b) In (II), it is not quite clear what becomes of the theory T referred to in (I). It seems indispensable explicitly to relativize the definition of emergence with respect to an accepted theory T; this, incidentally, involves another blow to the ontological status sometimes attributed to emergence.

Also, the meaning of "previously exemplified characteristics" in (II) is somewhat obscure; it would appear preferable to make explicit reference to a class of data-statements, and to relativize the concept of emergence with respect to it, in analogy to (I).

c) One of the difficulties inherent in using the notion of simplest hypothesis in (I) is that the simplest hypothesis which explains $a,b,c,\ldots$ in the sense of clause (2) is the conjunction of the statements $a,b,c,\ldots$. If this were to be admitted, (4) could never be satisfied unless x were a consequence of the data $a,b,c,\ldots$ alone.

d) It might be possible to avoid reference to the notion of simplest hypothesis altogether by replacing (I) by the following modified formulation: "x is predictable in T on the basis of $a,b,c,\ldots$ if T explains $a,b,c,\ldots$ and if x is a consequence of $a,b,c,\ldots$, and T."

Carl G. Hempel

Gustav Bergmann. *Syntactical analysis of the class calculus.* ***Philosophy of Science,*** vol. 9 (1942), pp. 227–232.

The first half of this paper is concerned with historical observations on the class calculus, culminating in the distinction between language and metalanguage. In the second half, after explaining the nature of a calculus, the author cites, as the result of failure to make this distinction, the interpretation of the sentential calculus as a two-valued Boolean algebra. This interpretation is, he argues, invalid because when we translate the class calculus into the sentential calculus by virtue of a set of translation rules which he provides, "what is coordinated to the elements '1' and '0' respectively are not expressions of the sentential calculus but syntactical properties of the sentential formulae 'corresponding' to" expressions such as '$X \cdot \bar{X}$' or '$X+\bar{X}$'. It is indeed usually required that every primitive sign in a calculus have a correlate in the translate calculus, but this may be provided for in the case of '1' and '0' by correlating them with sentential constants 'T' and 'F'. Thus, '$X+\bar{X} = 1$' would yield by translation '$p \vee \sim p \equiv T$', which would be a valid formula in the sentential calculus.

Everett J. Nelson

Warner Arms Wick. *On the identification of philosophy with logical analysis.* ***The philosophical review,*** vol. 51 (1942), pp. 508–513.

The author argues that since logical positivists advance theses which are claimed to be not mere conventions but true, they cannot properly identify philosophy with logical analysis, defined as consisting exhaustively of syntax, semantics, and pragmatics. As the other horn of the dilemma he urges that if the meaning of "logic" be expanded so as to include such theses, a precise account of the nature of logic is abandoned in favor of an ambiguous one and it becomes fruitless to identify philosophy with logic.

Charles A. Baylis

Haskell B. Curry. *The inconsistency of certain formal logics.* ***The journal of symbolic logic,*** vol. 7 (1942), pp. 115–117.

In the reviewer's opinion, the relationship of this paper to that of Kleene and Rosser (545*1*) is not as great as use of the same title would suggest. The Kleene-Rosser paper is devoted to showing that a certain attempt to construct a system of logic avoiding the logical paradoxes, or more generally any such attempt of a certain class, necessarily fails. On the other hand the present paper has the simpler task of exhibiting two of the paradoxes—those of Russell and Grelling—within systems of a certain kind having no attempted counter-provision. It is thus nearer to familiar (e.g., verbal) formulations of the paradoxes. The principal accomplishments are a very simple derivation of the two paradoxes without use of negation, and a precise determination of a general class of systems within which this derivation is possible.

In the terminology of the reviewer's conversion calculus (VI 171 (1)), the author's formulation of the Russell paradox may be roughly outlined as follows. Given $\boldsymbol{B}$, we are able to obtain A such that A conv $A \supset B$; in fact we may take A to be HH where H is $\lambda y[(yy) \supset B]$. From $A \supset A$ we have by conversion $A \supset [A \supset B]$, hence by a familiar law of the propositional calculus $A \supset B$, hence by conversion A. But A and $A \supset B$ together yield B, by *modus ponens*. Thus we have a method of proving an arbitrary B.—The method of constructing A should be compared with earlier formulations of the Russell paradox by the reviewer (359*4*, p. 347) and by the author (396*7*, pp. 588–589).

The author's formulation of Grelling's paradox consists in a second method of constructing A so that A conv $A \supset B$. It should be compared with another formulaton of this paradox by the reviewer (VI 171(1), p. 71), from which it differs by not using negation.

While not using negation, of course these derivations of the paradoxes do use implication $\supset$, and are therefore not applicable, e.g., to such a system as Fitch's "basic logic."

Erratum. In the theorem on page 115, for "I. $\vdash \mathfrak{M} \supset \mathfrak{N}$," read "I. $\vdash \mathfrak{M} \supset \mathfrak{M}$."

ALONZO CHURCH

K. CHANDRASEKHARAN. *The logic of intuitionistic mathematics.* ***The mathematics student*** (Madras), vol. 9 no. 4 (for 1941, pub. 1942), pp. 143–154.

This is an expository sketch of some initial ideas of mathematical intuitionism. In some ways it is a good introductory account, but there are serious defects. Brouwer's definition of a set (155*11*, *18*) is reproduced in confused and erroneous form (indeed many have found Brouwer's original statement of this definition obscure, but there are clearer statements by Heyting, 385*10*, and Black, 475*1*). Moreover the name "set" is afterwards applied to various things without showing how they come under this intuitionistic definition of a set; and in one instance the name is applied incorrectly, viz. to the "set" of all natural numbers n such that $x^n+y^n=z^n$ has no solution in positive integers x, y, z. Applications of lattice theory which the paper contains are subject to the same objection as to Pankajam (VII 39(2)).

ALONZO CHURCH

N. H. McCOY. *Remarks on divisors of zero.* ***The American mathematical monthly***, vol. 49 (1942), pp. 286–295.

This paper deals mainly with problems from the theory of commutative rings. The author indicates how it is possible to derive Stone's representation theorem for Boolean algebras (I 118 (5)) from his Theorem 6: "A commutative ring without nilpotent elements is isomorphic to a subring of a direct sum of fields." The proof depends on the fact that a Boolean ring has no nilpotent elements and that for this special case the fields mentioned in the theorem may be taken as the integers modulo 2.

P. LAGERSTRÖM

J. W. LASLEY, JR. *The revolt against Aristotle.* ***American scientist***, vol. 30 (1942), pp. 275–287.

This is a very popular account of certain topics in the philosophy and foundations of mathematics, including Zeno's paradoxes, the mathematical infinite, the paradoxes of set theory, intuitionism and formalism, Gödel's theorems. It has the fault (which is common, perhaps unavoidable, in such attempts at extreme popularization) of being definitely misleading at many points. The worst inaccuracies appear in the brief discussion of Gödel's results.

ALONZO CHURCH

L. O. KATTSOFF and J. THIBAUT. *Semiotic and psychological concepts.* ***Psychological review***, vol. 49 (1942), pp. 475–485.

This paper is a hodge-podge of inaccuracies and banalities. The first part states the nature of semiotic by repeating the familiar distinctions between syntactics, semantics, and pragmatics. But the authors' conception of these distinctions is heterodox, to say the least. They declare, for example, that "inference" is one of the chief syntactical relations, that the problem of semantics is to determine whether or not a sign has a designatum, and that "an experiment actually amounts to the semantical rule for a given sentence." In the second half of their paper, the authors attempt to make an application of these semiotical distinctions to psychological conceptions. A single but typical example will suffice to show the value of their contribution to "psychological methodology." They declare: "A stereotype is the