Comments and Communications

Fluorescence of Solid Streptomycin Salts

It has been observed in our laboratories that streptomycin exerts a definite fluorescence in the solid state when exposed to ultraviolet radiations of wave lengths between 3,600 and 4,000 A. This fluorescence has been found to occur with commercial samples of streptomycin hydrochloride, streptomycin sulfate, streptomycin calcium chloride complex, and with a research sample of dihydrostreptomycin hydrochloride. The products of various manufacturers have been investigated, the phenomenon having been found to occur in all samples.

It is of extreme interest to note that a purified sample of streptomycin B (trihydrochloride) supplied by K. Folkers and R. L. Peck showed no fluorescence under similar conditions. This sample yielded an "assay" value of 600 μg/mg on basis of maltol assay but showed a microbial activity of only 135 μg/mg against *B. subtilis*.

The fluorescence of solid streptomycin salts is apparently quenched upon solution. Concentrated (1,000,000 μg/ml) aqueous solutions prepared from a highly purified sample of the calcium chloride complex showed negligible fluorescence. This is also true of saturated solutions in methanol. Unfortunately, no commercial apparatus is known to the undersigned for the quantitative measurement of fluorescence of solids. An instrument which we think will be adequately sensitive has been designed, and, upon its completion, measurements will be made to attempt to correlate fluorescence with microbial activity. Due to the fact that samples from diverse manufacturers and localities demonstrate this fluorescence and that it is readily noticed that high-purity samples fluoresce more strongly than low-purity material, we believe that this phenomenon is characteristic of the streptomycin moiety and is not due to the presence of trace impurities.

H. A. FREDIANI

Merck & Co., Inc., Rahway, New Jersey

Should There Be a *Living Metasequoia*?

E. D. Merrill's recent communication about a living *Metasequoia* (*Science*, February 6, p. 140) once more focuses attention upon the interrelationship of living and fossil plants and calls to mind a matter of taxonomic policy that might well receive attention in drafting appendix I of the International Botanical Rules. This appendix is to contain "regulations for determining types" and presumably may be drafted in time to submit to the Stockholm Congress, scheduled to meet in 1950.

Three genera are mentioned by Merrill that were recognized from fossils before their living representatives came to light. These are: (1) *Petrophiloides* Bowerbank (1840)—type specimen, a fossil fruit of this plant; living representative, *Platycarya* Sieb. and Zucc. (1843); (2) *Caryojuglans* Kirchheimer (1935)—type specimen, a fruit from German brown coal; living representative, *Rhamphocarya* Kuang (1941); and, of course, (3) *Metasequoia* Miki (*Jap. J. Bot.*, 1941, 11, 261), the modern species of which is probably not yet described. A fourth case, that of *Steinhauera* Presl in Sternberg (1838) versus *Sequoia* Endlicher (1847), is generally known, perhaps largely because of the publicity given it by H. Potonié in connection with his rather elaborate nomenclatural proposals prior to the Brussels Congress. The name *Sequoia* was subsequently conserved officially, but there still is no good evidence regarding the generic identity of the respective *types* of *Steinhauera* and of *Sequoia*. Nathorst (*Botaniska Notiser för År 1910*, pp. 54–56) has commented on this matter particularly and, while an argument was settled through conservation of the name *Sequoia*, there was no compelling need for an official ruling. *Steinhauera* still is an available name referring to a problematic fossil group of possibly coniferous(?) relationship. It is not now, and probably never can be, very useful because of the ambiguity of its nomenclatural type. Apparently no one has questioned the generic identity of fossil *Petrophiloides* and *Caryojuglans* with their modern representatives.

The generic similarity of the fossil and "living" *Metasequoia* is supported by both Chaney (*Ecol. Monogr.*, 1947, 17, 145) and Merrill (*Arnoldia*, 1948, 8, No. 1), but the description and illustration of the type fossil material on which the name *Metasequoia* is based are not yet available to the present writer and apparently were not widely distributed, having appeared during the recent war. The taxonomic decision as to whether remarkable new living material now being studied by Wan-Chun Cheng and H. H. Hu in China is congeneric with *Metasequoia* rests on its degree of similarity with Miki's fossil type. In comparison with any fossil type certain details must be omitted; whether these have been important or not will have to be determined largely by consideration of Miki's type species and the type specimen pertaining to it.

The writer is not concerned with the question of identity because, although some authors have believed an artificial nomenclatural boundary should be drawn between "fossil" plants and others dead not quite so long, there can be no real question that living forms in many, if not in most, instances have bona fide representation in the fossil record. To deny this is to deny the pertinence of botany to paleobotany. In any given instance the question of what constitutes adequate evidence to identify a fossil specimen with an extant group must rest with students specializing in systematic study of the plants concerned.

There is, however, a point to be made regarding the source of evidence for such critical determinations. Although in a number of instances plant structures are preserved in fossils with a perfection not exceeded in modern plants save for the details of cytology, this is not a general rule, nor can we by any stretch of imagination expect that in the distant future the exquisitely preserved fossil