1827, and is still regarded as the most finished and useful introduction to the study of infinitesimal geometry. The translation is based on a copy of the original paper, but in the work of preparing it and the present notes all the other editions were consulted. This is followed by a translation of the abstract presented by Gauss to the Royal Society of Göttingen. Under the title of "*New* General Investigations of Curved Surfaces," the translators next give a paper really written by Gauss at an earlier date (1825), but which was not published until the eighth volume of Gauss's works appeared in 1900. Both papers contain the fundamental properties of what is now known as Gauss's measure of curvature, the theorem that the spherical excess of a geodesic polygon is proportional to the corresponding area on the auxiliary sphere, and the proof that the locus of points the geodesic distances of which from a fixed point are equal cuts these geodesics orthogonally. The paper of 1825, however, contains introductory matter on curvature in a plane which was omitted by Gauss from his 1827 paper, and while, in 1825, Gauss used geodesic polar coordinates only, in 1827 he introduced the notion of generalised coordinates p and q. It will thus be seen that the order in which the papers have been printed is the reverse of chronological order.

A large number of notes have been inserted by the translators, those on the 1827 paper occupying twenty-eight pages. Many of these notes contain proofs of results merely stated by Gauss; others consist of explanatory matter, restatements of Gauss's conclusions, or simple corollaries. The "bibliography" contains a list of 343 papers dealing chiefly with the following subjects:—Curvilinear coordinates, geodesic and isometric lines, curvature of surfaces, deformation of surfaces, orthogonal systems and the general theory of surfaces. A large proportion of the papers listed are of comparatively recent date, thus affording a guide to the literature about curved surfaces which has grown up in the development of methods first laid down by Gauss.

The Elements of Mind. By H. J. Brooks. Pp. xviii+312. (London: Longmans, Green and Co., 1902.) Price 10*s.* 6*d.* net.

THE author claims to have made the correlation of chemistry physiology and psychology possible by the discovery of the "simple elementary substances of mind" which, according to him, "when compounded with those of force and matter, constitute the mysterious substance we call life." It is not easy to gather his exact meaning, as his definitions of his fundamental terms are partly defective, partly circular. Matter and force he leaves undefined; of life he simply says that he "uses it in its ordinary sense." Mind—when not furtner defined by a restricting adjective—is "everything that is not matter," a definition which would include, *e.g.*, space, time and the series of natural logarithms. As an instance of a definition which is circular as well as obscure, "By Ego I mean that which is known as the personality of the brain. . . . Personality I employ in the ordinary sense of a person's physical and mental characteristics." Substance, again, should have been defined with special accuracy by a writer who attaches so much importance to his professed discovery of the "elementary substances" of mind. Yet all that Mr. Brooks has to say of it is that "substance is philosophically described as that which exists and remains." Now space and time may be said to "exist and remain"; are they substances or are they not? Mr. Brooks, of course, knows whether he means to say that they are, but a reader is nonplussed. And finally, what exactly does Mr. Brooks mean by an "element"? By "elements of matter," as his examples show, he means chemically undecomposable constituent parts; but what exactly are meant by the "elements" of force, which "scientists with somewhat less success have described"? So far as the absence of precise definition permits us to form a judgment, Mr. Brooks's doctrine seems to agree with the "mind-stuff" theory of W. K. Clifford. He quotes Prof. James's trenchant refutation of this theory of the composition of a unitary consciousness out of atomic constituents and attempts to turn its edge. He does not, however, seem to realise its full force. The case of "light" is no exception to James's contention that "all the combinations which we know are effects wrought by the units said to be combined" upon something other than themselves. Still less is the relation between an organism and its members the same as that between an aggregate and its parts. I confess that I have been unable to discover in Mr. Brooks's book any one consistent theory of the relation between his elements and the single whole which he calls the "greater Ego." Sometimes this whole is spoken of as controlling, dominating and using the elements, sometimes as built up by their mechanical interaction. So with his general metaphysical theory. He appears sometimes to hold that "mind," "force" and "matter" are things which can compound quasi-chemically, sometimes that they are different "aspects" of a single reality. Where I do understand him, he appears to be expounding in novel language a psychology of the extreme associationist type, though not without moments of deeper insight in which he seems to uphold the ultimate identity of mind and body. A. E. T.

A Graduated Collection of Problems in Electricity. By Prof. Robert Weber, D.Sc. Translated from the third French edition by E. A. O'Keeffe, B.E., M.I.E.E. Pp. xv+351. (London: E. and F. N. Spon, Ltd.; New York: Spon and Chamberlain, 1902.) Price 7*s.* 6*d.* net.

THIS book is intended to be a help to the teacher of physics, and consists of a collection of problems of varying difficulty in almost all the branches of electrical work. The third edition differs chiefly from the previous ones in the inclusion of some fresh problems and in the careful revision and correction of errors which has been made. The author has adopted the plan of giving the solution immediately after each problem, and though objections may be urged against this method, we think on the whole it is the most satisfactory for a book of this kind. Those interested in electricity from its practical side will regret that most of the problems are of an academic character. Thus, to quote one example, the section on glow lamps gives the impression that lamps are usually made for 40 or 50 volts and that lighting is carried out by means of primary batteries. Occasionally one comes across a problem in which the data are not sufficient in reality. Apart from a few minor defects of this sort, the book is a very useful one, as the questions are well calculated to show whether or not the student has really grasped the meaning of the work he is doing, which should be the principal aim of a teacher. The addition of a short section on units and a number of tables enhances the value of the work. M. S.

Junior Chemistry and Physics. By W. Jerome Harrison. Pp. vi + 224. (London: Blackie and Son, Ltd, 1902.) Price 1*s.* 6*d.*

SOME of the fundamental principles of physics and chemistry are simply described in this book. Common objects are used as subjects of observation and experiment, and an attempt is made to show the scientific aspects of familiar things. The first few pages seem out of place in a book of this character. Pupils beginning the study of science ought not to be troubled with such statements as "The universe is composed of matter," "We have given the name of *ether* to an extremely rare kind of matter," "Matter has extension," "Matter is indestructible," &c. These subjects belong to the later stages of natural philosophy.