

Wesleyan University Gets Einstein MS.

Physics

(7)

The original manuscript of "Zur einheitlichen Feld-Theorie" in which Professor Albert Einstein recently gave to the world his newest theory, combining the laws of mechanics and the laws of electricity into one law and submitting a complicated mathematical proof of his theory, is now in the possession of Wesleyan University, Middletown, Connecticut, where it will be permanently kept and cared for in the Olin Library.

Dr. James L. McConaughy, President of Wesleyan University, told the story of the acquisition of the manuscript which he exhibited.

The document is in the strictest sense of the word a manuscript. It consists of eight pages of close-knit lines, all in Professor Einstein's handwriting, together with mathematical calculating and interlineations and all the customary features of a scholar's handwritten work.

Mathematicians will be interested in some portions of the manuscript which Professor Einstein crossed out.

The manuscript "Zur einheitlichen Feld-Theorie" was autographed by Professor Einstein at the bottom of the seventh page. The eighth page contains expressions of thanks to Professor Einstein's co-workers. Professor Einstein supplied his signature after arrangements had been made for the acquisition of the manuscript and he signed the seventh page because the scientific part of his manuscript ends there. These seven pages contain the results of six years of Professor Einstein's deepest thought.

It is said that Professor Einstein believes that it will be years before the world of science will be able to grasp fully all the details and implications of his theory and check up on his calculations.

The story of how Wesleyan University, at Middletown, came into ownership of the manuscript of "Zur einheitlichen Feld-Theorie" has many elements of human interest as Dr. McConaughy narrated it. The manuscript was obtained by Mr. George W. Davison, President of Central Union Trust Company of New York and Mr. Albert W. Johnston, financier, 111 Broadway, New York City. Mr. Davison is president of the Board of Trustees of Wesleyan University and Mr. Johnston has for years been an ac-

die Form aus

$$\left(\frac{\partial}{\partial x^{\alpha}} + \frac{\partial}{\partial x^{\beta}} \right) \frac{\partial}{\partial x^{\gamma}} = 0, \dots (11)$$

~~Andere Gleichungen sind der Übertragungsgleichung schon vorgegeben, welche Gleichungssystem zusammen mit (10) die Feldgleichungen darstellen.~~

$$\nabla_{\alpha} \partial^{\alpha} \phi - \nabla_{\alpha} \partial^{\alpha} \psi = 0 \dots (10a)$$

das gesamte System der Feldgleichungen bildet. Würden wir statt von (10) direkt von (10a) ausgehen, so hätten wir die "elektromagnetischen" Gleichungen (11) nicht erhalten. Auch würden wir keinen Anhaltspunkt dafür haben, dass die Systeme (11) und (10a) miteinander verträglich sind. Es aber scheint es sicher zu sein, dass diese Gleichungen miteinander verträglich sind, da die Gleichungen (10) sechs Bedingungen für die Potentiale ϕ und ψ sind. Zwischen diesen sechs Gleichungen (10) bestehen allerdings Beziehungen, die die allgemeine Lösung der Gleichungen (10) bestimmen, so dass das System nicht überbestimmt ist. Diese Beziehungen sind:

Dass die Gleichungen (12) in erster Näherung die Gravitationsgleichungen enthalten, die Gleichungen (11) die in Verbindung mit der Existenz eines Potentials (10a) die Maxwell'schen Gleichungen für das Vakuum enthalten, schon gesagt worden. Sie haben auch zeigen können, dass umgekehrt zu jeder Lösung dieser Gleichungen (10a) erhält man eine Lösung der Gleichungen für das elektrische Potential

$$\left. \begin{aligned} \nabla_{\alpha} \partial^{\alpha} \phi - \frac{1}{2} \nabla_{\alpha} \partial^{\alpha} \psi &= 0 \\ (2\phi^{\alpha} = \nabla_{\alpha} \psi = 2\psi \phi^{\alpha}) \end{aligned} \right\} \dots (10b)$$

Eine tiefere Untersuchung der Konsequenzen der Feldgleichungen (11), (10a) wird zu zeigen haben, ob die Riemann-Metrik in Verbindung mit dem Fern-Parallelismus wirklich eine adäquate Auffassung der physikalischen Qualitäten des Raumes liefert. Nach dieser Untersuchung ist es nicht unwahrscheinlich, dass dies nicht der Fall ist.

Albert Einstein I 1929

* Dies alles nur, damit es auch von den linearen Gleichungen der ersten Ordnung her zu verstehen ist.

PAGE OF THE EINSTEIN MANUSCRIPT now in the Library of Connecticut Wesleyan University

tive Trustee of Wesleyan and is now Chairman of the Trustees' Committee on Buildings and Grounds, under whose direction and supervision the many buildings which have gone up on the Wesleyan Campus in recent years were erected. They have been friends since college days at Wesleyan; they are joint donors of the manuscript to Wesleyan.

Immediately after the publication of the new theory which Professor Einstein had promulgated, Mr. Davison instructed his Company's representative in Berlin to enter into negotiations with Professor Einstein to discover if the manuscript could be acquired. These negotiations were carried on with Mrs. Einstein, who surrounds Professor Einstein's life with the greatest protection. Professor Einstein has been in poor

health for a long time and his friends know that it has made him very happy to be able to complete the development and statement of his new theory in spite of the condition of his health and the strain of the arduous mental toil which the work has involved. The astonishing feature of the story of the way in which Professor Einstein's manuscript came to make its journey to the United States is the ease with which its acquisition was accomplished.

Professor Einstein is an ardent Zionist and the manuscript of his relativity theory was sent to the Zionist University in Jerusalem. The manuscripts of Professor Einstein's works between the publication of his relativity theory and the publication of "Zur einheitlichen Feld-Theorie" were (Turn to next page)

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Einstein MS.—*Continued*

purchased by Baron Rothschild of London, who presented them to the Einstein Institute in Berlin. When Mr. Davison's negotiations for the new manuscript were opened no other approach had been made to Professor Einstein with a view to its purchase, and through Mrs. Einstein ready assent was given by Professor Einstein to the sale of the manuscript to Mr. Davison, whose representative explained that it would be permanently entrusted to the custody of an American university. The only interest which Professor Einstein had in the financial aspects of the transaction was that its sale should realize sufficient money to enable him and his wife to carry on the welfare work among university students in which both of them have long been much interested. The price which Professor and Mrs. Einstein regarded as satisfactory had no relation to the pricelessness with which in time the manuscript itself will assuredly come to be held. It is understood that Connecticut Wesleyan will have the only original Einstein manuscript in this country.

In speaking about the manuscript, Dr. McConaughy said: "Wesleyan University feels itself honored to be entrusted with this extraordinary document. I use the word entrusted advisedly because Wesleyan will always consider that as custodian of this precious manuscript it has a trusteeship of it in the interests of the whole world of scientific thought. It is probable that photostat copies of this manuscript will be made available by Wesleyan for every university and college which desires to possess such a copy. The manuscript itself will be most zealously safeguarded."

Science News-Letter, April 13, 1929

Do You Know That

Alaska has a herd of galyaks, which are hybrids of galloway cattle and the Tibetan yak.

The Leviathan recently set a new speed record for ocean liners by going 27.8 knots an hour which is 36.4 land miles.

An experiment on the improvement of illegible handwriting among school children showed that drill work on specific defects was more effective than general drill on penmanship.