University of Illinois, a close examination was made of these trees and of the shrubs growing with them.

It was at once apparent that early in the season the trees had been stripped of their young developing foliage and small twigs and that the larger twigs and small limbs had been killed by some excessive injury. These stood out in the picture dead and barren against the greenness of a second growth of foliage and young twigs which, on all the trees, had since grown out very abundantly from a multitude of adventitious buds. The general aspect of these trees was such as to remind one of the war pictures of shrapnel-swept battlefields, where broken trees stand here and there denuded of their leaves after the bombardment. Truly these trees had been bombarded, for a terrific storm of hail had swept this area in the previous spring.

The numerous and markedly compacted bunches of new foliage, which from a distance appeared so much like rosettes, were generally abundant in all parts of the trees, in many cases even to the extent of growing out densely up and down the trunks, as if the trees, in a desperate effort to retain their hold on life, had made use of all their resources to reclothe themselves with leaves.

A close examination of the twigs and limbs of the trees, which were mostly maples and oaks, revealed severe hailstone lesions on the upper sides. These were frequently an inch or more long and often coalesced to form long compound lesions which, in many cases, resulted in a virtual girdling of the part.

From the many smaller branches and twigs which had been killed, in some cases for several season's growth back, by the excessive loss of cambium the bark was still peeling where it had not previously been stripped off by the hailstones.

The lesions on the still living twigs and small limbs were healing over very nicely with no sign of infection of any sort. The approaching layers of new tissue from the two sides of the long narrow lesions had, in the case of the smaller ones, already met, and in other instances, where the injury had extended half to three quarters of the circumference of the twig or limb, the healing process, although progressing very nicely, was not yet finished. The condition presented an excellent example of wound healing such as one is not often likely to meet with under ordinary circumstances.

On small ornamental junipers and Japanese barberry in the cemetery the foliage appeared normal, but a close examination of the twigs of these shrubs revealed severe hailstone lesions which, as in the case of the trees, were healing over very nicely.

Upon inquiry, the writer was informed by a local resident that on the first of May, 1929, a most severe hailstorm had occurred as a general disturbance over the entire locality but that the fall of hail had been exceedingly severe over the cemetery where, judging from the damage done, it had occurred in a path about two or three hundred yards wide from north to south. On neither side of this path did the vegetation show any such evidence of severe injury as was inflicted on the cemetery trees.

The hailstones were reported to be very large, almost the size of small hen's eggs. Automobile tops which were exposed to the storm were reduced to sieves by the bombardment. Hailstones of this size have occurred in Illinois before, although they have not been known by the writer previously to inflict such severe damage to trees. In the spring of 1927 particularly severe hailfall of very large stones occurred at Urbana and in the East St. Louis area as well as in St. Louis, Missouri, when great damage was done to houseroofs, greenhouses and automobile tops. At that time the Missouri Botanical Garden suffered severe damage to its greenhouses and to the very valuable plants contained in them.

GILBERT L. STOUT
ILLINOIS STATE NATURAL HISTORY SURVEY

MAN-MADE EARTHQUAKES

ON October 18, 1929, between midnight and sunrise, slight earth tremors were felt at Big Springs and nearby towns in Texas. People were very generally awakened by the rattling of dishes and windows. One person at Big Springs states that he was awakened about 3 A. M. by what he thought at the time was an automobile hitting the house in which he was sleeping. Another says he was awakened at about this time thinking some one was rattling his door. At one place south of Stanton a lamp chimney was broken, and at another the glass in a door was fractured. Five or more distinct tremors were felt of which the last, occurring about daylight, was said by some to be the strongest. On the following night similar tremors were felt although apparently by fewer persons. Some who had lived in earthquake regions were positive that the tremors were earthquakes.

Inquiry made in the region affected indicated that the tremors were caused by explosions of dynamite made in connection with the use of the seismograph in geologic explorations. The company making these explorations very kindly supplied a record of seismograph shooting on October 17, 18 and 19, and this note is made to record the distance that such earth tremors from seismograph shooting may be transmitted under favorable conditions in sufficient force to attract general attention.

The record of the seismograph work indicated that on the forenoon of October 17, two shots were fired on Section 15, Block 36, T.4 S. At midnight shooting was resumed at this locality and eight shots were fired between 12:20 and 8:15 A. M., October 18. Charges of dynamite were used in the following order: 50, 300, 300, 900, 1,500 pounds, and 50, 300, 300, 900 and 1,800 pounds. The 1,500-pound shot fired at 3 A. M. on October 18 made the tremor which caused one person at Big Springs to think that an automobile had bumped his house and another to think that some one was rattling the door; the 1,800-pound shot fired at 6:15 A. M. coincides with the reports as to the strongest tremor felt. The shooting on the following night, October 18–19, was as follows. On Section 39, Block 36, T.3 S. from 9:25 to 11:30 P. M.: 50, 300, 300, 900, 1,500 pounds; from 12:50 to 3 A. M.: 50, 300, 300, 900, 1,500 pounds, and on Section 31, Block 35, T.3 S. from 3:50 to 5:55 A. M.: 50, 300, 300, 900, 1,500 pounds.

The 1,500-pound shot at 3 A. M. on October 19 seems to have been less generally felt than was the same charge at the same time on the previous night. All the shots were similarly placed, being covered by about five feet of earth. The temperature at 3 A. M. on October 18 was 14° C.; the wind velocity, 11.2; the direction of the wind, from 10 degrees east of north; the sky cloudy. On the next night the temperature at 3 A. M. was 18° C.; the wind velocity, 8; the wind direction, from 10 degrees east of south; the sky cloudy. The ground conditions at the locality of the shot which are not recorded in detail may account for the seemingly different intensity of the tremors. One or two observers at Knott report that the tremors of the second night were greater than those of the first. However, for the region as a whole those of the second night were not so generally felt or reported upon.

The shots of October 17 and 18 were made fourteen miles west of Garden City in Glasscock County. The tremors were felt at Sterling City forty-four miles east; at Big Springs thirty-two miles northeast; at Knott forty miles north; at Stanton twenty miles north, and at Midland twenty-one miles northwest. Inquiry among farmers and ranchmen indicated that even beyond the towns mentioned the tremors were more or less distinctly felt. Apparently the tremors were readily detected within a distance of forty or fifty miles east and north from the locality at which the dynamite was discharged, this being true at least for the larger shots of 1,500 and 1,800 pounds. The distance the tremors were felt west and south is less well known from lack of records. The surface formation at the locality where the dynamite was exploded and of much, but not all, of the country affected is Cretaceous limestone. Where the limestone is absent the surface formations consist of either Cretaceous sands or Triassic or Permian red sands and clays. The limestone is apparently an effective medium for the transfer of earth tremors.

E. H. SELLARDS

UNIVERSITY OF TEXAS

IN AID OF AMERICAN MEDICAL BIOGRAPHY

DR. I. FISCHER, of Vienna, is engaged in the preparation of supplementary volumes to the second edition of Hirsch's "Biographisches Lexikon der hervorragenden Aertze aller Zeiten und Völker" (Berlin and Wien, 1884–6), which is the only international dictionary of medical biography in existence. The supplement will contain biographies of recent and living physicians, and Dr. Fischer is particularly anxious to obtain American material, the conditions for inclusion being original laboratory and clinical work, important discoveries and inventions, publications, editorial work and such like. Any help which may be given him by the donation of "Who's Who," volumes of biographical sketches, clippings of important obituaries from medical periodicals, etc., will be much appreciated. Such material may be transmitted directly to Dr. Fischer himself (address: Biberstrasse 15, Vienna, I, Austria).

F. H. GARRISON

ARMY MEDICAL MUSEUM

SCIENTIFIC BOOKS

Outlines of Biochemistry (The Organic Chemistry and the Physicochemical Reactions of Biologically Important Compounds and Systems.) By ROSS AIKEN GORTNER. John Wiley and Sons, New York, 1929.

THE success of the application of physics and chemistry to biology depends upon two conditions: first, the ability of the biologist to master physics and chemistry and yet remain a biologist, and second, the willingness of the physicist and the chemist to cooperate sympathetically with the biologist. Professor Ross Aiken Gortner is an outstanding example of the fulfilment of the first condition. In reading his "Outlines of Biochemistry," it would be difficult to say whether Professor Gortner is biologist or