

by the frequency with which he refers to the subject. With the object of procuring further information he sent his "notice" to Russia, and from Baron von Asch, surgeon in the Russian army, he learned that in January, February, and March, 1782, a disease described as "febris catarrhalis epidemica benigna" prevailed in the Russian capital. It originated in eastern Siberia, on the Chinese frontier, and spread through the whole of Russia. —*The British Medical Journal*.

SCIENTIFIC BOOKS

A Text-book of Precious Stones. By FRANK B. WADE, B.S. Published by G. P. Putnam's Sons, 1918. 8vo, pp. xiii + 318. Illustrated.

Those who are familiar with the work on "Diamonds" by the same author will find the present book characterized by similarly attractive features. The style is clear and precise and readability and practicality are afforded by examples drawn from the writer's own experience.

The book will appeal to the amateur rather than the professional student, but this is probably the intention of the author. His experience as a teacher has doubtless aided him in presenting the subject in a systematic and easily assimilable manner. The physical properties of gems are treated under the various subdivisions of refraction, absorption and dichroism, specific gravity, luster, hardness, and color, each to the extent of one or more chapters, and numerous practical details are given in the chapters on testing, cutting, occurrence and imitation of gems. The chapter on "tariff laws" affords useful information not readily found elsewhere and the bibliography of the subject of gems is the most complete and satisfactory for the purposes of the general reader that the reviewer remembers to have seen. The book is not extensively illustrated, a few text figures from line drawings comprising all the pictures that are provided.

Besides its usefulness for general reading, the title of the book and its systematic plan suggest that it could be employed for more formal instruction. The wide distribution of

gems in Nature and their possession in some form in almost every home, make it probable that they could be used more extensively than is now the case as a basis for school study.

The reviewer finds little to criticize adversely in the book beyond the occasional use of the term "gemology." While this term might be generally understood to refer to the science of of gems, it is incorrectly formed for this purpose and in reality has quite a different meaning. The Greeks seem to have had no single term for distinguishing objects used for the purposes for which we use gems, but indicated things of value by the adjective *τίμος*. Prefixing this adjective to *λίθος*, stone, the term *timolithology* can be obtained, which is at least a word properly formed to indicate the science of gems.

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SPECIAL ARTICLES

PINK ROOT OF ONIONS

IN 1915 Professor F. W. Mally called the writer's attention to a very serious disease of onions in Webb County, Texas, and locally known as pink root. Investigations were begun on this disease with Professor Mally, who cooperated in the field experiments and offered valuable assistance in many ways. A search in literature showed that there were no records that could be found, where mention was made of this new plant trouble. From conversation with Professor Mally I was told that Professor W. M. Gilbert, of the United States Department of Agriculture, had at one time worked on this disease and also published an account of the same. However, a letter received from Professor Gilbert dated May 15, 1918, says as follows: "So far as I know there are no publications on this disease, as I did not do enough work on it to secure results for publication and have not had the opportunity to study it very recently." The writer was the first to report on this disease in 1917.¹

¹ Taubenhaus, J. J., "Pink Root, a New Disease of Onions in Texas," *Phytopath.* 7: 59, 1917 (abstract).

The symptoms of this trouble are very striking. Affected roots turn yellowish, then pink and dry up. The disease is confined to the roots only and not to the bulb. As fast as the old roots are affected new ones are produced, these in turn becoming diseased. In the end, the bulb spends all its energies in producing new roots which in turn become affected, thus failing to attain the commercial standard. Diseased bulbs remain dwarfed and small to the end of the season, although apparently sound in every other way. The average annual loss from this disease in Webb County may be estimated at forty per cent.

Careful investigations in the laboratory of the Texas Experiment Station revealed the fact that the disease was caused by an apparently new pathogenic organism, the name of which is proposed to be *Fusarium mali*, n. sp. Over one thousand plate cultures were made from diseased material and in nearly every case a pure culture of the above organism was obtained. Moreover in planting healthy onion sets in both sterilized sand or soil in which a pure culture of the *Fusarium* fungus was worked in, the disease in each case could readily be reproduced. The symptoms on the artificially infected plants were in every respect identical with those of infected plants naturally found in the field. The checks remained free, proving that *Fusarium mali* Taub. is the cause of pink root.

Numerous laboratory experiments, which were duplicated in the field have yielded results which are briefly summarized as follows:

1. The disease is carried with infected sets.
2. The disease is carried over from year to year in the soil. Short term rotations with other crops than onions on pink root lands do not starve out the pink root fungus.
3. Pink root attacks not only the onions but also the garlic and the shallot. It does not seem to attack any other of the liliaceous plants.
4. Steam sterilizing will kill the fungus in the soil. Formaldehyde at the rate of one pint to twenty gallons of water, per square

foot will also rid the soil of the causal organism.

5. Applications of lime will not rid the soil from pink root.

6. In infected soils liberally fertilized, especially where quickly available plant food is applied, together with proper cultural management, the crop can be nursed to produce fairly normal yields. In this case the proper fertilizer merely stimulates the bulbs in producing new roots faster than the disease can destroy them.

7. Fertilizers rich in nitrogen and organic matter are especially valuable for use in soils infected with the pink root.

8. Healthy sets when planted on diseased soils will contract the disease. Likewise, diseased sets planted on healthy soils will also yield diseased bulbs.

Numerous experiments both in the field and in the laboratory are still in progress and as soon as these are completed a bulletin will be published by the Texas Experiment Station giving a full description of the causal organism and results of the experiments.

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A CHROMOSOME DIFFERENCE BETWEEN THE SEXES OF *SPHÆROCARPOS TEXANUS*

THE chromosome group in the cells of the female gametophyte of *Sphærocarpos texanus* is characterized by one large element greater in length and in thickness than any of the other chromosomes in the group. This large element does not appear in the chromosome group of the male gametophyte, but instead there is a small chromosome commonly nearly spherical in form, and unlike anything found in the female. The other chromosomes in the cells of both sexes vary in length. They have the form of rods, usually curved. The chromosome number for each sex seems to be eight. In the cells of the female, seven of the eight are similar respectively to seven of the male. The eighth chromosome of the female (the largest one) seems to correspond to the small chromosome of the male. The condition as to the chromosomes of the gametophytes in