RADIO

HOW WE REMEMBER

an address by

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AGRICULTURE—METEOROLOGY

Winter Drought Causes Worry in Wheat Belt

GENUINE winter drought conditions, bad enough to cause real worry, persist over a large portion of the country's best grain lands, studies directed by J. B. Kincer of the U. S. Weather Bureau have shown.

"A decidedly apprehensive situation has developed in the matter of soil moisture," the Weather Bureau report states. "An unusually large area of the West has become critically dry, resulting in drifting of soil by high winds and a general deterioration in winter crops. This is especially true in the western sections of the main winter wheat belt, and extends to a lesser degree, eastward to the lower Missouri, central Mississippi, and much of the Ohio Valley areas. Considerable hauling of stock water is necessary in some central valley sections, and the subsoil is very dry."

"Dust storms were widespread in western grain areas, with damage from soil blowing reported from Missouri, Iowa, and Kansas northwestward; moisture is seriously needed in the first two States, although no serious injury from the cold weather is probable. In Kansas winter wheat was unfavorably affected in the western area and many central counties by continued dryness, with rather severe damage from soil blowing in the southwestern quarter; little change was noted in the eastern part. Widespread deterioration was reported from Nebraska, South Dakota, Wyoming, and eastern Colorado, where the moisture situation is acute, with much drifting soil and dust storms."

Science News Letter, February 17, 1934

PHYSICS

Sub-Atomic Positron Has Shortest Life in Universe

Newly-Found Particle of Matter is Born of Radiation and Dies in Fraction of Second Giving Birth to New Radiation

THE LATEST sub-atomic entity to be discovered can now claim the honor of being the shortest-lived thing in the universe. It is the positron, fundamental particle of matter, complementary to the more familiar fundamental stuff of electricity, the electron.

The story starts when Prof. P. A. M. Dirac as a result of abstruse mathematical calculations predicted the anti-electron or positron, as scientists now call it. Prof. Dirac is the 31-year-old mathematical physicist, British despite his French name, who last fall was honored with a half-share of the 1933 Nobel prize in physics.

The positron would be born of radiation, Prof. Dirac foretold. But its life would be short. It would be immediately absorbed by surrounding matter and die giving birth to new radiation.

If water were the absorbent, the interval between these two events, he estimated, would be of the order of a billionth of a second—longer if the absorbing matter were rarer, shorter if it were denser. Only in interstellar space far removed from all other sorts of matter could the positron live to a respectable old age. Its extremely short life under terrestrial conditions explained, he said, why it had never been detected.

The precise manner of a positron's death was also predicted by Prof. Dirac. If it encountered a free electron, both particles would be annihilated and give rise to two photons or gamma rays traveling in opposite directions, of a total energy of a million electron volts—the energy equivalent of the matter destroyed. If it encountered an electron firmly bound to the nucleus of an atom, only the positron would be annihilated, and one photon would be emitted of half a million volts.

So fantastic this theory seemed at the time it was promulgated, that physicists doubted if Prof. Dirac himself believed it. But a year ago last August, Dr. Carl D. Anderson of the California Institute of Technology discovered the positron, and since then it has become a very active member of the growing family of atomic components. Evidence has been obtained by Skobeltzyn of Leningrad and others, that positrons are born of radiation and consequently are not pre-existing fragments of the atom that are simply knocked out, as electrons are, by the impinging radiation. And now Prof. F. Joliot and Prof. Jean Thibaud, two French physicists, have reported in simultaneous but separate communications to the French Academy of Sciences, evidence that the positron dies when absorbed by matter in the precise way that Prof. Dirac described.

As a source of positrons they used