University College of Liberal Arts (corner of Boylston and Exeter Streets). In the afternoon a series of scientific films will be shown between 4:45 and 5:45. At 8:00 P.M. of the same day, again at Boston University, there will be held a symposium on "Biology and Medicine in the War." Among those participating are Dr. Maurice B. Visscher, of the department of physiology of the University of Minnesota; Dr. Lucien Brouha, formerly of Liége, Belgium, and now of the Harvard Fatigue Laboratory; Dr. C. W. Walter, of the Harvard Medical School, and Dr. Harry Grundfest, of the Rockefeller Institute for Medical Research. All members of the federation and others in the Boston area are invited to attend.

DISCUSSION

ON THE STRIDULATIONS OF INSECTS

RECENTLY some articles have appeared on the effect of temperature on the stridulations of crickets. My interest in temperature control, stimulated by some of these reports and the presence of a very noisy insect in our back yard, prompted me to make some observations as described in the following paragraphs.

The insect was of the genus "Oecanthus" of the order "Orthoptera" and seemed to maintain a location of about three feet above the ground in the middle of a Spirea bush. A mercury thermometer was placed at the edge of the bush near the same level as the insect. The number of stridulations per minute were counted manually and record made of the temperature, simultaneously. Readings were taken every day from August 12 to September 10, the temperature passing through a range of 55 degrees to 85 degrees (F) during this period. The stridulations commenced at seven P.M., and this starting period did not vary more than five minutes on successive evenings. From about seven to seven-thirty o'clock the stridulations were quite irregular with interruptions occurring every half minute. After about seven-thirty they would proceed without interruption until the early hours of the morning. A total of 100,000 stridulations would occur on a warm night (no time out for lunch) as a fair estimate.

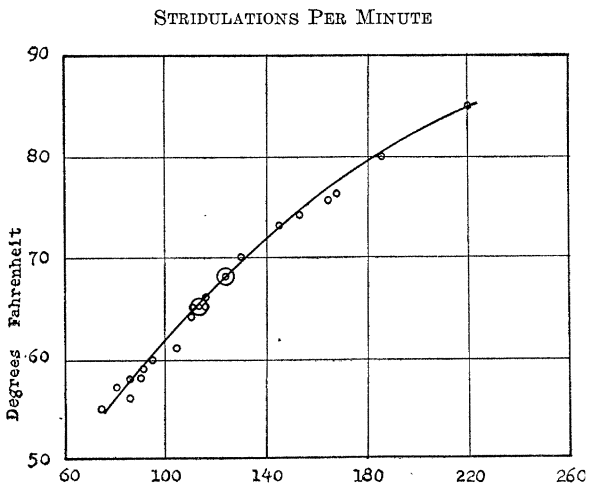

FIG. 1. Graph showing relation of stridulations of tree cricket (Oecanthus) to ambient temperature changes, readings taken each night from August 12 to September 10, 1941.

Data were taken at nine o'clock each evening in the interest of uniformity, as by that time the fall of temperature due to the setting of the sun had reached a point where the temperature gradient between the thermometer and the insect would be reduced to a minimum.

Observations, as shown by the graph in Fig. 1, indicate a very definite relation of periodicity of stridulation and ambient temperature. It is probable that sensitive recording apparatus would show a more uniform relation. Readings taken on different days at the same temperature were in close agreement. At 55 degrees the low limit of stridulatory power was reached, and the magnitude of the sound at this temperature was quite reduced from normal. At 54 degrees no audible sound was present. The points on the graph enclosed by circles were observations taken on a similar insect, August 23, at River Forest, Ill. The points coincide with the curve, showing a remarkable duplicity in insect life.

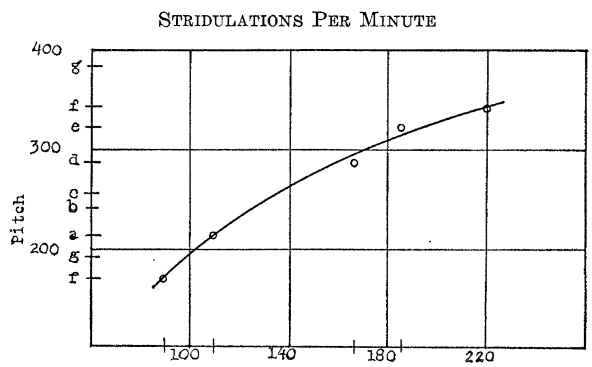

FIG. 2. Graph showing stridulations per minute in relation to pitch as compared to keys on piano. The numbers on the abscissa are vibrations per second and the keys are indicated in their approximate relation to this vibration. The keys plotted are those that came nearest to be in union with the pitch of the stridulation. (The key c is middle c on piano.)

The stridulation seems to be made up of two move-

ments. There is an outward movement of the wings at each stridulation, and as the movement reaches maximum position, membranes in the wings vibrate. The graph shown in Fig. 2 indicates the pitch of the stridulation in reference to its periodicity. As the pitch was determined from keys on the piano some variation could be expected as the key indicated was chosen as being nearest to the pitch. It will be noted that a range of one octave on the piano was covered by a change in temperature from 59 degrees to 85 degrees. From the data it is evident that the mechanism that moves the wings as well as the membranes in the wings are very sensitive to temperature, and response to temperature changes is of marked uniformity.

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THE RELATIVE EFFECTS OF ANOXIA

BECAUSE of recent interest shown in the problem concerning the relative effects of anoxia upon old and young animals, a reference by Moreland[1] to the work of Buffon, of LeGallois and of Edwards[2] should be brought to more general attention. Interest in the work of these early investigators lies in the fact that many recently reported results are substantially in agreement with results reported 125 years ago.

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CALENDAR REFORM AND 364-DAY YEARS

IN SCIENCE of February 20 it is stated that present calendar defects make the arrangement of schedules for industry and education difficult and temporary only, also that there can be no doubt about what would happen in calendar reform, if scientists had their way. A large percentage (76 per cent.) gave affirmative answers to the question whether or not a revised world calendar of 12 months and equal quarters should be adopted.

Some years ago when the Eastern Orthodox Churches changed to our Gregorian calendar, a clause was added expressing hope that Western nations might soon be ready to improve that calendar.

The World Calendar involves the interpolation each year of a so-called *Year day* or *extra Saturday*.

In this connection the possibility of making the astronomical year coincide with the calendar year might be considered. If the change to a calendar year with 12 months and equal quarters is made, the first years might be assigned only 364 days, omitting the disputed *Year day*. After eight such years, the winter solstice (occurring now about December 21) would coincide with the *Year day*. Thereafter the calendar quarters would correspond approximately to the astronomical quarters. The period of eight years would give the world time to experience the greater convenience of the new calendar. Before the end of that period many people might come to favor the new plan who now have never heard of it or are skeptical.

January 1, 1943, comes on a Friday; two years later, on a Monday. With ideas changing from national to international along many lines, perhaps we may now also think about the coming world calendar. To take away a day a year need be no more disturbing than the present adding a day in leap years. We have recently witnessed the ease with which the whole United States can drop or add an hour on a specified day.

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A STUDY OF FAUNAL DISTRIBUTION

I SHOULD like to take the opportunity of acknowledging in SCIENCE the generous support that E. P. Mumford, of Jesus College, Oxford, and I have received in America in connection with a cooperative study of faunal distribution with particular reference to oceanic islands. This comprehensive study of island populations seeks to promote a wider approach to the basic problems of the origin of species. It was initiated at Oxford in October, 1938, with the aid of grants from the Higher Studies Fund, the Royal Society and the British Association for the Advancement of Science. Since the war, the work has been carried on by Mr. Mumford as a member of the faculty at Stanford University, California, in association with Oxford, with the aid of supplementary grants from the Carnegie Corporation of New York, the National Academy of Sciences, the American Philosophical Society, the American Association for the Advancement of Science, the Society of Sigma Xi and the May Esther Bedford Fund, Inc. Mr. Mumford and I are deeply indebted to these organizations for their support as well as to the officers and trustees of Stanford University, where he has been extended every facility in the prosecution of his researches. Among the scientists at Stanford who have been most helpful, mention should be made of Dr. Ray Lyman Wilbur, chancellor of the university, Professor C. V. Taylor, Professor Eliot Blackwelder, Professor E. G. Mears and Dr. H. A. Spoehr, director of the Carnegie Institution there. Thanks are due also to Dr. Frank Aydelotte, of Princeton University, and the Rhodes Trust, for unfailing support.

In view of the importance of Anglo-American rela-

[1] F. B. Moreland, A thesis presented to the faculty of Vanderbilt University, 1936.

[2] W. F. Edwards, "On the Influence of Physical Agents on Life." Translated from the French by Hodgkin and Fisher and published by Haswell, Barrington and Haswell, Philadelphia, 1838.