

## ABSTRACTS

OLIVE B. ADAM: Linkage relationships in the homothallic *Aspergillus nidulans*.

By using PONTECORVO's technique already described at this Congress, eight pairs of allelomorphs have been identified. The mutants were artificially produced by X-rays and other means. Seven of these allelomorphic genes have been tested, Y/y, green/yellow — W/w, pigmented/white (w is epistatic to Y/y) — Ad<sub>1</sub>/ad<sub>1</sub>, adenine independent/adenine dependent — Bi/bi, biotin independent/biotin dependent — S<sub>δ</sub>/s<sub>δ</sub>, able to reduce sulphate/unable to do so — Thi/thi, thiazole independent/thiazole dependent — Ly/ly, lysine independent/lysine dependent — Ad<sub>2</sub>/ad<sub>2</sub>, adenine independent/adenine dependent.

The Bi, Y and Ad<sub>2</sub> loci are linked in the order given, 5—10 crossing over units apart. Of the other tested loci, three segregate independently of one another and of the already mentioned linked ones; the fourth, incompletely tested, segregates independently of the three linked ones.

MARIA DOLORES ANGULO: Experiments on the c-mitotic action of the alkaloids of opium in comparison to that of colchicine.

During the years 1946 and 1947 the Estacao Agronomica Nacional de Sacavem, Portugal, started experiments on the c-mitotic action of the alkaloids of opium, morphine, thebaine, codeine, dionin and dihydrooxycodoinone in order to show whether the phenanthrene group which forms the framework of quinic compounds, both the alkaloids and colchicine, was responsible for the mitotic action of the alkaloids. For this reason and based on the analogous structure of the molecule of colchicine and the alkaloids of the opiums, we started a comparative study of these substances to confirm whether it is the phenanthrene group which communicates its biological and characteristic qualities to colchicine.

The plants utilized were *Triticum monococcum*, *Vicia faba* and *Allium cepa* and the alkaloids were in the form of their hydrochlorides which are soluble in water. Concentrations of 0.1 %, 0.2 % and 1.0 % were used.

Our observations showed that in the majority of cases the c-mitotic effects of the tested alkaloids proved to be weak, except in the case of morphine where the effects of c-mitosis appeared more accentuated. Thus the behaviour of *Triticum monococcum* towards morphine shows rather intense c-mitotic action of weak concentrations (0.1 %), and no further accentuation if stronger concentrations (1 %) are used.

In some species of *Vicia* this c-mitotic action appears more marked, until tetraploid cells are found.

CLAUDIO BARIGOZZI: The rôle of the heterochromatin of the Y chromosome of *Drosophila melanogaster*.

The rôle played by the heterochromatin remained unexplained till a few years ago, and is still very incompletely known, for it fails to exercise such gross effects for which the euchromatic genes are detectable.

same subfamilies, *i. e.* Otiorrhynchinae and Brachyderinae, which also show parthenogenesis. The great majority of parthenogenetic weevils have turned out to be polyploid. Of the 18 parthenogenetic weevil species and races studied, only one (*Polydrosus mollis*) is diploid (22 chromosomes), 12 are triploid (33 or 34 chromosomes), 4 are tetraploid (44 chromosomes), and one (*Barynotus moerens* in the Austrian Alps) is pentaploid (55 chromosomes). Several of these weevil species are represented by a bisexual as well as by a parthenogenetic race. The former is always diploid, the latter, at least in the cases so far studied, polyploid. The eggs of the bisexual race undergo two maturation divisions, the eggs of the parthenogenetic race only one. In addition to the diploid bisexual race a weevil species may occur as different parthenogenetic races, differing as to their degree of polyploidy. For instance, *Otiorrhynchus scaber* is tetraploid in North Europe, while in the Eastern Alps (in Lunz am See) it is triploid. In Switzerland this species is represented both by a triploid and a tetraploid parthenogenetic race. In addition even a diploid bisexual race is known from the Eastern Alps.

Especially striking is the different distribution of the races, representing different degrees of polyploidy, in certain boreo-alpine species. For instance, *Otiorrhynchus dubius* is parthenogenetic and tetraploid in North Europe, but bisexual and diploid in the Central European mountains. The different distribution of the different weevil races is very clear also in the Eastern Alps. The diploid bisexual races of several *Otiorrhynchus* species occur there in areas which were free from ice during the last ice age, whereas the polyploid parthenogenetic races have spread over areas which were then covered with ice. This different distribution is evidently caused by the polyploidy of the parthenogenetic races in that polyploidy has changed the optimum life conditions of the parthenogenetic form which enable it to disperse into other and climatically usually more unfavourable regions. SEILER has discovered in the Psychid species *Solenobia triquetrella* that its corresponding races in Switzerland have fundamentally a similar distribution. As known, plants behave similarly in many cases. The distribution of at least certain boreo-alpine weevil species is inexplicable except on the assumption that they have survived the last glaciation in North Europe in special ice-free refuges along the west coast of Scandinavia. The thought suggests itself that at least in some boreo-alpine weevils the polyploidy has contributed to their ability to resist the unfavourable conditions prevailing in these ice-free refuges in the vicinity of the glaciers. If this is so, polyploidy has supported their survival in the north during the last ice age.

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C. C. TAN: Seasonal variations of color patterns in *Harmonia axyridis*.

The Asiatic lady-bird beetle, *Harmonia axyridis*, presents a number of different types of color patterns on the elytra, the inheritance of which, being due to a series of multiple alleles, strictly follows the principle of mosaic dominance (TAN, 1946). Different geographical localities are also

known to vary the frequency distribution of the various alleles. The commoner types found in China are *succinea* (yellow ground with a varying number of small black spots), *conspicua* (black ground with one big yellow window on each elytron), *spectabilis* (black ground with one big and one small yellow window on each), and *aulica* (black color restricted to the costal margin). Recently, some indication of seasonal variation has also been noticed in the populations collected in the vicinity of Hangchow from April to December, 1947. The results of the analysis of a total of 2456 individuals, composed of 1237 *succinea*, 571 *conspicua*, 615 *spectabilis*, and 33 *aulica*, a few rare types being neglected, are as follows: *succinea* falls from 48.3 % in April to 21.5 % in July and increases again in September to reach 58.5 % of the November—December population. On the other hand, *conspicua*, including its heterozygous forms with *succinea* and *spectabilis*, increases from 19.8 % in April to 42.8 % in July and falls again in September to arrive at 19.6 % in November—December. In the case of *spectabilis*, the proportion also rises in summer, though the difference appears not so significant as in *conspicua*. The *aulica* type does not show any difference, partly due to too few individuals contained in these populations.

Although the above findings need to be confirmed by extended analysis at least for another year, the available data that signify the seasonal cyclic changes apparent in the cases of *succinea* and *conspicua* appear to indicate the adaptive nature of these types to the climatic conditions, the causal relationship of which, of course, remains obscure. Furthermore, the frequency of each type in the spring populations (after hibernation) and that in winter populations (before hibernation) are not significantly different. In fact, the April population and the November—December population of *conspicua*, being 19.8 % and 19.6 % respectively, are practically identical. This suggests the randomness of the effect by hibernation. As a proof of the latter, the winter populations of different types caught alive, consisting of 743 *succinea*, 249 *conspicua*, 241 *spectabilis* and 10 *aulica*, were artificially disposed to hibernation in our laboratory under natural temperature conditions last winter. The percentages of the survivals recorded in March, 1948, are 94.48 for *succinea*, 92.77 for *conspicua*, 92.12 for *spectabilis* and 100 % for *aulica*. The apparent insignificance of these differences is in agreement with the above contention.

A. TAVČAR: Linkage between sugary endosperm and embryo weight (fat content) in maize.

A greater content of fat, about 8 % in sweet corn (*Zea mays saccharata*) against about 4 % in other maize varieties, is primarily due to a greater percentage of embryo in the kernel of sweet corn. In sweet corn about 19 %, in other maize varieties only about 11 %, of the kernel weight represent the embryo.

Crosses between 4 different genotypes of sweet corn and 4 different genotypes of dent corn were made to detect the linkage between the alternative character: sugary (su)-starchy (Su) endosperm and the quantitative character: percentage of embryo in the kernel.