W. Wilcox, of New York. His widow and one son by his first marriage survive him.

HENRY NORRIS RUSSELL

PRINCETON UNIVERSITY

## ARTHUR WILLIS GOODSPEED

### (1860–1943)

ON June 6, 1943, Arthur Willis Goodspeed, a pioneer in the study of x-rays, died at Concord, N. H., a few miles from the small town of Hopkinton where he had been born eighty-three years before. A descendant of early New England settlers, the son of Obed and Helen (Morse) Goodspeed, he passed his early years in Boston. Graduating from the Boston Latin School, he entered Harvard College. Here he came under the influence of John Trowbridge and Benjamin Peirce, who encouraged him to pursue the study of the physical sciences in which he had shown marked aptitude even as a boy. In 1884 he graduated from Harvard, winning high honors in physics and mathematics.

Immediately after graduation he was offered a position as assistant in physics at the University of Pennsylvania. As this provided an opportunity for advanced study, he accepted it, and this decision determined the scene of his life-work. He enrolled in the newly established graduate school of that university, and in 1889 received the degree of Ph.D., being, incidentally, the first recipient of a degree from that school.

At this time the chair of physics was held by George F. Barker, a scientist of international reputation. Goodspeed's association with this brilliant lecturer gave him invaluable experience and inspiration. He continued under Barker through the grades of instructor and assistant professor, succeeding him when he retired in 1900, and continuing as director of the laboratory until he himself reached the age limit in 1931. Thus, his teaching service of nearly half a century was wholly spent at this one institution.

The period of his service was one of rapid growth of the university and of the department of physics. He saw in his time its staff and its activities increase ten-fold. Much of the success of the many adjustments made necessary by this expansion was due to the administrative skill, ready decision and quiet tact which he exhibited.

As a lecturer he carried on the tradition of his predecessor in sparing no pains to devise ingenious and striking experiments with which to emphasize the essential aspects of his subject. Even after the pressure of administrative duties compelled him to give up much of his formal teaching he would frequently, in presenting new developments in physics, devote great care to illustrate them with clever and interesting demonstrations.

He was early attracted by the scientific aspects of photography—an interest which he retained throughout his life and which perhaps dated from the time when, as a young instructor, he witnessed and assisted at the famous experiments of Muybridge on animal locomotion. What wonder, then, that the report of Röntgen's discovery in 1896 strongly drew his attention and that he became one of the earliest investigators of the new rays? He at once recognized their importance from the medical point of view and, in collaboration with many physicians of the city, carried on numerous investigations on osseous malformations, the location of foreign bodies and similar topics. In this work he developed an experimental technique that was at that time unexcelled. Indeed, some of his plates taken then compare favorably with those of the present day.

His studies of the physical and therapeutic properties of the rays also were begun at this period and carried on for some years. He later investigated the properties of the secondary x-radiation. His work in the field of radiology was recognized by his election in 1902 as president of the American Röntgen Ray Society.

The increase of his official duties put a check to these investigations, though they were never wholly discontinued. The administration of the laboratory and service as chairman of important faculty committees demanded much of his attention. For some years he served on the board of managers of the Franklin Institute. In 1901 he was elected secretary of the American Philosophical Society. His faithful and efficient service in performing the duties of that responsible office will be remembered by many of its members. When he resigned the position in 1935 he was appointed editor of the society's publications and continued as such until a year before his death.

Goodspeed was married in 1896 to Annie H. Bailey, of Hyde Park, Mass. Their children were Frederick, who lost his life in a parachute accident in 1928, Willis and Helen (Mrs. John R. Skeen). In 1913 he married Ethel W. Mitchell, of Staunton, Va. Their son, Arthur, is at present Lieutenant in the armed services of the United States.

Though his professional life was passed in Philadelphia, Goodspeed always retained an affectionate attachment to his New England home. He usually spent his summers at Hopkinton and took part in many of its civic activities. And when his work was finished he returned to his native town to enjoy quietly the close of his life, which was to be so soon terminated.

Goodspeed always retained his sturdy New England characteristics. His thrift and skill in management served him well in the administration for many years of a department which never received adequate finan-

cial support. His relations with his associates were most cordial, and he was always solicitous for their interests. The writer will ever hold in memory with pleasure and gratitude the encouragement, advice and cooperation which he received during the many years of their association.

HORACE C. RICHARDS

## RECENT DEATHS

DR. ROBERT B. HINMAN, professor of animal husbandry at Cornell University, died in his fifty-fifth year on July 26.

EDWARD HALL BOWIE, regional director for the Pacific States of the United States Weather Bureau at San Francisco, president of the American Meteorological Society, died on June 29 at the age of sixty-nine years.

ALBERT KINGSBURY, founder and president of the Kingsbury Machine Works, Philadelphia, died on July 28 at the age of eighty years.

DR. ORVILLE HARRY BROWN, specialist in internal medicine, died on July 26 at the age of sixty-eight years. Recently he had been collaborating with Dr. John Lawrence, of the University of California at Berkeley, in experiments using cyclotrons to combat malignant growths.

THE death on July 28 at the age of sixty-one years is announced of Sir Harold Beckwith Whitehouse, gynecologist, president of the British Medical Association.

# SCIENTIFIC EVENTS

## THE DEATH-RATE IN GERMANY[1]

RECENTLY published statistics of mortality rates in German towns show that the health of the urban dweller has been steadily deteriorating, and this is especially marked during the later months of 1942. The following figures refer only to the large towns of "Greater Germany" with a total population of 24,500,000.

Compared with the corresponding months of 1941, infant mortality rose by 17 per cent. during the last quarter of 1942 to 69 per 1,000 live births. For the whole year the rate was 66, against 59 for 1941. This contrasts with a record low rate for England and Wales during 1942 of 49. Among children aged one to five—another sensitive index of health—the number of deaths rose sharply in 1942 to 7,236. In previous years the number had been 6,404 in 1941, 6,062 in 1940 and 5,670 in 1939.

School children aged five to 14 are also being affected, but adolescents seem to be affected more than any other group. For ages 15 to 20 a rise of 38 per cent. in 1942 was recorded over the number of deaths in 1939. The numbers were: 4,159 in 1942, 3,192 in 1941, 3,126 in 1940, and 3,023 in 1939. Contributing to these significant upward trends in mortality among children were sharp increases in the number of deaths from diphtheria and scarlet fever.

The report also shows a steeper rise in deaths from tuberculosis. There were, in German towns, nearly 5,500 more deaths from all forms of tuberculosis in 1942 than in 1939. The death-rate per 1,000 population at all ages was 24 per cent. higher in 1942 than in 1939, and the rise was more rapid in 1942 than in 1941.

The new statistics disclose a sharp rise in the number of suicides. In the last four years the numbers have been 7,647 in 1942, 6,222 in 1941, 6,104 in 1940 and 6,387 in 1939. It has been the experience of most belligerent countries in this and in past wars that the suicide rate declines during hostilities. This has happened in Britain during the present war, and in Germany the number fell in 1940. The last quarter of 1942 showed, however, a rise of 87 per cent. (to 2,538) over the number registered during the corresponding quarter of 1940 (1,358).

It does not appear that political murders or suicides in concentration camps are included in the official statistics; nor does it seem that suicides of imported workers are included.

All these death-rates for the large towns are likely to underestimate the actual rise in mortality. There are several reasons to support this view.

The evacuation of children, mothers and expectant women to rural areas might be expected to reduce the number of deaths in the towns.

As the official statistics relate only to civilian deaths, the transference of large numbers of adolescents into the armed forces would reduce the civilian population exposed to the risk of tuberculosis.

The removal of hospitals, institutions and sanatoria from the Ruhr and Rhineland towns to rural areas should reduce the number of urban deaths—unless the register of deaths is retained in the town records.

Turning from deaths to births, the latest figures show a dramatic fall in the birth-rate. For the large towns of Germany the number of births in 1942 declined by 80,000 from the figure of 419,000 for 1940. The rate per 1,000 total population was down to 13.9 in 1942 compared with 17.3 in 1940.

The last quarter of 1942 recorded a rate as low as 12.7. This experience for German towns is borne out

[1] From *The Times*, London.