Reprinted from SCIENCE, June 28, 1957, Vol. 125, No. 3261, pages 1283–1284.

R. Zon, Pioneer in Forest Research

Raphael Zon, a blazer of trails in forest research and an outstanding conservationist, died on 27 October 1956, less than 2 months before his 82nd birthday. Thus was closed a long, colorful, and productive career.

Zon was born 1 December 1874 at Simbirsk, Russia. His early education was received at the classical gymnasium there and at the Imperial University at Kazan (1892–96). At the latter institution he specialized in zoology, particularly in comparative embryology. Because of his liberal leanings, Zon had to flee Russia in 1896. He spent the next two academic years at the University in Liége, Belgium, and the University of London, studying natural sciences, political economy, and philosophy.

In 1898 Zon made his way to the United States and, not long thereafter, enrolled at Cornell University in the first American school for training professional foresters. He obtained his degree in forestry in 1901. In July of that year he joined Gifford Pinchot as a forester for the Bureau of Forestry (later U.S. Forest Service) in the U.S. Department of Agriculture. For the next 43 years his career lay with that agency, all of it in the field of forest research.

Zon had many "firsts" to his credit. He established the first forest experiment stations in the United States, in 1908. He envisioned, and thereby laid the foundation for, the system of regional forest experiment stations that were established, largely between 1921 and 1923, by the U.S. Forest Service. He pioneered in studies of the relation of forests to stream flow and flood control. As a basis for that work he wrote *Forests and Waters in the Light of Scientific Investigations* (U.S. National Waterways Commission, Final Report, 5 Apr. 1912, pp. 205–302; 62nd U.S. Congress, 2nd Session, Sen. Doc. 469; reprinted with revised bibliography, 1927). This publication, the first survey and summary of its kind, was later translated into German, French, Spanish, Russian, and Japanese. Zon, in collaboration with W. N. Sparhawk, prepared and published the first attempt at a systematic and accurate inventory of the forests of the earth (*Forest Resources of the World,* 2 volumes, New York, 1923). In collaboration with H. L. Schantz, he prepared the first complete map of the native vegetation of the United States; Zon prepared the section on forest vegetation (*Atlas of American Agriculture,* pt. 1, sec. E, U.S. Department of Agriculture, 1924).

That Zon was a man of vision is further attested by several of his activities. One of the most controversial undertakings with which he was involved was the Prairie States Forestry Project. When President Franklin D. Roosevelt, in 1934, proposed establishment of a network of shelterbelts in the prairie-plains states, it was Zon who was given responsibility for the technical direction of the project, which was essentially his own brainchild. He answered the critics of the scheme in an article entitled "Shelterbelts—futile dream or workable plan" [*Science* **81**, 391 (1935)]. The soundness of his views was borne out by the establishment of 18,600 miles of shelterbelts, between 1935 and 1942, in the tier of states from North Dakota to Texas. A survey in 1954 showed that 77 percent of the plantings had been successful and that a large proportion of the failures had resulted from preventable causes [R. A. Read, *Yale Forest School News* **43**, 67 (1955)].

Shortly after Zon became director of the Lake States Forest Experiment Station (University of Minnesota, St. Paul), at its inception in 1923, he initiated silvicultural research on jack pine (*Pinus banksiana*) and aspen (*Populus tremuloides* and *P. grandidentata*), which were then considered to be weed species. Today these are the two most widely used pulpwood species in the lake states region—a witness to his foresight—and the studies that Zon began provide a sound technical basis for their management.

To halt destructive cutting of forest stands in the lake states, Zon campaigned vigorously for the use of partial cutting methods. His effective espousal of this cause and the results of these methods, demonstrated by research that he had initiated, did much to convert many forest landowners to the practice of partial cutting methods and, hence, did much to extend the resource.

Foreseeing stringent demands for rubber during World War II, Zon proposed that the Forest Service develop methods of growing the Russian rubber-bearing dandelion (*Taraxacum kok-saghyz*). Such a program was authorized and developed under his technical guidance, although the need for rubber from this source ceased before the program got into full production.

From 1902 to 1928 Zon wielded strong influence on the progress and direction of professional forestry in the United States as an editor of the *Proceedings of the Society of American Foresters,* as assistant editor to B. E. Fernow on the *Forestry Quarterly,* and finally as editor-in-chief of the *Journal of Forestry,* which succeeded these earlier journals. He set high standards for the technical content of the *Journal,* and his stimulating editorials helped to mold the thinking of members of this young profession along progressive lines. In addition, he was the author of more than 200 scientific publications, which embraced almost all branches of forestry.

Seldom do we realize the worth of a person until he is gone. This is true of Raphael Zon, yet he was not without honors and recognition in his lifetime. At Montreal, in 1952, he was awarded the Gifford Pinchot medal, the highest honor bestowed by the Society of American Foresters, at the joint meeting of that organization and the Canadian Institute of Forestry. He was one of the first to be elected a fellow in the Society of American Foresters and was long a fellow of the American Association for the Advancement of Science. During World War I, President Wilson appointed him to the National Research Council, where he served for many years as chairman of the Forestry Committee. He was American vice president of the subcommission on forest soils at the International Congress of Soil Science in 1928. He was editor of forestry and logging terms for Webster's *New International Dictionary,* author of the section on forests and forestry in the *Encyclopedia Britannica,* and author of the article on forests for the *Encyclopedia of Social Science.* In 1940, in connection with the New York World's Fair, he was named one of the 600 foreign-born citizens who were judged to have made the most notable contributions to American democracy in the past 100 years.

Zon was not infallible, of course. One of his early enthusiasms was for drainage of forested swamps. Studies which he initiated did show that improved tree growth followed this practice, but the benefits were disproportionate to the cost involved. Perhaps he was just ahead of

his time, for drainage of forested swamps is widely applied in Finland, where the pressure for land is much greater.

Zon was a man of many facets. He was both a staunch supporter of what he believed to be right and a relentless and resourceful adversary of what he considered wrong. Such a man makes both bitter enemies and devoted friends. He was extremely frank, yet often very considerate. With his subordinates he was warm and understanding, a "human" person, yet one who demanded their best. He was always concerned about the effects of forestry and conservation activities on the people, especially on the "little fellow." Gifford Pinchot called him "a forester-statesman and a statesman-forester" [*J. Forestry* **43**, 927 (1945)].

Although he had been professionally inactive during the past 5 years, Zon's passing leaves a deep sense of loss among those who knew him and worked with him. American forestry and the American people are the richer for his having been with us. That is his monument.

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