to six weeks old. As before, the rats were carried to the F_4 generation, with no positive findings resulting.

In both series of experiments, chemical findings for glutathione-like substances were always within the limits specified by the Philadelphia workers.

In connection with the above, it is well to note that negative findings in mice[3] and in rats[4] have been reported. Positive findings in rats have been reported from the Wistar Institute,[5] and positive findings regarding sexual maturity only in mice by Lafon.[6]

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A NUCLEUS-LIKE STRUCTURE IN A STAPHYLOCOCCUS

IN the course of studies on the variability of bacteria, we encountered a greenish-black staphylococcus which spontaneously dissociates into a yellow form.

The resting cell of this staphylococcus contains a single granule, spherical or slightly ellipsoidal in form and located near the center of the cell.

The growing cell contains either a single rod-like granule parallel to the long axis of the cell, or two granules spherical or ellipsoidal in shape and lying in the polar regions across the long axis of the cell. Instead of being rod-like, the granule may often be kidney-like.

These granules have the following properties: (1) They are pseudo-chromotropic with old solutions of methylene blue. (2) They are strongly acidic, staining deeply with methylene blue at pH 1.8–2.0. (3) They are not dissolved in 10 minutes by boiling water. (4) They are not dissolved by 0.02–0.5 per cent. sodium bicarbonate after a contact of over two hours. (5) They do not disappear when the cells are subjected to starvation for as long as 24 hours at 37° C. (6) They do not disappear upon frequent transferring. (7) They give a clear-cut Feulgen reaction under all the conditions listed above.

The constancy of these granules, their position, numbers and morphology in resting and growing cells, added to the properties enumerated above, speak strongly for their nuclear nature. Indeed they appear to fulfil all the requirements of nuclei.

The size of these granules, compared to that of the cell, is strikingly large, and yet we have been so far unsuccessful in our attempts at observation in the living cell, indicating that, in the living state, their refractive index is close to that of the cytoplasm.

We were unable to detect any type of reserve material in the cell of the staphylococcus.

The details and records of the present work will be published elsewhere.

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[3] G. van S. Smith and E. E. Jones, *Proc. Soc. Exp. Biol. and Med.*, 43: 157, 1940.

[4] H. B. Vickery, Carnegie Inst. Wash. Year Book No. 37, 335, 1937–8; H. Chiodi, *Rev. de la Soc. Argent. de Biol.*, 14: 326, 1938; W. O. Nelson and D. A. McGinty, quoted by Nelson in "Sex and Internal Secretions," 2nd Edition, 1939, Chapter XXI.

[5] *Wistar Institute News Letter*, April 15, 1936.

[6] M. Lafon, *Jour. Exp. Biol.*, 13: 140, 1936.

HOW MANY SPECIES OF PLANTS ARE THERE?

RECENTLY, during the course of investigations of general systematics of plants, it has been noted that current text-books of botany for university students contain discrepant and often contradictory statements of the number of existing species of Angiosperms. For example, according to a dozen books examined, the number of species of all Angiosperms varies from 133,000 to 175,000; of Dicotyledons 100,000 to 140,000; and of Monocotyledons 24,000 to 35,000. The number of Gymnosperms usually is said to be 500, and the total of all living species of plants is frequently estimated to be about 250,000. The methods used by the authors of these books in obtaining these figures is not revealed, but it is clear that the relatively simple expedient of consulting reasonably accurate recent sources of taxonomic data was not employed.

It occurred to me, therefore, that, in view of the fact that these estimates appear to have been based upon antiquated data, it may be worthwhile to present a more accurate summary. According to a compilation made partly from the eleventh edition (1936) of "Die Syllabus der Pflanzenfamilien" (Engler and Diels), and partly from recent monographs and other sources, the Angiosperms contain a total of 195,000 known species; of these, 155,000 are Dicotyledons, and 40,000 are Monocotyledons. There are approximately 640 species of Gymnosperms. On the basis of figures supplied by G. M. Smith,[1] there are (with the addition of Bacteria) 107,570 species of Thallophyta and 23,000 species of Bryophyta. The Pteridophyta contain about 10,000 species, of which 9,000 belong to the Filicales.[2]

Thus, the conclusion may be drawn, that on a conservative basis, the approximate total number of different species of known living plants is slightly in excess of 335,000. The rate of discovery and description of new species of flowering plants during the twenty-five year period from 1910 to 1935 has been reported by E. D. Merrill as averaging at least 4,800 per year.[3]

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[1] "Cryptogamic Botany," Vol. 1, 1938, McGraw-Hill Book Co.

[2] C. Christensen in Verdoorn's "Manual of Pteridology," The Hague, 1938.

[3] *Memoirs Brooklyn Botanic Garden*, 4: 57–70, 1936.