the formulas (11), (8), and (5) furnish us a solution of the problem.

We still have to consider the possibility of satisfying the equations (4) by making vanish more than one of the expressions in brackets in the left hand sides of these equations and less than two of the numbers a,b,c,d; but it is easy to see that this is possible only in the exceptional case mentioned above, namely, where two of the numbers f,g,h,k are equal. Barring this exceptional case we have then a unique system of values for e, a^2, b^2, c^2, and d^2; but we can choose the signs of c and d.

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ON THE PHRAGMÉN-BROUWER THEOREM*

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1. *Introduction.* The purpose of this note is to give an elementary demonstration of the validity of the Phragmén-Brouwer theorem in spaces satisfying certain conditions. This theorem has been proved and generalized by Urysohn and Alexandroff† for cartesian spaces by means of the theory of dimensionality, but the great importance of the theorem seems to the writer to justify the offering of another proof which involves only the elementary principles of the point-aggregate theory. As is well known, to prove this theorem for a space is the same as demonstrating that, if m and n are any two points of the space and C is an irreducible cut between m and n, then C is a continuum. It is this form which will be used and the proof is deduced from the validity of the theorem in the euclidean plane.

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* Presented to the Society, October 26, 1929. Shortly after the submission of the manuscript of this note to the editors, C. Kuratowski published another proof of this theorem in the Fundamenta Mathematicae, vol. 14, pp. 304–310. This paper was not withdrawn, because the great importance of the theorem seemed to the author to warrant the belief that another demonstration would not be void of interest to readers.

† P. Alexandroff, *Sur les multiplicités cantoriennes et le théorème de Phragmén-Brouwer généralisé*, Comptes Rendus, vol. 183, pp. 722–724.