DISCUSSION

THE HIGH WAX CONTENT OF GREEN LINT COTTON

THE lint from *Gossypium hirsutum* (var. Arkansas green lint),[1] described by Ware,[2] differs from that of ordinary strains of upland cotton not only in its bright green color and soft feel to the touch but also in its remarkably high wax content. Whereas the wax content of most cotton lint varies within the range of from 0.4 to 0.7 per cent.[3] that of green lint cotton, based on the dry weight, has been found to vary within the high limits of from 14 to 17 per cent. This high wax content was discovered accidentatlly by the writer in connection with some inquiries into the source of different hues of fluorescence when cotton fiber was irradiated with ultraviolet light.

The wax may be removed readily from the lint of green lint cotton with hot ethyl alcohol, chloroform and other organic solvents. It is also quite soluble in hot acetic acid and cold pyridine. With alcohol as well as with most other solvents the hot extract is colored deep amber in transmitted light but fluoresces a deep velvety green in reflected light. However, the green color of the lint is not changed appreciably, if at all, by the extraction. Thus, it has not yet been ascertained whether the green fluorescence of the alcoholic extract is related to the green color of the lint or is entirely independent. When the hot alcoholic solution cools to 50–55° C. most of the wax separates out in poorly defined yellow crystalline flakes. Between crossed nicols the crystals are quite noticeably anisotropic.

By means of 95 per cent. ethyl alcohol and ethyl ether at room temperature it is possible to separate the crude wax into at least three fractions of different properties (Table 1):

TABLE 1

Fraction no.	Approx. per cent. of total	Solubility at room temperature	Melting point of solid ° C.	Transmitted color of hot alcoholic solution	Velvety green fluorescence in reflected light
1	30	Moderate in alcohol	85–89	light green	inappreciable
2	50	Slight in alc., large in ether	86.5–90	golden brown	moderate
3	20	Slight in both alc. and ether	93–95	very dark brown	very strong

It seems quite likely that fraction 2 contains small amounts of the substance responsible for the dark color and deep velvety green fluorescence of fraction 3. The latter fraction is practically insoluble in ethyl ether, even at boiling temperature and thus can be readily separated from the other two fractions. The very deep color of its solutions is not removed by wood or animal charcoal. A Salkowski test for phytosterol in this fraction was negative. All fractions have a remarkably high melting point compared with other naturally occurring waxes.

X-ray diffraction patterns show that a least a part of the wax occurs in a crystalline form in the fiber and is quite highly oriented, the most prominent diffraction arcs arising from crystal planes perpendicular to the fiber axis; this is the same as Berkley[4] found for the primary wall patterns of white upland varieties. The green lint cotton differs from the other varieties, however, in that a strong wax pattern persists even with the mature fiber.

Microscopic observation of the fibers in longitudinal mount or of their cross-sections does not reveal definitely the location of the wax. In cross-section an outer greenish translucent ring which constitutes one third to one fourth of the thickness of the wall may be observed on sharply focusing. When the fiber cross-sections are strongly swollen with cuprammonium solution a number of similar greenish translucent concentric rings may be seen throughout the wall. Thus far it has not been possible to identify any definite layer of the wall in which the waxy constituents may be considered to be concentrated.

A larger quantity of the wax has been collected for identification of the components.

CARL M. CONRAD
U. S. DEPARTMENT OF AGRICULTURE

[1] The samples were furnished by Dr. J. W. Neely through Dr. J. O. Ware, both of the Bureau of Plant Industry, U. S. Department of Agriculture.
[2] *Jour. Amer. Soc. Agron.*, 24: 550, 1932.
[3] Shirley Institute Memoirs, 4: 107–113, 1925.
[4] *Textile Research*, 9: 355–373, 1939.

POLIOMYELITIS IN A LABORATORY WORKER EXPOSED TO THE VIRUS[1]

ONE of our associates, a woman 35 years old, has developed paralytic poliomyelitis under circumstances which make it highly probable that the infection was contracted in the laboratory. The purpose of this preliminary report is to inform investigators, who may be engaged in work with poliomyelitis virus of human or recent human origin during the next two or three months, of the possibility of laboratory infection in order that they may take precautions which ordinarily might not have been observed. In the more than thirty years of experimental work on poliomyelitis there has not been a single instance of infection as a result of exposure to the virus in the laboratory. Since adults are relatively resistant and since most of the work has been done with rhesus monkeys and with monkey-adapted strains of virus, it is possible that the

[1] Aided by a grant from the National Foundation for Infantile Paralysis, Inc.