mark and no change of pressure resulted of more than 0.3 mm mercury in 47 hours. The entire chamber with contents was then immersed in liquid air, the pressure was determined and temperature measurement (accurate to 0.03° C.) was made with a platinum resistance thermometer. After 22 hours the temperature and pressure were again determined and no change of pressure exceeding 0.2 mm was found to have taken place, leading to the conclusion that under alpha-ray bombardment no disappearance of helium had resulted. In the great majority of reactions that we have studied the ratio (M/N) of the number of molecules reacting to the number of ion pairs generated is of the order from 1 to 6. Since for a value of M/N equal to unity, the pressure of helium would have decreased by 50 mm in this experiment, there is no evidence of the formation of a helium compound. This negative result with α-particles does not prove that helium and mercury do not interact under electrical discharge, since electron bombardment frequently produces chemically active resonance states, which are not known to be produced by alpha-particles.

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THE NATIVE HOST OF THE CHIGGER

WITHIN the past few years several acarologists have undertaken investigations hoping to answer the question of the native host of our common chigger, named by Dr. H. E. Ewing "The Mexican chigger-mite."[1] Among other studies of the Acarina undertaken by the author was an investigation of the above problem. The results have been most encouraging and seem to have settled this matter, at least in part.

Professor C. V. Riley and many of his students believed that the chiggers fed on various plant juices. Some larval Trombidiidae were then discovered on insects and the conclusion was drawn that all were parasitic on tracheates. During his studies Dr. Ewing came into the possession of a specimen of King snake, *Lampropeltis getulus getulus,* infested with the chigger that attacks man. While prosecuting this study the snake molted and all the mites were cast with the skin. None were reared to maturity, and the conclusion was drawn that the snake did not serve as a natural host. In a short article appearing in SCIENCE[2] during the past year Dr. Ewing reports as follows: "That he has found the hitherto unknown full-grown form of the common chigger, together with strong indications that the rabbit is largely responsible for its spread. The adult chigger has been known to entomologists as Trombicula . . ."

A few years ago several specimens of black snakes, *Zamenis constrictor,* were captured that had small red parasitic mites attached to the skin between the scales. Not having any particular interest in the Acarina at this time the specimens were allowed to escape without further study.

During the summer of 1923 several black snakes, *Zamenis constrictor,* and garter snakes, *Eutoenia sirtalis,* of various sizes were captured that also carried the small red mites between the scales. Specimens were removed, mounted and determined as *Trombicula tlalzahuatl* Murray. These determinations were later confirmed by Dr. Ewing. The hosts were confined and fed, but none of the mites had reached maturity when it was necessary to discontinue the observations.

During the season of 1924 large and small specimens of the black snake, *Zamenis constrictor,* the garter snake, *Eutoenia sirtalis,* the common hog-nosed snake, *Heterodon platyrhinus,* the black hog-nosed snake, *Heterodon platyrhinus niger,* and the eastern ring-necked snake, *Diadophis punctatus,* were captured carrying countless numbers of chiggers. These hosts were taken throughout southern Ohio. Copperheads, rattlesnakes and water snakes, although examined alive, were never found to be infested with the chiggers. The infested snakes were confined in suitable aquaria and fed on newts, toads and frogs. Due to the molting of several of the snakes their parasites were lost, as had been the experience of Dr. Ewing. Observations were made daily, but at no time did any of the snakes appear annoyed by the presence of the numerous parasites. Engorgement was very slow. When engorged to repletion the bright red body protruded beyond the margin of the overlapping scale and was easily seen. After an infested snake has fed and the scales are widely separated due to the engorged condition of the body the parasites, apparently standing on their heads, are very conspicuous. No mites have been found attached beneath the ventral scales or beneath the close set scales of the head.

Throughout late September the engorged larvae, which have been in this condition for several weeks, begin to fall from the host and make their way by very sluggish movements into the loose soil to a depth of from one half inch to an inch. The length of time between apparent engorgement and detachment from the host may be necessary to allow extrication of the mouthparts. From two to three weeks is spent in a quiescent stage similar to the pupal stage of many insects after which the adult emerges, but from all

[1] "The chigger mites affecting man and the domestic animals," H. E. Ewing and A. Hartzell, *Jour. Ec. Ent.,* 2, 2, 1918, p. 261.

[2] "Life history of chigger," H. E. Ewing, SCIENCE—Supplement, 2, LIX, 1924, p. xiv.

observations thus far made does not appear above ground, nor have they been found to leave their earthen cells until the following spring.

Following the usual biology of the Trombidiidae oviposition does not take place until the following spring. There is but one generation a year. The very moist conditions held by some authors to be necessary for development have not been verified by the work thus far performed. Some adults have been reared under very dry conditions while others from the same host have reached maturity under quite moist surroundings.

Further details and additional studies on *Trombicula tlalzahuatl* Murray will appear at a later date.

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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

SOCIETIES RELATED TO SECTION O (AGRICULTURE) AT WASHINGTON

(*A report for Section O appeared in Science for February 6.*)

The American Society of Agronomy

President, C. W. Warburton.

Secretary, P. E. Brown, Iowa State College, Ames, Iowa.

(*Report by P. E. Brown*)

The society held a joint program with Section O as shown in the report of the section, and also participated in the agricultural dinner. No separate meeting of the society was held.

The American Society for Horticultural Science

President, M. J. Dorsey.

Secretary, C. P. Close, U. S. Department of Agriculture, Washington, D. C.

(*Report by C. P. Close*)

The American Society for Horticultural Science held its annual meeting on December 29, 30 and 31. The program was so crowded that it was necessary to divide into sections on two half days, making eight sessions in all. There was one joint session with Section O of the American Association for the Advancement of Science, at which the teaching of horticultural courses and methods of experimentation were especially considered. A session was devoted to extension work in horticulture, in which methods and results of this work were discussed. There was one session on vegetable topics and another on fruit topics. The other sessions were general, covering both fruits and vegetables. The attendance was the largest in the history of the society, about 100 members being present.

The Society of American Foresters

President, Walter Mulford.

Secretary, R. V. Reynolds, U. S. Forest Service, Washington, D. C.

(*Report by R. V. Reynolds*)

The twenty-fourth annual meeting of the society was held on December 30 and 31, in the spacious library of Central High School, allotted them through the efficient management of the A. A. A. S. At the close of the first quarter century of the society's existence the program presented a review of the development of forestry in the United States, a sober estimate of the present standing and achievements of the profession, and a forward glance at ways and means for future accomplishment adapted to American needs. A dozen leading speakers covered some of the principal subjects in the wide field of forestry, while others commented briefly and amplified the ideas of the principals.

The attendance probably constituted the largest assemblage of professional foresters ever convened in the United States, including federal and state officials, foresters in private and corporate employ, and the leading educators from the foremost forestry schools. The registered attendance was 182, including six of the eight fellows, 112 seniors, 26 members, six associates, and 32 guests. The members present represented 12 of the 14 sections composing the society and came from 23 states, the District of Columbia and Canada. The membership has tripled since 1917, and now amounts to 1,094 members, in six grades.

The executive council transacted a large amount of business before the annual meeting. It was voted to employ an executive secretary on part time, as a preliminary step to an eventual increase of dues and a full-time secretary. The council is unanimous in considering that this move is essential. The *Journal of Forestry,* previously issued eight times yearly, will become a monthly in 1925. A standing Committee on International Relations in Forestry was established.

One of the most enjoyable events of the meeting period was a smoker held at the Cosmos Club on the evening of December 30, at which all visiting and local foresters were guests of the Washington Section of the society and an entertainment committee organized by the United States Forest Service. Over 200 men attended, heard short addresses and music, watched motion pictures related to forestry and con-