THE forty-ninth summer meeting of the American Mathematical Society and the twenty-fifth colloquium were held in September at the New Jersey College for Women, Rutgers University. The Mathematical Association of America and the Institute of Mathematical Statistics met in conjunction with the society. There was an attendance of about three hundred, including two hundred and forty-two members of the society. The program consisted of three colloquium lectures on "Existence Theorems in the Calculus of Variations," by Professor E. J. McShane; two addresses, "The Complex Method of the Theory of Trigonometric Series," by Professor Antoni Zygmund, and "Finite Deformations of an Elastic Solid," by Professor F. D. Murnaghan. There were six sections for contributed papers, one of which was a joint session with the Institute of Mathematical Statistics. Eighty-eight papers were presented either in person or by title.

THE National Research Council announces that fellowships in mathematics, astronomy, physics, chemistry, geology, paleontology, physical geography, zoology, botany, agriculture, forestry, anthropology and psychology will be available for the year 1944–1945. These fellowships are awarded as a rule to persons under thirty-five years of age who are citizens of the United States or Canada, and who have met all the requirements for the doctor's degree. Applications must be filed on or before December 31, on forms obtainable from the secretary of the Fellowship Board in the Natural Sciences, National Research Council, 2101 Constitution Avenue, Washington 25, D. C. A handbook describing the fellowships—stipends, conditions and tenure—will be furnished upon request.

SCIENCE SERVICE announces that the membership in Science Clubs of America has increased 300 per cent. since this time last year. The third annual science talent search, sponsored by Science Clubs of America and offering $11,000 in Westinghouse science scholarships, is now under way. Entries must be completed by December 27. Over 15,000 high-school seniors competed in a similar contest last year, and it is expected that more than that number will enter this third search for talented science students worthy of financial assistance for higher education.

THE State Legislature of Alabama has made an appropriation making possible the inauguration of a state-wide program of cancer control. For the first year $30,000 has been set aside and for the second year $50,000 to finance the project, which will be administered by the State Board of Health. A cancer control committee has been named by the Medical Association of the State of Alabama.

DISCUSSION

A POSSIBLE RELATIONSHIP BETWEEN THE WALNUT ERINOSE MITE AND WALNUT BLIGHT

IN the late summer of 1942, successful isolation of the walnut blight organism, *Phytomonas juglandis* (Pierce) Bergey *et al.*, responsible for huge annual losses of English walnuts all over the world, was made from a walnut erinose mite, *Eriophyes tristriatus* Nalepa var. *erinea* Nalepa, found hibernating beneath the scales of a healthy, dormant bud on an English walnut tree. Transferred to the surface of a plate of beef agar, colonies of bacteria in mixed culture, including the blight organism, developed from one of a small number of mites so treated. After purification of the cultures, needle puncture inoculations were made on the main stems of young seedling walnuts forced in the greenhouse. Small but characteristic lesions of the disease developed before the trees went dormant and the tissue hardened.

In 1943, young shoots and nuts on mature trees inoculated by the needle puncture method likewise developed characteristic lesions. Similarly, broth suspensions of the bacteria atomized on unwounded nuts produced numerous lesions. Corresponding controls in all the experiments referred to remained healthy.

Smith[1] pointed out over thirty years ago that flies attracted to the black, slimy sap that often oozes from blight lesions and which teems with the bacteria may become contaminated. Since wounds or abrasions of the epidermis of susceptible tissue are not necessary for infection, he assumed that flies disseminate the disease by simply tracking the bacteria over susceptible surfaces, or on their mouth parts. It must be recognized that flies are not obligate parasites[2] of the walnut and their presence in a tree is casual or accidental. Thus the role they play in the dissemination of the disease must be a variable one if they actually constitute a factor at all.

The successful isolation of the blight bacteria from the walnut erinose mite marks the first instance that a strictly obligate parasite of the English walnut has been found to harbor the organism. Whether the walnut erinose mite can actually transmit the disease to the nuts is not yet proved, but it does not seem im-

[1] C. O. Smith, *Calif. Agr. Exp. Sta. Bul.* 231, 1912.

[2] Even the walnut husk fly, a serious parasite of walnuts in Southern California, is not an obligate parasite of the walnut. The first authentic report of its presence in the state occurred as late as 1926, consequently the flies C. O. Smith worked with were entirely different and probably not parasites on walnuts at all.

probable. The mites, microscopic in size, are omnipresent on walnuts and abound by the millions on trees of all sizes and ages where they produce erinea or galls on the foliage. Heretofore, except for the hypertrophies they produce on the leaves, they have been regarded as of no importance. In the light of the present discovery it may be necessary to take them more seriously. This is true with regard to existing methods of controlling bacterial blight, since the sprays now in use for controlling the disease do not destroy the mite. This factor may be responsible for certain irregularities observed from time to time in the control of the disease with sprays.

Grateful acknowledgment is made to Dr. Leslie M. Smith, one of the few authorities on Eriophyid mites in California, for his considerable assistance in handling the mites used in the experiments.

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ANOTHER DISCOVERY OF CHAOS CHAOS

IN 1936 Schaeffer[1] rediscovered Chaos Chaos in a New Jersey marsh. In the spring of 1942, we found several large specimens of the animal in a shallow pond in Cunningham Park, New York City. In the spring of 1943, we collected several large specimens, some measuring 900 μ, in the same pond.

These animals responded readily to culturing by the method of Brandwein.[2] The agar which serves to anchor the rice grains (as described in this method) was eliminated. Large quantities of these animals are now on hand. They are able to ingest such animals as Frontonia, Stentor, Spirostomum, Blepharisma, different Rotifera and some of the smaller Turbellaria.

The animals seem to be Schaeffer's type A, in the main. Some of the animals, however, have the ellipsoid nucleus of the so-called type B.

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TENNYSON'S PREDICTION OF THE INVENTION, USE AND MISUSE OF THE AEROPLANE

ON several previous occasions I have, in these columns, drawn attention to a number of remarkable predictions concerning the invention, use and misuse of aeroplanes. In all these cases the prophets were scientists. I have elsewhere drawn attention to similar predictions made by literary men.[1] The prediction concerning the aeroplane which is perhaps the most remarkable of all is by Alfred Tennyson, and occurs in his poem "Locksley Hall," published in 1842.[2]

The relevant stanzas are as follows:

Men, my brothers, men the workers, ever reaping something new:
That which they have done but earnest of the things that they shall do;

For I dipt into the future, far as the human eye could see,
Saw the Vision of the world, and all the wonders that would be;

Saw the heavens fill with commerce, argosies of magic sails,
Pilots of the purple twilight, dropping down with costly bales;

Heard the heavens filled with shouting, and there rained a ghastly dew
From the nation's airy navies grappling in the central blue;

Far along the world-wide whisper of the south-wind rushing warm,
With the standards of the people plunging thro' the thunder-storm;

Till the war-drum throbb'd no longer, and the battle-flags were furl'd
In the Parliament of man, the Federation of the world.

There the common sense of most shall hold a fretful realm in awe,
And the kindly earth shall slumber, lapt in universal law.

So I triumph'd, ere my passion sweeping thro' me left me dry,
Left me with the palsied heart, and left me with the jaundiced eye;

Eye, to which all order festers, all things here are out of joint,
Science moves, but slowly, slowly, creeping on from point to point:

Slowly comes a hungry people, as a lion creeping nigher,
Glares at one who nods and winks behind a slowly-dying fire:

Yet I doubt not thro' the ages one increasing purpose runs,
And the thoughts of men are widen'd with the process of the suns.

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[1] A. A. Schaeffer, *Turtox News*, 15: 114–115, 1937.
[2] P. F. Brandwein, *American Naturalist*, 69: 628, 1935.

[1] "Four on War," *Technology Review*, April, 1943.
[2] *Poems by Alfred Tennyson*, 2 vols., London, 1842.