In cases of subcutaneous introduction, prostration does not occur until after 20 or 30 minutes, and even then is induced only by much larger doses.

Further tests were made with *curare*. A dose can be found which will have no apparent effect after subcutaneous injection, but which, after intramuscular introduction, will cause paralysis of the voluntary muscles in a few minutes. The authors also established striking differences between the effects of the two modes of application in the cases of *morphin* and *fluorescein*.

## Tenth meeting.[1]

**[Second Annual Business Meeting.]**

*Rockefeller Institute for Medical Research. February 15, 1905. President Meltzer in the chair.*

16 (62). **"Degrees of susceptibility to diptheria toxin among guinea-pigs. Transmission from parents to offspring": THEOBALD SMITH.** (Presented by **WILLIAM H. PARK.**)

The author called attention to the usefulness of the antitoxin unit furnished by the Institute for Experimental Therapy under the direction of Professor Ehrlich in the routine testing of the strength of diphtheria antitoxin. The one uncertain element is the relative resistance of the guinea-pigs to diphtheria toxin.

In the course of the past nine years the author has given considerable personal attention to this subject and found that different dealers furnished guinea-pigs of slightly different susceptibility. This difference was attributed to environment and care. The animals bred under the author's supervision generally showed maximum resistance. Irregularities in the routine tests during the past year led the author to look up the genealogy of the pigs used and he found that the different degrees of resistance belonged to certain families or litters and were constant for those families. Thus, one mother gave birth to young which did not react to what was the usual fatal dose. Four successive litters possessed the same resistance. As each pig could be tested but once the precise degree of resistance could not be measured, but it appeared prob-

[1] Reprinted from *Science*, 1905, xxi, p. 580; *American Medicine*, 1905, ix, p. 491; *Medical News*, 1905, lxxxvi, p. 666.

able that this family could stand 40% more toxin when mixed with the antitoxic unit than those of average susceptibility. Other mothers were traced whose offspring possessed less resistance than the ones described, but could still neutralize 20% more toxin when mixed with the antitoxic unit than the average.

It would seem from these observations that different degrees of susceptibility to toxin are to be found among guinea-pigs and that the special degree possessed by any one is not to be attributed to individual variation, but to a family trait or character. The resistance in the cases cited could not be attributed to any preliminary treatment with toxins and antitoxins. Experiments are now under way to determine the part played by the male in the transmission of toxin resistance. In the case of the most resistant family, the four litters were the offspring of two males.

17 (63). **"The protective action of venom upon blood-corpuscles,"** with demonstration: **HIDEYO NOGUCHI.** (Presented by **SIMON FLEXNER.**)

That concentrated solutions of venom fail to destroy and tend to preserve blood-corpuscles was noted by Mitchell and Stewart. Among the recent writers who have paid especial attention to the interpretation of this phenomenon are Kyes and Sachs. They ascribe it to deviation of the hemolytic complement through the excess of venom amboceptors. The study which forms the basis of this brief communication shows the hypothesis of Kyes and Sachs to be untenable, since it could be demonstrated that (1) the protective action fails to occur with venom in which, through heating to from 95° to 100° C., the hemolytic principle has been preserved, but certain other constituents have been coagulated, and (2) the action extends to protection of the corpuscles from laking by water, ether, saponin, etc. The conclusion which has been reached by the author is that venom unites with the globulins and especially with the hemoglobin of the red corpuscles, yielding a water-insoluble compound to which the protection is due. Various substances, such as salts, acids and alkalis, restore the hemolyzability of the corpuscles by dissolving the venom-hemoglobin compound. The permeability of the corpuscles is not markedly altered.