

as to enable the formed type to be ejected into a trough or guide, where it remains until the types for the whole of the proposed line have been brought, one after another, into said trough or guide behind it, when the whole line is by certain automatic appliances swept or slid into a galley prepared for its reception, the galley in turn being automatically advanced after the reception of each line of type. . . .

Science News Letter, February 11, 1933

SEISMOLOGY

Sea Bottom North of Japan Shaken by Third Earthquake

FOF the third time in a few months, the sea bottom near the island of Sakhalin, north of Japan, was shaken by a deep-seated earthquake, on last Friday afternoon, Feb. 3, at 5:10.7 p. m., eastern standard time. The location of the quake was calculated by scientists of the U. S. Coast and Geodetic Survey and of the Jesuit Seismological Association on the basis of data supplied to Science Service by Georgetown and St. Louis Universities.

Science News Letter, February 11, 1933

Cellophane greenhouses are something new for gardeners.

Medieval descriptions of the romantic triad of elements

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PHYSICS

Einstein Develops Quantum Mechanics In Latest Paper

By **DR. R. M. LANGER**, California Institute of Technology, Science Service Correspondent.

PROF. ALBERT EINSTEIN'S first paper on the new quantum mechanics is soon to appear under the title: "Semivectors and Spinors."

He has just allowed his colleagues in theoretical physics at the California Institute of Technology at Pasadena, Calif., to have an advance view of some of the ideas contained in this forthcoming paper, which will be published in the *Proceedings of the Prussian Academy* at Berlin, with Dr. Walter Mayer as collaborating author.

Prof. Einstein is careful to explain that most of the results had already been discovered by other workers. But he wrote the forthcoming paper at the request of his friend, Prof. Paul Ehrenfest of Leiden, to clarify this little known subject.

His discussion with the theoretical physicists was, of course, technical. To make it easier for his American listeners Einstein spoke English. This is the first extended discussion he has delivered in English. Usually he chooses to use German in order to express himself more precisely and clearly. His English is, however, quite good.

Semivectors are related to vectors in somewhat the way that imaginary numbers are related to real numbers. The spinors are restricted semivectors. The vector concept is fundamental in relativity because it enables one to avoid

irrelevancies. Thus it helps discover new laws.

The semivector may suggest new physical laws also for it has the same simplifying properties as the vector. As in the case of the vector, the semivector can furnish tensors. The famous equations of Lorentz can be written for semivectors but no important change is involved. The Dirac equation for an electron can be derived in an elegant manner but Prof. Einstein pointed out that it was not the simplest case of its type.

He said it would be interesting to study the simplest case. Then he went on to say that semivectors could be used to advantage in generalized relativity, but that unlike vectors they led to complicated equations.

When Prof. Richard C. Tolman, of the California Institute of Technology, asked for a physical description of a semivector, Prof. Einstein confessed he had been unable to think of any geometrical or physical picture but added that with mathematical analysis the subject could be handled with great ease.

Science News Letter, February 11, 1933

ANTHROPOLOGY

Chinless Skeleton Puzzles Scientists

AT LEAST one of Palestine's earliest known cave men had no chin. A cabled report to Dr. George Grant MacCurdy of Yale University, from Palestine, where archaeologists are excavating remains of ancient man, springs this new surprise regarding Palestine's inhabitants of the Old Stone Age.

A skeleton found in the Cave of the Oven, near Mt. Carmel, has been removed from its stone matrix. Instead of having the well-developed chin that has been ascribed to early Palestine cave men, this skeleton reveals the receding, chinless jaw typical of men of that time in Europe.

The report is from Miss Dorothy Garrod, of the expedition of the American School of Prehistoric Research and the British School of Archaeology.

Altogether, ten skeletons of Palestine men have been unearthed in caves near

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