of the University of Chicago, says: "We believe that talking films properly prepared and integrated with printed instructional material will contribute greatly to the effectiveness of our new general courses for freshmen and sophomores. . . . These films will be available to any high school, college, university or adult educational group in the country. . . ."

Erpi Picture Consultants, subsidiary of Western Electric Co., cooperated in the production of the pictures.

Science News Letter, December 3, 1932

CHEMISTRY

Neuton, Element Zero, May Gain Place in Periodic Table

Made up of Neutrons. a Thimbleful of it Would Weigh A Million Tons; But it Will Never be Thus Concentrated

WHEN the neutron was detected this year at the famous Cavendish Laboratory at Cambridge, England, it was not heralded as the discovery of a new chemical element.

Yet it can be so considered, and Dr. W. D. Harkins, the University of Chicago chemist, has suggested to the National Academy of Sciences that this remarkable new kind of matter should be recognized as a chemical element of atomic number zero and that it should be accorded a secure place in the list of chemical elements.

Just last year the last undiscovered two of the ninety-two chemical elements were discovered by the American chemist Allison and named after two American states, alabamine and virginium. Chemists thought that all possible elements had been found. But they had forgotten that there might be a building block of matter without electrical charge which nature uses in atom building and which might be considered an element itself.

Twelve years ago Dr. Harkins and Lord Rutherford, working independently, suggested the existence of the neutron and predicted its properties. Just as the neutron was experimentally detected in the rays from the element beryllium, so the theoretical existence of the neutron came out of the same element. Then as now, all the other atoms were considered to be made up out of combinations of hydrogen atoms and helium atoms. This idea gave an atomic weight of eight for beryllium whereas at that time only beryllium of atomic weight nine was known. Incidentally, since then beryllium eight has been discovered. So it was necessary to assume that each beryllium atom of the nine weight then known contained a neutron in its nucleus or heart.

The neutron is a close combination of electron and proton, the negative and positive units of matter, which is electrically neutral. It differs little from a hydrogen atom in mass. But hydrogen has a unit electrical charge upon its atom and its electron and proton do not make such a closely wedded pair as they do in the neutron.

Neuton is the new name suggested by Dr. Harkins for the new kind of matter which is made up of minute atoms called neutrons. He obtained chemical element zero's name by making its name end in "on" in conformity with the practice used in naming neon, argon, and the other inert gases of low atomic number. Undoubtedly, there will be confusion between neutron, the atom, and neuton, the element, until both words become more a part of the language.

Element zero or neuton is a strange substance which the chemists can never hope to isolate as they do the other elements. As neutrons are very much smaller than any atoms known previously, a lady's thimble tightly packed with neuton would weigh a million tons.

But the new element could not be kept in such a space since it easily passes through any known material. It streaks through the walls of any known container.

Neuton is always leaving earth faster than other elements and it escapes more easily. Dr. Harkins concludes that most of the neuton in the universe is almost certainly in the space outside the planets, sun and stars, although it is concentrated in such bodies by the weak force of gravitation.

Science News Letter, December 3, 1932

AVIATION

Parachutes Useless At Bolivian Altitudes

WHEN you decide to make a descent in a parachute, do not come down in Bolivia.

This advice is gathered from a report of Lieut. A. Y. Smith of the U. S. Army Air Corps. Lieutenant Smith, who recently returned from South America, stated that the Bolivian Air Force does not include the parachute as an item of equipment for its fliers and that many aviators who have attempted to use parachutes in this South American country suffered broken legs and other injuries.

The obvious reason is the high altitude of the greater part of Bolivia. La Paz, the capital of the country, at an altitude of 13,000 feet, is considered the highest capital in the world. Numbers of good landing fields are at elevations of about 12,000 feet. At such heights, which are common near the West Coast of South America, the atmosphere is so rare that a parachute descends dangerously fast.

Landing speeds for planes are unusually high, between 60 and 80 miles per hour, and take-offs require a very long run. Lieutenant Smith said that some planes are equipped with oversized wings in attempts to overcome the high altitude handicap.

Science News Letter, December 3, 1932

GEOGRAPHY

Yale Expedition Maps Unknown Land in Asia

MORE THAN 4,600 square miles of hitherto unexplored country, high in the Himalayas more than 14,500 feet above sea level, have been mapped in detail by the Yale North India Expedition, is the report received by President James Rowland Angell of Yale from the expedition's director, Prof. Hellmut de Terra.

"The geological data amassed tend to prove that Himalaya and Karakorum, the world's highest mountain ranges, possess a geological structure similar to that which characterizes the Alps in Europe, a result which will ultimately lead to a better understanding of the origin of high mountain ranges," Prof. de Terra's report says. "Collections of invertebrate fossils from hitherto unexplored regions will throw new light on the geological history of Central Asia."

Science News Letter, December 3, 1932