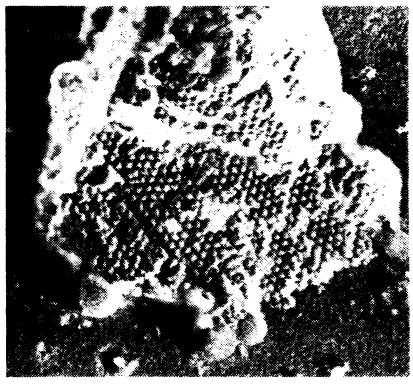

Fig. 1. The octahedral face of a crystal from ammonium sulfate of the turnip yellows virus protein (× 36,100).

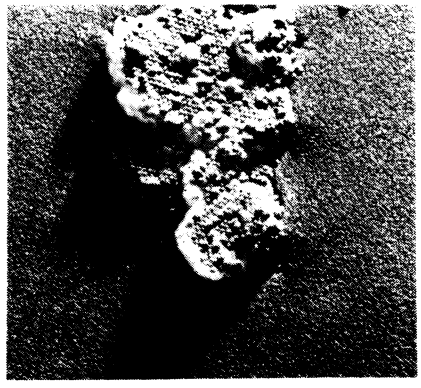

Fig. 2. Similar faces to that of Fig. 1 of crystals obtained from alcohol. Note that the magnification is the same for the two photographs (× 36,100).

tetramolecular unit cube having an edge length of 510 A.

The crystals precipitated from alcohol-acetic acid are prismlike aggregates that show faces with the same hexagonal and less frequent square nets of molecules as those from salt. They appear, therefore, to have the same cubic close-packed structure. Their spacings are, however, very much smaller. This is clear from Fig. 2, which is an electron micrograph of a clump of crystals made at the same magnification as Fig. 1. The interparticle distance here is about 210 A, and the unit cube would have an edge of only 300 A.

In view of this difference, it might be imagined that the molecules forming the crystals from alcohol are decomposition products of the virus protein molecules. However, this is not the case since solutions of two kinds of the crystals show particles of the same size, and solutions of the alcoholic crystals yield the usual octahedra on the addition of ammonium sulfate. It therefore seems necessary to conclude that the large interparticle distances in the crystals from salt are to be attributed to salt they contain.

It will obviously be of great importance for studies of the structure of proteins to determine how this salt is distributed. Our experiments directed toward this goal are continuing and will be described in more detail in a paper to be submitted elsewhere for publication.

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References and Notes

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24 October 1955

Cytogenetics of Sex in Gibberella cyanogena (DESM.) SACC.

In view of the recent discrepancies (*1*, *2*) regarding chromosome numbers and sex inheritance in the heterothallic ascomycete *Hypomyces solani* f. *cucurbitae*, I have extended my observations to other ascomycetes in the *Hypocreaceae*, particularly to those that have proved favorable for genetic study. In the present investigation, further information is added to our knowledge of the cytogenetics of sex in these fungi.

Gibberella cyanogena, the perfect stage of *Fusarium sambucinum* Fuckel f. 6. Wr., is a heterothallic ascomycete that has been found (*3*) to be hermaphroditic, self-sterile, and interfertile. Perithecia are formed only when the two compatible thalli, A and a, are brought together. Recently, I received through the courtesy of James Tammen of the State Plant Board, Gainesville, Fla., the original thallus, ♀ A, and a mutant of the compatible thallus, ♀ a. Upon examination, the latter appeared to resemble to a great extent the M-type of *H. solani* f. *cucurbitae* (*4*). It could be distinguished morphologically from the former thallus (C-type) by the lack of color, the absence of perithecial primordia, and the occurrence of relatively more abundant mycelium. When conidia from this mutant were transferred to the other thallus, ♀ A, perithecia with mature asci and ascospores were formed within 2 weeks. Therefore, the new mutant has retained the ability to produce the fertilizing elements; hence, it seems to be homologous to the male strain of *H. solani* f. *cucurbitae* and can be designated ♂ a. When the ascospores from the cross ♀ A × ♂ a were analyzed, the progeny was found to consist of hermaphrodites and males in the ratio of 1/1. Thalli of type ♀ a were selected from this cross.

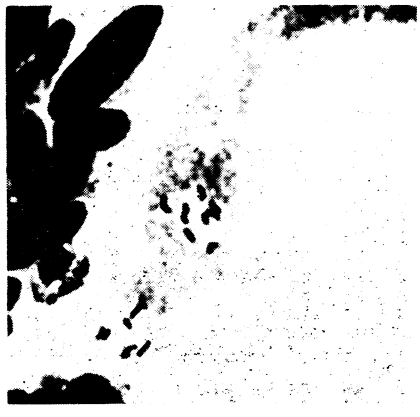

Fig. 1. Ascus from ♀ A × ♂ a showing two nuclei at second anaphase with 8 chromosomes in each. (× 1800).

Cytological study was then carried out on asci from two subsequent crosses, ♀ A × ♂ a and ♀ A × ♀ a. The aceto-orcein smear technique, which has given good results with *H. solani* f. *cucurbitae* (*2*), was again employed. Preliminary investigations of the nuclear divisions and chromosome behavior inside the ascus have revealed that the haploid chromosome number in each of the hermaphrodites and males is 4 (Fig. 1). Thus, the present data provide clear evidence that mutation of hermaphrodite to male is by no means the result of a single chromosome loss. It is merely a single gene mutation. Finally, it should be noted that these results are not in accordance with the findings of Hirsch *et al.* (*5*), who reported the chromosome number in *G. roseum* to be 6. According to Snyder and Hansen (*6*), *G. cyanogena* is a synonym of *G. roseum*.

A detailed description of these findings is in preparation.

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31 October 1955

Correction

Harold F. Gray, of Corning, Calif., has called my attention to an error in the note "On the rule for leap year" [*Science* 123, 544 (30 Mar. 1956)]. In the sixth paragraph of the article (page 545), the end of the second sentence should read ". . . the century years 1800, 1900, and 2100 are not divisible by 400 and, hence, are not leap years; but 2000 is divisible by 400 and, hence, is a leap year."

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18 April 1956