

- Van Denburgh, J. 1922. *The Reptiles of Western North America*. 2 vols., 8vo. Calif. Acad. Sci., San Francisco. (\$10.00.)  
A detailed treatise. Tendency to recognize doubtful subspecies, but otherwise all right.
- Van Denburgh, John, and Joseph R. Slevin. 1918. The Garter Snakes of Western North America. *Proc. Calif. Acad. Sci., Ser. 4*, Vol. 8, No. 6, pp. 181-270.
- Wright, A. H., and S. C. Bishop. 1915. A Biological Reconnaissance of the Okefinokee Swamp in Georgia. Sec. 2. Snakes. *Proc. Acad. Nat. Sci. Phila. for 1915*, pp. 139-192, illus.

#### QUARTERLY PUBLICATIONS

- Bulletin of the Antivenin Institute of America*. (Box 1404, Philadelphia, \$1.50 yearly.) Vol. I, No. 1, March, 1927.
- Copeia*. (*Amer. Soc. Ichthy. and Herp., Mus. Zool., Univ. of Mich.*, Ann Arbor, \$3.00 yearly.) Established in 1913.
- Herpetologica*. (Chicago Academy of Sciences, \$1.00 yearly.) Vol. 1, No. 1, July 11, 1936.

#### RECOVERY FROM VIRUS DISEASE CAUSES IMMUNITY IN TOBACCO

Acquired immunity to disease in man and animals has given rise to important branches of medical science—particularly preventive inoculation with a mild form of a disease to prevent dangerous infection by a severe form.

Until recently, however, it was generally believed that the only hope for immunity or resistance in plants must come through the existence of inherited characters or factors.

Now, Dr. James Johnson of the Bureau of Plant Industry, working at the Wisconsin Agricultural Experiment Station, has announced that tobacco plants recovering from tobacco streak—a virus disease fairly common in Wisconsin and to some extent elsewhere, acquire a considerable degree of immunity from further infection. Renewed infection is not likely to affect the new growth. However, these "recovered" plants are infectious to healthy plants, that is, "carriers" of the infection.

Dr. Johnson's findings confirm the results of recent research into the virus diseases of tobacco and potatoes, and may have practical results. It is not likely, he says, that protective inoculation of individual plants may prove a practical disease control method for ordinary crop plants grown annually from seed. But in the case of plants ordinarily grown by propagation—potatoes and sweetpotatoes, for example, and many trees, shrubs, bulbs, and perennial ornamentals—it is likely, he thinks, that immunization may be applied to planting stock, so that the propagated material will possess immunity. It is possible that acquired immunity may explain why commercial stocks of potatoes are not attacked by some of the virus diseases that are likely to attack seedling potato varieties with which the plant breeders experiment.

Dr. Johnson makes clear that his experiments do not suggest hope that plants may acquire immunity from fungous and bacterial diseases, but do open a field for attack on the virus diseases. His work with tobacco streak indicates the acquired immunity is specific and gives protection against this disease only. It does not render his plants immune to other virus diseases.

Other investigators in recent years have reported a few instances in which recovery from one virus seems to give some degree of protection from one or more of the other related virus diseases.