

and have not previously admitted that they may be altered to this extent. It has been allowed that some such changes might take place during the course of many generations of individuals, but Dr. Strong's work forces the conclusion that it is quite possible to produce profound modification on short order.

Discussing corkscrew one-celled forms known as spirochetes, which figure in prevalent disease, "the free living spirochetes in water have generally been considered harmless," he stated. "Recently there have been found in certain stagnant waters, and on the surface of filter beds, a number of spirochetes which correspond in form with their parasitic cousins; such as the causal organisms of syphilis, relapsing fever, seven-day fever and bleeding jaundice."

Experiments on the bacterium resembling the jaundice organism, isolated from water, proved that after being grown in nutritive solutions, this particular variety did actually acquire the power of causing the jaundice or Weil's disease, so that many of the animals inoculated with the preparation died.

A similar experiment with a protozoan, a low animal form, resulted in the development of a species which sickened monkeys, although the animals were immune to the untreated germs.

In the case of some of the experiments, the change was so complete that parents, once free living but educated to the parasitic state of life, produced descendants which were also parasitic. In this case, free living forms were developed in addition, so that the growth of the germs was sure to take place, even though an obliging host animal should not be conveniently at hand. This observation is a second blow for the old ideas, as it was previously thought that a characteristic acquired within such a short space of time could not be hereditary.

The discovery may explain mysterious diseases of the digestive tract, according to Dr. Strong. Spirochetal organisms are known to exist in the intestinal canal, but their exact relationship to intestinal disease is indefinite. "They may under the proper circumstances give rise to dysenteric symptoms, or to chronic gangrenous appendicitis," he suggested.

INSECT SOUNDS HAVE NO MEANING

The plaintive love-song of the cricket, the cheerful fiddling of the katydid, and all the other insect sounds that make summer nights in the country so romantic - and often so unbearable - may have no meaning at all to the insects themselves. Dr. Frank E. Lutz, curator of insects in the American Museum of Natural History, New York, speaking before a joint meeting of the Entomological Society of America and the Ecological Society of America, challenged the idea that every sound that an insect made had its meaning.

"Judged by human ears, the best insect-musicians of today belong to rather primitive orders," said Dr. Lutz. "The more advanced groups, such as ants, bees, flies, and butterflies, make no sounds that we can hear or else, at most, what seem to us to be nothing more than faint squeaks, buzzes, hums, or clicks. However, it is entirely probable - indeed, practically certain - that insect-sounds are not made for the purpose of being heard by human ears. Whether the insects themselves hear these sounds is the important question and one that has not been - possibly can not be - determined beyond all doubt.

"In this connection it should be remembered that, in man's affairs at least,

many sounds are made without intention and even contrary to desire - for examples, sneezing and snoring. No part of the success of a certain popular kind of automobile is due to the various and often loud noises emitted by the machine in action. Using an illustration more applicable to the present subject, the armor of the knights of old creaked and rattled as they moved. Their fellows were able to hear these sounds and reacted to them. A rough spot in a particular joint increased the sound made by the moving of that joint. Now, if the armor-maker purposely designed these joints to creak or if the wearer purposely creaked his armor, even if for no other motive than to tickle his pride (as has been the case with wearers of squeaking shoes), then the creaking of the joint had a significance analogous to that usually claimed for certain sounds made by insects - there was an adaptation of structure to sound production. But, considering now the sounds made by insects, if they are merely incidental to friction between parts of their body, analogous to unintentional squeaks and rattles of knightly armor then those sounds have no biological significance, except as they may betray the insect to its enemies."

SCIENCE HUNTING DOWN ANTIRACHITIC VITAMIN

Further clues in the tracing down of the mysterious accessory food factor or vitamin which prevents rickets were revealed for the consideration of the American Society of Biological Chemists, meeting in Washington, by Drs. Alfred F. Hess and Mildred Weinstock, of New York, who are on the trail of the component of cod liver oil now well known as an effective substitute for the ultra-violet rays of sunshine in the banishing of bow legs, bad teeth and bending bones.

Cod liver oil supplies curative and preventive principle, which is absent in vegetable oils, such as olive or cottonseed oils. But these oils, as well as green vegetables, such as lettuce, or wheat can be likewise endowed with power of preventing rickets by exposing them to the rays of ultra-violet light from a mercury vapor or carbon arc light. The power so acquired is not immediately lost, but is retained by the lettuce for several days.

Further, according to the statement of the New York doctors, the property imparted to otherwise inactive oils by the exposure to ultra-violet rays is of permanent nature, and is retained for many months. "While it is impossible to state definitely that the substance which is formed is the same as that which is responsible for the remarkable curative value of cod liver oil, it has been found by means of chemical examinations that cod liver oil can be separated into two definite portions - one which is of value and one of no value in curing rickets," they stated.

"The vegetable oils which have been exposed to the ultra-violet rays can likewise and by the same chemical means be separated into a portion which is of no value, and another which acts as a specific in warding off or curing rickets. It would, therefore, seem that a substance has been formed in the vegetable oils by the action of the ultra-violet rays, similar to that which is naturally present in the oil of the liver of the cod."

Minnesota has nine fish refuges either closed to fishing at all times or during specified seasons.
