tablishment of a uniform exemption from taxation of at least 600 marks for each member of a family, with elimination of the present maximal sum for the whole family."

DISCUSSION

"MAD ITCH" OF CATTLE

THE observations made in this note are based on an outbreak of "mad itch" in a herd of dairy cattle in Johnson County, Iowa, in 1930. The disease is a rapidly fatal one, the interval in this outbreak between the appearance of pruritus or "itch" and death ranged from 36 to 48 hours.

The source of our experimental material was the brain tissue, preserved in glycerol, of three cows. The specimens from two cows produced no effect when injected subcutaneously into rabbits. The remaining specimen was effective, and on injection produced conditions resembling "mad itch" in cattle and death in a total period of 100 hours or less. The symptoms of pruritus appeared in from 70 to 80 hours after the inoculation and death followed 12 to 24 hours later.

Not only rabbits, but guinea pigs, white rats and mice are susceptible to inoculation. A difference has been noted in the susceptibility of the rabbit and the other animals. Subcutaneous injection is regularly effective in the rabbit, and intracerebral injection in the other species. Inoculations by other routes are irregularly effective in guinea pigs, rats and mice.

We have been interested in the experimental production of "mad itch" in small laboratory animals because through them an exhaustive study will be facilitated, and the nature of the etiologic or causative agent of the disease may be determined.

It is obvious that the agent is resistant to glycerolation. This is equally true of the infected rabbit and cow brain. No ordinary bacterial organism has by methods of culture and direct microscopic examination been discovered. On the other hand, suspensions of emulsified brain of rabbits, when passed through Berkefeld filters V, N and W, and Chamberland filter L^3, are all effective in inducing the experimental disease in rabbits.

The indications, therefore, are that "mad itch" in cattle is a disease communicable to laboratory rodents and its incitant is a filterpassing virus.

RICHARD E. SHOPE
DEPARTMENT OF ANIMAL PATHOLOGY,
THE ROCKEFELLER INSTITUTE FOR
MEDICAL RESEARCH,
PRINCETON, N. J.

THE SORTING POWER OF WIND AND WAVE

THE sorting power of streams of water—the power to sift out light or fine material from coarse or heavy material, such as dust, sand, gravel, etc.—has long been known and much studied. The sorting power of winds and waves is also a matter of common knowledge, but perhaps the effectiveness with which this process is carried on under favorable circumstances is not quite so generally known. The thoroughness of the sifting depends upon several factors, including especially differences in the size, shape and specific gravity of the particles, and, to a lesser degree, the slope of the surface and velocity of the wind or waves.

During the past summer we found on the shores of Bear Lake, Idaho-Wyoming, immense numbers of mollusk shells, chiefly *Carinifex,* with some *Lymnaea utahensis, Paludestrina, Valvata, Fluminicola* and other genera. On some portions of the shore the shells had been gathered by the waves into low windrows, or, to coin a more expressive term for the particular phenomena, waverows, from one to three or four inches deep and two to five times as wide. On a fine, sandy beach at the north end of the lake we scooped four quarts of shells by double handfuls from the top of the windrows and sacked them. In the laboratory we found that the shells had been so thoroughly sifted from the surrounding sand, by the waves, that there was only about a teaspoonful of sand left after separating out all the shells. On a similar beach on the west side we scooped up two quarts of shells out of which only three tablespoonfuls of sand were obtained. South of Garden City, on gravel, our collections contained coarse pebbles, in size roughly comparable to the shells, up to about 3 per cent. On the east side of the lake not far from the southern end, on a beach composed chiefly of well-rounded gravel of about the same average size as the shells but of course much heavier in proportion to bulk, we scooped up three pints from the windrows, which yielded 20 per cent. gravel, in bulk, much more in weight.

Near Thermal, California, a little hollow in the sand was filled with *Paludestrina protea, P. longinqua* and *Physa,* from which the fine sand had been so completely eliminated by the wind that in a lot of about 12,000 specimens scooped up by the hands there was scarcely a trace of sand. Near Brownwood, Texas, we found a ledge of limestone composed largely of foraminifera (*Fusulina*), which were weathering out rapidly. These were gathered by the wind into little depressions in the rock, the finer débris resulting from

the weathering having been almost completely eliminated. These are just a few out of numerous instances where shells and fossils have afforded data useful in the study of the sorting power of wind and water. Incidentally, they suggest the explanation of occasional occurrences of "pockets" and "streaks" of fossils in the rocks which would otherwise be very puzzling.

JUNIUS HENDERSON
UNIVERSITY OF COLORADO

A TERRESTRIAL AMPHIPOD IN THE UNITED STATES

A TERRESTRIAL amphipod, *Talitrus alluandi,* has been found in abundance in a greenhouse in Ohio. Besides its natural habitat, which appears to be the Indo-Pacific Islands, it has also been recorded from several localities in Europe, where it apparently has been carried and has become established locally. The most recent of these reports is one by K. Stephensen in 1924 on the finding of this organism in a greenhouse in Copenhagen.

The fact that the specimens under consideration were found in large numbers in a greenhouse in Columbus, Ohio, would lend support to the idea that this form has likewise been transported to this country and has survived for more than two years in an environment which simulates tropical conditions.

The specimens, measuring from two to four and a quarter millimeters in length, were found in great abundance in a greenhouse of the Fifth Avenue Floral Company, at Columbus, Ohio, by Mr. H. Walker, of the Ohio State University, and were given to the writers by Dr. Raymond C. Osburn. Search has been made in many other greenhouses but without success. They have, however, subsequently been cultured successfully in the laboratory at Cleveland.

It is believed that this is the first record of a completely terrestrial amphipod found within the United States. *Talitrus alluandi* was described by Chevreux in 1901, in the *Mem. Soc. Zool. de France,* 14: 389–393.

J. PAUL VISSCHER
CHESTER S. HEIMLICH
BIOLOGICAL LABORATORY,
WESTERN RESERVE UNIVERSITY

PLANT LICE PUMPING IN UNISON

THE phenomenon, "flashing of fireflies in unison," discussed on page 132 in the January 31 and on page 537 in the May 23 issues, prompts me to report some observations of the curious behavior of aphids. These insects appear to lift their bodies simultaneously in the act of feeding, sucking the sap of a host plant. Following the theory described in the second discussion mentioned above, the insect on seeing his neighbor rise for inspiration or pumping may himself rise to keep in step and thus all in a like way tend to synchronism. But apparently incidence of light is not a motive, as the writer has placed a cardboard screen around the sides of an individual feeding in proximity to many others and this individual kept in step right on with the others, and even when there was a pause all along the line he paused too, and on recommencement of the lifting or inflating of their bodies in the act of sucking again, the screened individual was found to be in step as before, although he could not see any of them. It was noted that a colony of the insects rising in unison on a branch somewhat removed from another collection rising in unison on another branch did not coincide in moment, *i.e.,* each individual colony rose as a man, but did not rise in unison with the other colony.

W. LEE TANNER
CHICAGO, ILLINOIS

SPECIAL CORRESPONDENCE

A NATIONAL SYSTEM OF EXPERIMENTAL FORESTS AND RANGES

THE Acting Secretary of Agriculture recently approved a National Forest regulation which marks a new epoch in the forest-research work of the United States. The regulation is as follows:

> The forester shall determine, define and permanently record a series of areas of national forest land to be known as experimental forests, sufficient in number and extent adequately to provide for the experimental work necessary as a basis for forest production or forest and range production in each forest region, these areas to be dedicated to and used for research; also where necessary a supplemental series of areas for range investigations to be known as experimental ranges; and a series to be known as natural areas sufficient in number and extent adequately to illustrate or typify virgin conditions of forest or range growth in each forest or range region, to be retained in a virgin or unmodified condition for purposes of science, research and education; and a series of areas to be known as primitive areas within which will be maintained primitive conditions of environment, transportation, habitation and subsistence, with a view to conserving the value of such areas for purposes of public education and recreation. Within any areas so designated, except for permanent improvements needed in experimental forests and ranges, no occupancy under special use permit shall be allowed, or the construction of permanent improvements by any public agency be permitted, except as authorized by the forester or the secretary.