to return to Jerusalem, the Persian king granted autonomy. Discovery of the coins was made by Dr. E. L. Sukenik, field archaeologist of the Hebrew University.

The Jerusalem coins are said to match a small silver coin which for the past 150 years has been in the British Museum. It bears an inscription of three Aramaic letters, which Dr. Sukenik now declares have always been wrongly interpreted by scholars and therefore the significance of the coin was not completely understood. He reads the letters as "Yehud" which was at one time the official name of the province of Judea. The coins bear the engraving of an owl, under which appear the three letters in the old Phoenician Hebrew script.

Science News Letter, February 24, 1934

ASTRONOMY

Woman Uses Prize To Found New Award

DR. ANNIE J. CANNON, the Harvard astronomer, has utilized the thousand dollar prize awarded her last year by the Association to Aid Scientific Work by Women to found an award which will honor other women for distinguished contributions to astronomy.

The American Astronomical Society will administer this endowment and the first award of the "Annie J. Cannon Prize in Astronomy" will be made next December. Women of all countries will be eligible to the award which will be made triennially.

Dr. Cannon is noted for her work on the Harvard Star Catalog and she has been given honors both here and abroad for her researches in astronomy.

Science News Letter, February 24, 1934

PSYCHIATRY

Only One of Identical Twins Attacked by Mental Disease

Case of Successful Man and His Unfortunate Brother Shows That Environment, Not Heredity Alone, Causes Insanity

A CASE of twins, one of whom developed the mental disease schizophrenia, while the other remained well for a period of eight years, was reported to the Boston Society of Neurology and Psychiatry by Dr. J. Kasanin, of the State Hospital of Mental Diseases, Howard, Rhode Island.

The twins were always so much alike that they have been mistaken for each other, even their fingerprints bearing striking resemblances. It is therefore believed that they are of the type known as "identical twins," which have their origin in a single egg cell and hence have identical heredity.

A case of such identical twins, only one of whom develops the insanity, is very important in indicating that environment, not heredity alone, is the determining cause of the disease.

The lives of the brothers were very much alike up to the age of 18. Both were bright, studious boys, and both became excellent mechanics. While in high school, both became extremely interested in religion. Both suffered from an impairment in hearing which was greater in one ear than in the other.

But after graduation from high school, one of the boys had an opportunity to go to another city and work with an uncle. This boy, whom we shall call "C. D.," became very successful. "Life smiled on him." He soon had saved enough money to go to a college of osteopathy and at the present time is doing comparatively well in private practice.

The twin brother, "A. B.," was like the unfortunate "little piggy" of the nursery rime. He stayed home. He tried to write, but was unsuccessful in having anything published. Instead of confessing to himself his inability to write, the patient began to feel that some person or organization was preventing him from making good. He thought people were trying to blackmail him and trying to prevent the publishers from accepting his manuscripts. He thought he was being shadowed by detectives. This delusion made life so miserable for him that he went from city to city to escape the persecution. Gradually his mental condition grew worse and worse until he was sent to a hospital for treatment.

"I think this case illustrates very beautifully the relative importance of environmental factors," Dr. Kasanin commented.

"Both these individuals with the same endowment and the same early environmental forces begin to show at eighteen an altogether different psychobiological reaction. With the favorable environment for one individual he becomes a successful, well adjusted man in his community. When the environment becomes bad for the other individual, who is endowed exactly as his brother, he has to find a solution of his failure in a psychosis."

Science News Letter, February 24, 1934

PHYSICS

Findings of Stratosphere Flyers Surprise Scientists

THE SCIENTIFIC findings of the explorers of the stratosphere in the Soviet "stratostat" USSR are at variance with earlier theoretical calculations of physicists which were based upon the theory that no convection of air takes place at that height, it appears from an announcement by Prof. A. Wangenheim.

Analysis of samples of air taken during the flight last September showed that the oxygen content of the stratosphere 19 kilometers (11.8 miles) above the surface of the earth varies very little from the oxygen content of the air at the surface. The analyses were carried out by a special commission under the leadership of Academician A. A. Chernishev of the Institute of Physical Chemistry, Moscow.

Tests of the samples of air, made in two laboratories, proved identical in their results, which differ slightly from the theoretical calculations of such sci-

DOLLS FOR SCIENCE

A parade of Russian dolls, sixteen in all, has been brought from the Soviet Union to the University of Pennsylvania Museum, in Philadelphia. (See SNL, Feb. 10, '34 p. 83) Museum scientists explain emphatically that these are not toy dolls, but scientific reproductions, of a people. In careful detail, they show the clothing and the racial types of sixteen Soviet tribes. From left to right: Usbeck, Kalamik, White Russian, Samoyed, Georgian, Circassian, Great Russian, and Ukranian.

entists as Wegener, Störmer, Humphreys, and Gutenberg, which indicated an oxygen content of not more than 19 per cent. The new results confirm the theory of some convection at that altitude, recently adopted by the physicists.

The samples of air were taken by means of glass bulbs suspended from the stratostat, opened and hermetically sealed by electricity while the stratostat ascended. Three of the four bulbs carried worked without a hitch.

The composition of the air 18.5 kilometers (11.7 miles) above the earth was found to contain moisture of less than 0.7 per cent.; 20.95 per cent. of oxygen and 78.13 per cent. of nitrogen; 0.92 per cent. of argon and other rare elements. At sea level the atmosphere contains 21 per cent. oxygen and 78 per cent. nitrogen.

A commission headed by Academician S. I. Vavilov analyzed the records of the stratostat on cosmic rays and Prof. Wangenheim announced that the cosmic ray findings provide grounds for a new theory of stratosphere structure.

In the lower spheres cosmic rays cause very little ionization in the air, forming not more than one to two ions a second in each cubic centimeter. The records of the stratostat at an altitude of 12 kilometers (7.5 miles) show 226 ions in a cubic centimeter per second; at 15 kilometers (9.3 miles) 342 ions; and at 17.7 kilometers (11.0 miles) 360 ions. These data are said to coincide with those of Prof. Piccard and to a certain extent confirm the hypothesis of the cosmic origin of these rays.

SEISMOLOGY

Long Rise in Earth Level Preceded Great Indian Quake

THE LEVEL of the part of India where the disastrous earthquake of January 15 occurred has been rising at an average rate of .06 foot a year, or six feet a century, for the last seventy years at least. The earthquake was associated with this change of level, together with the unique state of internal stress which has hitherto occurred in this region.

Such is the conviction of Dr. J. de Graaf Hunter, former director of the Survey of India. He explained it at a geophysical discussion held at the headquarters of the Royal Astronomical Society in London.

Two years ago, when Dr. de Graaf Hunter was endeavoring to reconcile the numerous spirit-level observations made in Bengal between the years 1862 and 1930, he found evidence that the land was rising at a regular rate. He constructed a diagram in which lines drawn on a map of northern India indicated the various rates at which the rise of level was taking place.

The lines passing through places having the same rate of change ran approximately west-southwest to east-northeast. The line indicating zero change of level passed about fifty miles north of Calcutta. The line indicating the maximum change of .06 foot a year ran about thirty miles north of Benares, and passed through the position calculated to be the epicenter of the January 15 earthquake. This position is latitude 26 degrees 8 minutes, longitude 86 degrees 3 minutes.

Other researches carried out by Dr. de Graaf Hunter during his directorship of the Survey of India, showed, as a main feature of the figures obtained for the "overloading" and "underloading" of the earth's crust in that country, that there is (or was before the earthquake) an area of about 100,000 square miles with a high average "underload." This "underload" was equivalent to a thickness of approximately 3,000 feet of surface rock, after allowing full isostatic compensations.

This region, whose crustal stress Dr. de Graaf Hunter believes to be unique when its large extent and great underloading are both considered, stretches roughly from the Himalayas to the Ganges, and from Meerut, near Delhi, to Jalpaiguri, near Darjeeling, and it includes the whole earthquake zone.

The earthquake of January 15 was the culmination of the long-continued stress due to this widespread underloading and to the consequent rise of level, Dr. de Graaf Hunter believes.