During the summer, twenty collections were made at ten different stations. Only a few of the infected hosts that were worked with have been identified at this time. Also, additional studies of the numerous slides prepared from the living fungus material are still needed.

The successful summer's work has materially contributed to our knowledge of these little-known organisms and their relationships to their hosts. Nevertheless, many interesting problems still remain to be worked on, and the rich habitats of Jackson Hole will, undoubtedly reveal many other new forms of Trichomycetes.

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The Collembola or Springtail Insects of the High Altitude Areas of Yellowstone and Grand Teton National Parks

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Project Number 111

Extensive collecting of Collembola, perhaps the most intensive for any region of comparable size in the U.S., was carried out during the summer of 1961. The region involved encompassed Yellowstone and Grand Teton National Parks and certain adjacent areas of Teton and Shoshone National Forests. A new type of modified Berlese funnel, involving a battery of 12 Buchner separatory funnels, was employed to extract the Collembola from such materials as soil, humus, moss, etc. This new apparatus proved highly efficient for the purpose. Several hundred lots of material were collected and passed through the Berlese apparatus. Extensive manual collecting, particularly sweeping vegetation, was also done. Emphasis was placed on the study of the Collembolous fauna of high altitude areas; collections were made at elevations ranging from about 6,500 to 13,700 feet.

Invaluable assistance was rendered by two fellow investigators. Dr. J. Gordon Edwards provided about a dozen lots of material from mountain peaks ranging from 11,000 to 13,700 feet, with a yield of 15 species of Collembola, including some new species. Dr. Kenneth Diem brought back from his various pack trips to remote regions more than fifty lots of material that yielded a great quantity of Collembola, including several new species.

Much of the final study of the material collected remains to be carried out during the coming winter. The completion of this work will be performed at the Southwestern Regional Laboratory of the American Museum of Natural History at Portal, Arizona. There, Collembola will be collected at the high elevations of the Chiricahua Mountains in Southeastern Arizona for a comparative study with the Wyoming species.

Although the study is still incomplete one fact is evident: Altitude as such is not a factor in determining the distribution of most species of Collembola; numerous species known from near sea level have

been taken in the high mountain regions. For example the Linnaean species Podura aquatica, of world-wide distribution, found commonly near sea level, was collected at elevations ranging from 6,500 to 10,000 feet.

Another interesting discovery was the almost complete absence of species of two of four subfamilies of the single family that constitutes the suborder Symphypleona, one of the two suborders of Collembola. Although numerous species of the other two subfamilies of this suborder were collected, only one species of the third subfamily and none of the fourth were discovered. Altitude directly may not be the determining factor in this instance; a short period of warm summer temperatures may not permit completion of the life cycles of the species in these subfamilies, probably the most highly specialized members of the suborder. Further investigation of this question seems warranted.

A small amount of collecting was done in areas earlier scourged by forest fires. An interesting and important study would involve the determination of the rate of repopulation of such burned areas by the Collembola which constitute a major part of the fauna of the soil and play an important role in the breakdown of organic materials in the biological cycle of soil formation.

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Rodent Population Studies in Jackson Hole, Wyoming

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Project Number 110

Collections were made during a period of about a month during the summer. Results of these collections are not yet available.

Stress as a Factor in Parasitism

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Project Number 103

Research during the summer of 1961 was a continuation of a study which was started in June, 1959. The overall purpose was to investigate the relationships between stress on an animal and its parasites. This problem not only involves the internal environment of a host, which is the habitat of parasites, but also is related to population pressures and behavior.

As in previous studies, the host animal was the Uinta ground squirrel, Citellus armatus. These animals were live-trapped, examined immediately for parasites to get a field count, taken to the laboratory, weighed and caged. They were fed dandelions in the morning and rabbit pellets in the afternoon. Water was present at all times. Fifty-three squirrels were captured but a few soon died of unknown causes.