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Mathematics. — A posthumous work of Dr. P. H. SCHOUTE. By Prof. J. CARDINAAL.

(Communicated in the meeting of January 29, 1916).

At the moment of Dr. P. H. SCHOUTE's regretted decease four sections of his great treatise "Analytical treatment of the polytopes regularly derived from the regular polytopes" had been inserted in the works of this Academy (Verhandelingen XI 3 and XI 5). The fifth section failed, which was the more to be regretted, as the author considered it a quite essential part of his researches and might well hope to complete the whole work in his lifetime.

It was to be supposed that part of this fifth section might be found amidst SCHOUTE's papers. Happily this supposition proved to be true; the fifth part was found nearly complete in manuscript. It is true, the manuscript bore the character of a first concept and had to be put in final form, but the clearness and accurateness of expression, so characteristic of the deceased, revealed themselves in this concept. The results were nearly all put down, so we can fairly admit, that it is SCHOUTE's work that is now to be published.

We wish to give some remarks relating to this publication. In

1910 this Academy published a treatise of Mrs. A. BOOLE STOTT: "Geometrical deduction of semiregular from regular polytopes and space fillings". This treatise contains a method by which bodies having a certain kind of semiregularity may be derived from regular bodies, with application to any number of dimensions. The methods were essentially geometric, SCHOUTE resolved to give the analytical counterpart. The conception might seem simple, the execution proved to be very laborious. Many theorems had to be tested for spaces of more than three dimensions; we give the subdivision of each of the four published sections as a proof. *A.* Symbols of the coordinates. *B.* The characteristic numbers. *C.* Extension numbers and truncation integers and fractions. *D.* Expansion and contraction symbols. *E.* Nets of polytopes. *F.* Polarity. *G.* Symmetry, considerations of the theory of groups, regularity. The author's analysis extends over four principal forms of polytopes and many difficulties in the consideration of spaces of more than three dimensions had to be conquered.

The fifth section deals with polyhedrons deduced from icosahedron and dodecahedron and the forms of S_4 deduced from C_{24} , C_{600} , C_{120} . The author had to apply a method very closely connected with the geometrical generation of the bodies as a consequence of the impossibility of applying some of his former principles. The analysis of C_{24} did not present insurmountable difficulties, but the number of characteristic numbers and coordinates belonging to C_{120} and C_{600} is very great. The reciprocity of C_{120} and C_{600} however allows to limit the considerations to C_{600} .

It has been already hinted that subdivision and results were found in Dr. SCHOUTE's manuscript. The form was however very concise and a mark from his hand indicated some results he had not yet soundly tested. The text was in Dutch, a final redaction in English in harmony with the other sections was not yet begun. A general revision of the work which would have allowed the author to give to its methods that perfect unity at which he aimed, had not been made.

Now this became the task of the editors, a task which had to be fulfilled with all the piety due to SCHOUTE's memory. The author of this communication gave a first redaction in English. The great and laborious work however, consisting in the controlling and filling up of the characteristic numbers and coordinates and the ensuing final redaction is due to Dr. W. A. WIJTHOFF, whose kind collaboration made it possible to publish SCHOUTE's last work, a collaboration which will be thankfully remembered.