really protein diseases, the pathological aspects of virus disease acquire a new significance. Certain basic facts concerning one virus disease may prove to be useful in the study of other virus diseases. For example, in the case of most virus diseases it has been difficult to induce immunity without the use of active virus. Inactive virus has given poor results, yet in most cases it is dangerous to use active virus. In the case of crystalline tobacco-mosaic virus, methods have been evolved for inactivating the virus so that the inactive virus gives practically the same immunological response as that given by active virus. These methods involve careful treatment of the active protein so that the groups responsible for the virus activity are blocked or removed without disrupting the molecule as a whole. It is possible that this and similar studies on crystalline tobacco-mosaic virus may prove useful in the study of other viruses. Whether this unusual, high molecular weight, crystalline protein is regarded as living, as non-living, as a gene, as a super-catalyst, as an organizer, or as a pathological protein, a complete study of its basic properties should prove of importance. It is now possible to list protein molecules, along with living organisms such as bacteria, fungi, and protozoa, as infectious disease-producing agents.

Science News Letter, January 9, 1937

MATHEMATICS

Harvard Mathematician Made President of A. A. A. S.

Dean of Graduate School of Arts and Sciences, Author of Mathematical Theory of Beauty Is Honored

OFFHAND you might not expect a great mathematician to be interested in why it is that men throughout countless ages have taken joy in looking on the moon, a shapely tree, a pearl or the rhythmical curves of a woman's form.

Yet Dr. George D. Birkhoff, Harvard mathematician, who was elected president of the American Association for the Advancement of Science for the coming year, has made the mathematical measure of art one of his main branches of research.

He has devised formulae that enable you to analyze the source of delight in the creations of painters and poets. The esthetic value of a shape or form as determined by the Birkhoff formula conforms to the emotional judgment of those who look upon it. Not that you need to be a mathematician to delight in art. Esthetic pleasure is due to an unconscious appreciation of the mathematical proportions of the object.

In a detailed treatment of esthetic measure which he published not long ago, Dr. Birkhoff has told how painters, architects and others can use consciously some rules that he has discovered. Take forms made with straight lines. The square is rated as the straight line form having the highest esthetic appeal, being rated as 1.50 compared with the diamond at 1.00 and the triangle at 0.63. Take a famous painting. Dr. Birkhoff finds that its composition involves geometric forms which are pleasing to the eye.

The pretty girl is pretty because all her measurements are in correct relation to each other—if her arms were longer or her nose shorter or her height just a little different in relation to her weight, the effect would not be at all the same.

Dr. Birkhoff's formulae for esthetic values can also be applied to music and poetry. The scale used for poetry, for example, is not the same as the one applied to pictures, but it involves such artistic qualities as rhyme, rhythm and alliteration. Dr. Birkhoff has even tried building experimental poems and musical compositions by deliberately placing in them the elements indicated by the formula.

Just a short time ago Dr. Birkhoff, who is only 52, was made dean of Harvard's Graduate School of Arts and Sciences, where he has been professor of mathematics since 1919.

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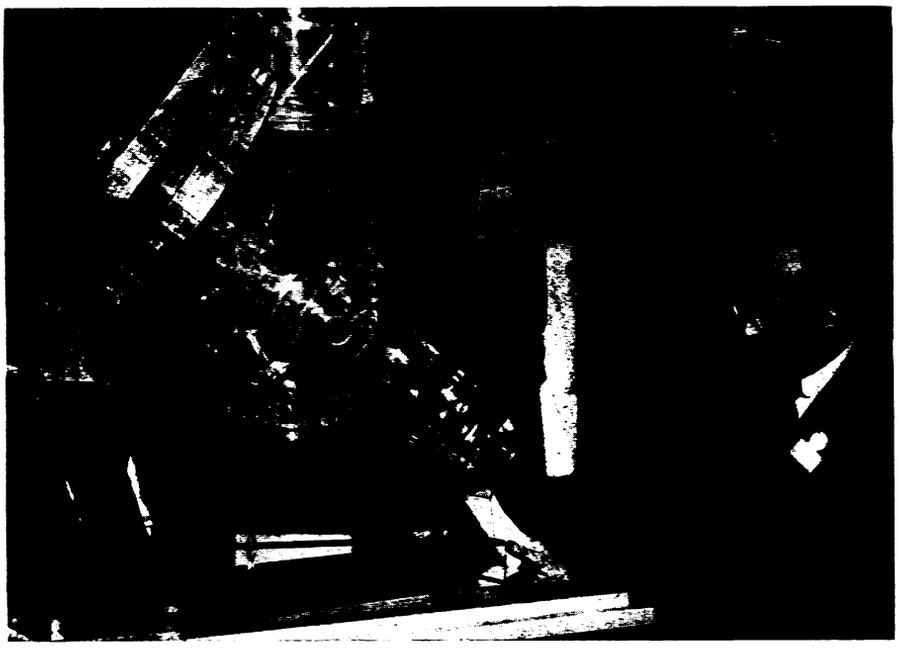

200-INCH TELESCOPE MODEL

Dr. Harlan T. Stetson, Massachusetts Institute of Technology, with a celluloid model of the great instrument on exhibit at the Atlantic City science meeting. Notice the scale figure of the man on base of instrument.

PHYSICS

New Theory of Atom by New A.A.A.S. President

A NEW theory of atomic structure that may allow physicists to understand better the composition of matter was presented to the American Association for the Advancement of Science by Prof. George D. Birkhoff, of Harvard, one of America's leading mathematicians. It is called "a conceptual theory of atomic structure" and may recall to modern approval fundamental ideas that were first presented by the famous James Clerk Maxwell.