crete unit, such as has been developed by the interaction of cosmic stimuli. In virtue of all these we are an ego, and recognise ourselves as such in contrast to nature.

"Here, too, the difference between nature and individual mind as a mere difference of contents is emphasised. In nature we have a content in which each part is determined by all the relations which it bears to all the other parts. The moon is determined by all its relations to the earth and to all the heavenly bodies and by its relations to its own parts (that is, in its chemical and physical composition), and by its relations to all nervous systems wherever and however existing; and so forth. Thus the moon is exhaustively and necessarily determined, and that is objective nature. On the other hand, we have in our ego a content which is determined solely by a limited number of relations, namely, by such possibilities of interchange of energy as pass the threshold of this particular nervous system of mine; and thus this ego is not exhaustively determined, and thus it remains subjective experience, appurtenant to me especially, and subject to untold contingencies."

The bearing of this conclusion on the problem of personal freedom is evident, but it is further enforced by considerations drawn from the doctrine of physical and psychical parallelism, or, as we might express it, of the one-to-one correspondence between physiological function and psychical function. The author says: "The term 'parallelism' is not supposed to imply that the analogy prevailing between physical and psychical phenomena is a thoroughgoing one. The fact is, that where unity is presented in the psychical (as in subjective sensation and feeling), in the physical the process is extremely complicated; and where indeterminateness is met with in the psychical, in the physical determinateness prevails. We cannot, accordingly, refute the theory of parallelism, by showing that no analogy prevails between the two aspects. The unconscious or non-psychical denotes nothing but separation from my individual consciousness, and not separation from the determinations of the content of a universal consciousness. Here forms of determination abide which rank above the phenomenal world, empirically known to us in individual minds; physical and psychical events in time and space may be conceived as the co-ordinated means by which the free self-determination of persons is developed under the guidance of reason. In this way the critical view meets the requirements of scientific cognition by exhibiting nature both in physical and psychical respects as a necessary system determined by law, while it also preserves intact the freedom of persons."

Space will not permit us to enter into details as to Dr. Lasswitz's religious and ethical views. Their trend and their scientific *pièces justificatives* may be gathered from the foregoing specimens of his procedure. They involve a practical personal philosophy which presents many points of interest and in many of its aspects is very ingeniously worked out. *μ.*

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## NOTICEABLE MATHEMATICAL TEXT-BOOKS.

The *Elements of Geometry*[1] of Professors Phillips and Fisher, of Yale University, which forms one of the recent volumes of the Phillips-Loomis Mathemat-

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ical Series, combines many advantages both of content and external form that will recommend it to students. The work is based on the old geometry of the late Professor Elias Loomis, and has faithfully preserved the ideals and the traditions of
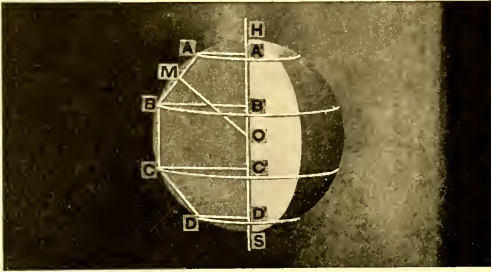


PHOTOGRAPH OF A MODEL FROM PHILLIPS AND
FISHER'S *Geometry*.

Illustrating the theorem that the area of a zone is equal to the
product of its altitude by the circumference of a great circle.

that excellent teacher, whose simple and natural text-books were for their time and conditions nothing less than admirable. Yet the book is after all essentially new
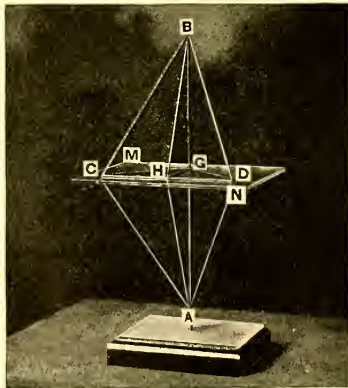


PHOTOGRAPH OF GEOMETRIC MODEL.
(From Phillips and Fisher.)

as to arrangement and method of presentation, and while we still have the old geometry much has been done by historical notes and the introduction of practical construction-work to enliven the mode of exposition. In the treatment of the prop-

ositions of solid geometry photographs are presented of actual models of figures, and this feature alone renders the work unique ; the aid to be derived from these visual helps is in no wise to be underrated, and the proof of many a theorem which is absolutely bereft of objective reality to the average imagination is here flooded with light. These models of which we have reproduced three specimens subserve a definite physiological function in the teaching of geometry, for it is on this base
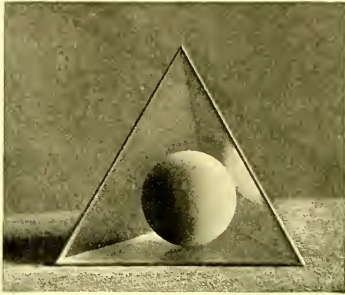


SPHERE IN TETRAHEDRON.
(From Phillips and Fisher's *Geometry*.)

that the world of conceptual form has been constructed. In an appendix to the book the authors have added an "Introduction to Modern Geometry," treating of such subjects as inversion, the radical axis and coaxal circles, projection, the nine points circle, duality, etc., and which will be useful in affording the student some conception of the new methods.

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It is a pleasure to notice so sound and promising a work as Beman and Smith's new *Elements of Algebra*[1] for high schools, normal schools, and academies. Within the brief compass of four hundred and twenty-one pages these authors have applied some of the more important devices of modern algebra to the purposes of elementary instruction with what bids fair to be success. The remainder theorem, the notion of functions, the graphic representation of complex numbers, the graphic solution of equations, synthetic division, symmetry and homogeneity in factoring, elementary determinants, etc., of which one usually sees little or nothing, are here brought within the reach of the young student, to the great augmentation of his power. On the principle that the new should be introduced where needed, the methods referred to are for the most part placed in the body of the work ; for example, the consideration of complex quantities before quadratics and the remainder theorem before factoring. This latter subject has received most satisfactory treatment in the book ; being of central importance, it is applied practically at every step in the solution of equations, and is used again and again in various ways "until it has come to be a familiar and indispensable tool." Altogether, the exposi-

tion is as practical as it is rigorous.   The use of books of this type will do much to lift our high-school instruction to more rational planes, and it is to be hoped that
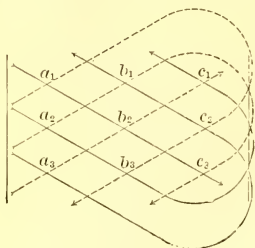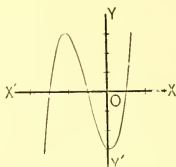


DIAGRAM FOR EXPANDING A THIRD-        GRAPHIC SOLUTION OF AN EQUATION
ORDER DETERMINANT.                        OF THE THIRD DEGREE.
(From Beman and Smith's *Elements of Algebra*.)

the necessary jolt to official and pedagogic inertia may be given to admit of their widespread introduction.

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We have finally to acknowledge the receipt of several new volumes of the series of German text-books edited by Professor Schubert,[1] of Hamburg, who is well known to our older readers as a contributor to *The Open Court* and *The Monist*.   These works, published by G. J. Göschen, of Leipsic, are with few exceptions quite unique in type, and vary so considerably from the books commonly in use in America that our teachers will profit by possessing them.   It is the purpose of the series to cover the entire field of pure and applied mathematics, including the more abstract physical sciences like astronomy, mechanics, thermodynamics, and optics ; and while many of the works are of an advanced character, in the main their modes of presentation are as simple as the subjects admit.   The following is a list of the titles that have already appeared ; *Elementare Arithmetik und Algebra* (Arithmetic and Algebra), by Prof. Hermann Schubert, Hamburg.   (Price, Mk. 2.80) ; *Elementare Planimetrie* (Plane Geometry, including the fundamental notions of modern geometry), by Prof. W. Pflieger, Münster.   (Price, Mk. 4.80) ; *Ebene und sphärische Trigonometrie* (Plane and Spherical Geometry), by Dr. F. Bohnert, Hamburg.   (Price, Mk. 2) ; *Algebra* (determinants and theory of numbers), by Dr. Otto Pund, Altona (Mk. 4.40) ; *Ebene Geometrie der Lage* (Plane Geometry of Position), by Prof. Rudolf Böger of Hamburg (Mk. 5) ; *Analytische Geometrie der Ebene* (Plane Analytic Geometry), two volumes, by Prof. Max Simon, Strassburg (Price, Mk. 10) ; *Elemente der darstellenden Geometrie* (Descriptive Geometry), by Dr. John Schroeder, Hamburg (Mk. 5) ; *Differential-gleichungen* (Differential Equations), by Professor Schlesinger, Klausenburg (Mk. 8.00) ; *Praxis der Gleichungen* (Solution of Numerical Equations), by Prof. C. Runge, Hanover (Mk. 5.20) ; *Wahrscheinlichkeits- und Ausgleichungsrechnung* (Calculus of Probabilities, etc.), by Dr. Norbert Herz, Vienna (Mk. 8) ; *Analytische Geometrie der Flächen zweiten Grades* (Analytic Geometry of Surfaces of the Second Order), by Prof. Max Simon, Strassburg (Mk. 4.40).                     *μ.*

[1] *Sammlung Schubert.*  Forty volumes already announced.  Prospectus on application.  Address, G. J. Göschen, Verlagsbuchhandlung. Leipzig, Germany.