

ABSTRACTS OF PAPERS

to be presented to the joint meeting of the Association for Symbolic Logic
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RUDOLF CARNAP. *Truth in mathematics and logic*. Thirty minutes, by invitation.

First problem: what is the nature of the truth of mathematical and logical theorems? We have to distinguish between factual truth and formal truth. A sentence of empirical science is true or false according to whether the (possible) fact asserted by it subsists or not. A sentence of the language of mathematics and logic does not assert a fact. Such a sentence is true or false according as the rules of the language-system state it to be true (analytic) or false (contradictory).

Second problem: how to construct a system of mathematics, i.e., how to define the concept, 'true mathematical sentence.'

a) The customary *method of demonstration* consists in laying down some primitive sentences (postulates) and some rules of inference (with a finite number of premises). Example, the system of *Principia mathematica*. But, according to Gödel's results, such a system is always incomplete.

b) Therefore we are compelled to apply *rules of a new kind*, referring to infinite classes of premises. By rules of this kind the concept of the truth of universal sentences concerning integers can easily be defined; but for sentences concerning real numbers, i.e., classes of integers, certain difficulties arise.