a very large percentage of abnormal flowers and leaves. The numbers of seeds set per flower by the auto- and allo-polyploid plants were much more variable than the numbers of the seeds set by their ancestral forms. A series of allo-polyploid species, studied recently, showed greater modifications of cell and organ dimensions than the diploid species of the same genus. But there were also allo-polyploid species that did not show greater modifications of the cell and organ dimensions in comparison with the diploid species of the same genus. The increase of the modifiabilities of polyploids and of certain F_1 species hybrids (the products of distantly related species) are of great significance from the evolutionary and plant breeding (agricultural) points of view, because they are closely connected with the plasticity and adaptability of the plants, playing at the same time an important role in the geographical distributions of the plant organisms.

A series of allopolyploids and F_1 hybrids have, in

addition to the increased modification, increased frequency of abnormal mitosis³, and more often produced somatic mutations^{3,4} than the parental species. Both allopolyploids and autopolyploids that propagate sexually often give rise to new hereditary variations as a result of abnormal meiosis and crossings-over between partially homologous chromosomes^{5,6}. Extensive studies in the genera *Triticum* and *Nicotiana* showed that in the majority of the cases polyploids are characterized by a much greater polymorphism than diploids. Our data are in close agreement with those obtained by N. I. Vavilov upon the same problem but from another point of view.

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Moscow. August 22.

¹ Cf. Kostoff, D., *Curr. Sci.*, 7, 270-273 (1933).

² Kostoff, D., and Orlov, A., *Ann. Bot.*, 2, 883-886 (1933).

³ Kostoff, D., *NATURE*, 144, 599 (1939).

⁴ Kostoff, D., *Curr. Sci.*, 3, 302-304 (1935).

⁵ Kostoff, D., and Kendall, J., *Gartenbauwiss.*, 9, 20-44 (1934).

⁶ Kostoff, D., *J. Genet.*, 37, 129-209 (1933).

Sir Frank Dyson

I HAVE been planning to write the life of my father, the late Sir Frank Dyson (formerly Astronomer Royal), but owing to war work have had to postpone the task for the present. I am, however, anxious to collect letters and other material before these are destroyed.

May I appeal to those who knew my father for any letters they may have of his, or for any reminiscences they may care to give me. I should very much value the personal reminiscences of his scientific friends.

I shall naturally take the greatest care of all papers sent to me, and I undertake to return them within a few days.

The Chimes,
Radford Rise, Stafford.

MARGARET WILSON.

Points from Foregoing Letters

OBSERVATIONS are recorded by A. C. B. Lovell and J. G. Wilson of the frequency with which cosmic ray showers from the atmosphere affected two cloud chambers operated simultaneously and arranged in different ways. From the average multiplication observed when lead or aluminium is interposed between the chambers, they conclude that large showers will be relatively more frequent in light elements than is indicated by the cascade theory applied to a single entrant particle.

The evaporation of droplets in mists of phenolic germicide solutions has been studied by S. R. Finn and E. O. Powell by means of the ultra-microscope. The results, correlated with the biological findings, show that three rough classes of bactericidal behaviour are distinguishable according to the volatility of the solute.

From a study of the dimeric forms of *o*-hydroxy-isopropenyl compounds, W. Baker and D. M. Besly conclude that they must be derivatives of flavane. This structure satisfactorily explains their properties.

J. J. Dowling describes a method for the comparison of small resistances using ordinary laboratory apparatus.

J. Weiss and H. Weil-Malherbe state that further quantitative work on the action of catalase has

shown that catalase activity does not depend on the presence of oxygen. This is in agreement with the theory proposed recently and based on the earlier discussion by Haber and Willstätter. It was not possible to corroborate Keilin and Hartree's results, whose theoretical views are also criticized.

N. K. Panikkar finds that *Palæmonetes varians* is hypotonic in normal and hypertonic in dilute sea water. The osmotic pressure of its blood ranges from 1.8 to 2.3 per cent NaCl for a corresponding range of 0.6-3.5 per cent NaCl in external medium, isotonicity being at about 2.0 per cent. The homoiosmotic behaviour of the species is of interest in view of its habits and distribution.

In examining the intestine of *Amphioxus* for amylase activity, W. L. Doyle found that the greatest activity per unit area was in the caecum and the least in the lower intestine. The relation of pH to amylase activity was also studied and showed an optimum at pH 7.

J. Lamb and E. H. Houghton produce evidence that the oxidase responsible for the oxidation of ascorbic acid in the tea leaf may be identified with cytochrome oxidase, and that it is unlikely that an ascorbic acid oxidase is present.