There is an old record of a coconut pest believed to be *Levuana,* in Fiji as early as 1871, but there is reason to believe that the species was introduced from some as yet undiscovered locality. Mr. Taylor told me that in New Guinea he found many related species feeding just as *Levuana* does, on palms and plants of the ginger family (Zingiberaceae). He did not, however, find *Levuana.* In New Caledonia I saw no trace of *Levuana,* though the coconuts were attacked by other pests, which I hope to discuss at another time.

Levuana remained in Fiji, attracting little attention, because not yet wide spread, for a number of years. But eventually it came to be recognized as a major pest, and one which, unchecked, would destroy all the coconuts. It began to spread, and in 1921–22 reached the Island of Ovalau. The indications were that it would eventually spread all over the Pacific Islands, destroying the coconut and bringing calamity to the natives. Mr. Paine told me that it reached Malolo, off the west coast, and killed the coconuts, itself perishing apparently from lack of food. It is not, however, confined to the coconut; it will attack ornamental palms and has been seen feeding on the leaves of the banana. So abundant did *Levuana* become that many perished because the cocoons were spun in masses, one over the other, with the result that the moths hatching below died without being able to emerge.

No enemies were adequate to check the scourge. A large attid spider of the subfamily Cytaeinae (*Ascyltus pterygodes* L. Koch) attacks *Levuana.* It is a beautiful animal, the cephalothorax and abdomen above green, the legs partly purple. Three species of Pentatomid bugs are enemies of *Levuana.* One, *Oechalia consocialis* (described from Australia), is a narrow species, with pointed scutellum. The second, *Cantheconidea cyanacantha* (described from Fiji), is brown, obtuse, the scutellum with a metallic blue spot on each side at base, the lateral spines of the prothorax also blue, as the specific name indicates. The third, *Platynopus* or *Pinthaeus melanacanthus,* has long, blue-black spines at sides of thorax, and has the end of the scutellum broad and pale yellow. A clerid beetle, *Callimerus arcufer,* was imported from the Malay Peninsula to feed on *Levuana,* but it was of no use, and the many colonies liberated apparently failed to establish themselves. The outlook was thus, for a time, discouraging, as none of the enemies mentioned could abate the plague.

In 1925 Dr. Aldrich, of the U. S. National Museum, described a new fly of the family Tachinidae as *Ptychomyia remota.* It was sent from the Federated Malay States, with the statement that it was a parasite of *Artona catoxantha* Hampson, a zygaenid moth seriously attacking coconuts. Dr. Tothill and his associates obtained living material of this fly, and liberated it in Fiji. Results were apparent in about six months. The fly spread with great rapidity, and in a short time the *Levuana* pest was practically a thing of the past. When I was in Suva, I was shown the coconut palms, with fresh green foliage, ready to bear abundant fruit. I could only imagine from descriptions what they looked like not long ago.

The entomological work in Fiji is supported to the extent of about half by the government, the other half by the planters, through a tax on copra.

As an example of successful biological control, through cooperation among scientific men, the case of *Levuana* could hardly be excelled. It should encourage further efforts along similar lines, teaching at the same time the importance of patiently and industriously following every clue. The only disadvantage is that a section of the public, seeing the entomological magicians thus work miracles, do not understand why they can not control any pest at any time.

T. D. A. COCKERELL

"AN UNEXPLAINED VISUAL PHENOMENON"

UNDER the above title, in SCIENCE for October 26, Mr. Gradle reported an extremely interesting observation. I am wondering whether the phenomenon is not due to the same underlying cause as the occasional stationary appearance of a rotating spoked wheel. Also, I have frequently observed that when I was stropping a razor, it gave the jerky appearance familiar in the "movie" of a rapid action; this appearance has occurred in sunlight as well as in artificial light. I have questioned several psychologists about it without any result. My only explanation (purely a hypothesis!) is that in certain individuals vision is not a steady process, but occurs at regular intervals, as by a stroboscopic disk. Or shall we say that vision is also quantized? Mr. Gradle can easily test this in his case by adjusting the speed of a spoked wheel until he can repeat his observation on the propeller.

As to the position of his eyes, it is well known that the peripheral portions of the retina have more acute vision in dim light than the central portion. When I walk over a trestle in dim light I always look straight ahead, and can see the ties more easily than when looking down.

PAUL F. GAEHR

WELLS COLLEGE,
AURORA, NEW YORK

REFERRING to Mr. Harry S. Gradle's letter in SCIENCE,[1] I might say that I have the same sort of

[1] October 26, 1928, p. 404.

experience every day. If I look at the wheels of an automobile which is passing me at moderate speed, perhaps of ten to fifteen miles per hour, they will seem to stop stock still about once per second while the car is within 45 degrees of my straight-ahead direction. The phenomenon is much clearer with wooden spokes than with wire ones. I can see all the wooden spokes perfectly distinctly.

I have never been able to get an oculist interested enough in the thing *facere aliquid experimentum in corpore vili,* and I have never taken the time to experiment myself with a rotating disk. I have been inclined to attribute the phenomenon to retinal fatigue.

There is a peculiarity in my vision which may have something to do with it. Presbyopia has hardened my lenses asymmetrically, and each eye has one fairly distinct false focus and several quite indistinct ones. At the proper distance from an electric sign at night I can read about half the letters at the false focus. With the reverse illumination, as with black print on white paper, it doesn't bother me, as the spurious images merge in the white background and are too faint to see. On a dark day, when my pupils are wide open, I can just see them. The trouble is in the periphery of the lenses. A two or three millimeter pinhole obviates most of the trouble.

R. M. PACKARD

BOSTON, MASSACHUSETTS

NOTE UPON THE OCCURRENCE OF OTOMESOSTOMA AUDITIVUM (PLESS.) IN THE UNITED STATES

IN Ward and Whipple's "Fresh-water Biology" (18) the statement occurs that no fresh-water representative of the suborder *Alloeocoela* has been definitely established for the United States (page 354). Higley (18) records new species of rhabdocoeles for the Mississippi Valley but does not mention any genus or species of the suborder *Alloeocoela.* Nor have I been able to find any reference to this suborder which would indicate that it occurred in the United States. I would like to record, therefore, that I have found and definitely identified *Otomesostoma auditivum* in the streams and pools near the University of Virginia. I have found only five specimens so far, three in April, one in May and one in July. Of those I found in April two were sexually mature and produced eggs which later developed. The young ate heartily of tadpole's brain and were developing in fine fashion until the culture was accidentally destroyed.

I have found specimens of two other species which, from the general characteristics ascribed to this suborder by von Graff, I am convinced belong to the suborder *Alloeocoela.* These species have not been identified definitely as yet.

It seems, from these instances, that members of this suborder do exist in the United States, and that by careful observation and study they will be found to be somewhat abundant.

J. S. CARTER

UNIVERSITY OF VIRGINIA

SALMONELLA COLUMBENSIS

SALMONELLA COLUMBENSIS was first described by Castellani in 1905 under the name of *Bacterium columbense.* He isolated it from cases clinically similar to typhoid fever of medium severity. The microorganism was motile, Gram negative and did not produce spores. It produced acid and gas in dextrose, maltose, dulcite, mannite, dextrin (slight amount), arabinose, sorbite, galactose, levulose, salicin, rhamnose and gylcerine no acid or gas was produced in saccharose, raffinose, adonite, inulin, inosite or amygdalin. Acid and gas production in lactose was variable. It liquefied neither gelatin nor serum. Tests with typhoid serum, paratyphoid A serum and paratyphoid B serum, were distinctly negative.

The writer recently isolated a microorganism similar to the above from the stool of a non-febrile patient. This microorganism did not produce acid or gas from either lactose or dextrin. In addition to the carbohydrates used by Castellani, acid and gas were produced in xylose and trehalose. There was no agglutination with typhoid, paratyphoid A or paratyphoid B serums. Agglutination with *Salmonella columbensis* serum was complete in full titre.

Judging from the available literature, it would appear that *Salmonella columbensis* infections and carriers are quite rare in this country, there being no report in the literature reviewed.

FREDERICK W. SHAW

MEDICAL COLLEGE OF VIRGINIA

INHALATION THE CHIEF FACTOR IN ONION OR GARLIC CONTAMINATION OF MILK

IN sections where wild onion and garlic flourish agricultural experiment stations, dairymen and consumers of dairy products have long been interested in measures to prevent contamination of the milk of cows on pasture during the spring and fall seasons of growth of these weeds. The desirability of accomplishing the result by supplementary feeding has suggested many experiments which have failed to solve the problem and has encouraged the sale of numerous proprietary feeds which have not fulfilled their guarantees.