In that part of Agassi's discussion note which is most relevant to this JOURNAL, he characterizes Alexander's two suggestions for determining the relative support of a hypothesis by evidence as follows: "The first is that the better the evidence the more improbable it must be. The second is that the evidence has to be improbable not given that the hypothesis is true, and probable given that the hypothesis is true ..." Agassi claims that both are necessary, although not sufficient, and that they follow from a suggestion in Popper's XX 304.

In reply, Alexander rejects Agassi's loose formulation of his first suggestion. He then discusses Popper's proposal with a view to showing that, contrary to Agassi's remark, on Popper's proposal the background knowledge that the relative frequency of ravens is greater than that of non-black objects, is sufficient for a report of a black raven to support the hypothesis better than a report of a non-black non-raven. The reviewer agrees that Popper's proposal has this result, but Alexander's argument is not convincing since he (1) confuses the *relative* probability of a known raven being black with the *absolute* probability of an arbitrary object being a black raven, and (2) uses Popper's formula for the case where no background knowledge is assumed, although Popper also gives a formula for the case where background knowledge is involved.

Watkins responds to Alexander's claim that if prior background knowledge is excluded, the finding of black shoes, etc., should count as an unsuccessful attempt to falsify the hypothesis, with the remark that if "*c* is known to be no raven; *d* is known to be black ... Then, without any background beliefs about the relative probabilities of an object being a raven and being non-black, ... I know that further investigation of *c* and *d could not possibly* lead to its falsification and hence that the results of such an investigation, whatever they might be, could not confirm [the hypothesis] according to a testability-theory of confirmation. But on an instantiation-theory, both *c* and *d* (which might be an elephant and a dinner-jacket respectively) instantiate, and therefore 'confirm,' our hypothesis." But here, as in his reply to Scheffler, Watkins has not correctly understood that in the situations described the prior knowledge about *c* and *d* must be counted as part of the background knowledge, or formally accounted for in some similar way. Part of the difficulty on this point clearly results from treating Hempel's problem as Hempel initially formulates it: which of various objects (black ravens, black shoes, etc.) confirm the hypothesis. Hempel later rejects this formulation in favor of: which of various observation reports (of an object being black, of its being a black raven, etc.) support the hypothesis. It is not hard to see how Hempel's theory could be extended to define *the observation report* O_1 *confirms the hypothesis H in the light of the prior observation report* O_2, or to see that according to such an extension "Edgar is a raven" would not confirm "All ravens are black" in the light of the prior knowledge "Edgar is black." The reviewer believes that if Hempel's theory were so modified as to be able to express the situations in which Watkins and Agassi are interested, it would yield results not unlike those they espouse.

On a final point of reconciliation, it is noted that Popper's formal definition of confirmation, referred to by Agassi and Alexander (and also a simpler version given in Popper's XXV 383) is in accord with Alexander's second suggestion in the respect, mentioned above, that the hypothesis can be supported by a result of the apparent non-test (e4). Thus it appears that in their requirement that a *test* provide a possible conclusive refutation of the hypothesis (and this requirement seems to lie at the base of the present controversy) Watkins and Agassi may have misrepresented Popper. DAVID KAPLAN

R. H. VINCENT. *The paradoxes of confirmation.* ***Mind,*** n.s. vol. 73 (1964), pp. 273–279.

In criticism of Watkins's replies to Scheffler and Alexander, reviewed above, the author argues that the reports "Edgar is a black raven," "Edgar is a black non-raven," and "Edgar is a non-black non-raven" *always* result, in part, from a test of the hypothesis "All ravens are black," and therefore Watkins's testability criterion of confirmation does not avoid the paradox of confirmation. To Watkins's case of the known non-raven examined for color, the author demurs that the prior knowledge "Edgar is a non-raven" always results from a test of the hypothesis. But since this information can be obtained by testing only for species, and ignoring color, the reviewer does not agree that it must result from a test of the hypothesis. Further, to conflate in this way the prior and posterior information involved in Watkins's case is to confound Carnap's notion of confirmation—roughly, the probability of a hypothesis in the light of all available evidence—with Popper's notion of confirmation: roughly, the degree of change in the probability of a hypothesis in the light of new evidence as compared with prior evidence. It is only the latter that is here under discussion. DAVID KAPLAN

R. A. SHARPE. *Validity and the paradox of confirmation.* ***The philosophical quarterly*** (St. Andrews), vol. 14 (1964), pp. 170–173.

In stating the paradox the author writes "we may conclude that a white shoe confirms the hypothesis 'All crows are black,' or more precisely, the statement 'This white shoe is not a crow' confirms the hypothesis 'All crows are black'... [But] 'This white shoe is not a crow' reflects ordinary usage and is therefore analytically true in natural languages." Hence it is necessary, and the paradox is dissolved because "Necessary statements do not confirm factual generalizations." DAVID KAPLAN

NICHOLAS RESCHER. *Definitions of "existence."* ***Philosophical studies*** (Minneapolis), vol. 8 (1957), pp. 65–69.

KAREL LAMBERT. *Notes on* "E!". Ibid., vol. 9 (1958), pp. 60–63.

The background for these notes is contained in a paper by Leonard (XXVIII 259) wherein Leonard argues that one should introduce into formal logic the notion of (*singular*) *existence*, symbolized by 'E!', and defined by: $E!x =_{df} (\exists\varphi)(\varphi x \,.\, \lozenge\sim\varphi x)$, where x can be either an individual or predicate variable and $\lozenge$ is the modal possibility operator. Leonard gives no detailed formulation of the system he envisions but indicates that some of the "laws" of ***Principia mathematica*** will have to be modified if trivialization of his notion is to be avoided; e.g. he shows how to deduce $E!x$ from the premiss $\lozenge Gx \,.\, \lozenge\sim Gx$, for any predicate G. To avoid this Leonard adopts an additional law L5: $E!\varphi \equiv \sim E!\varphi'$, where φ' is the complement of φ (i.e., $\varphi'x \equiv \sim\varphi x$), as well as the modified law of existential generalization L6: $\varphi y \,.\, E!y \,.\supset.\, (\exists x)\varphi x$.

In the Rescher paper, which follows Leonard's point of view, it is argued that Leonard's definition of singular existence has unwanted consequences—e.g. that it denies singular existence to abstract objects—and should be replaced by: $E!x =_{df} (\exists\varphi)(\sim\varphi x \,.\, \lozenge(\exists y)\varphi y)$. Rescher also shows that from the premiss that there is some object X not having singular existence one can derive a contradiction if E! is allowed as an instance of a free predicate variable, thus concluding that "*existence* is not a predicate."

In the Lambert paper, which likewise adopts the Leonard point of view, the author makes two points: First, Leonard's derivation of $E!x$ can, with suitable modifications, be also carried through with Rescher's definition, and thus that Rescher should also adopt the above mentioned L5 and L6. Secondly, Rescher's proof that *existence* is not a predicate would not go through if L6 is adopted rather than the unrestricted form of existential generalization used by Rescher. But in this last point Lambert seems to make an error—his formula (17), which is supposed to be an instance of L6, contains $E!X$ where it should have E!(E!), so that the antecedent of (17) reduces to E!(E!) rather than a contradiction. This would make Rescher's proof not a derivation of a contradiction but of ~E!(E!), that is, if L5 is employed, of E!(E!′)—in other words, that non-existence has singular existence. THEODORE HAILPERIN

KAREL LAMBERT. *Notes on* "E!": *II.* Ibid., vol. 12 (1961), pp. 1–5.

On the basis of some remarks on the use of definite descriptions in ordinary discourse, the author lays down the criterion that a "definition" of *existence* of a definite description must be such that "it will permit us to infer nothing about the truth or falsity of $E!(\iota x)\varphi x$ when the uniqueness condition [φ for at most one object] fails." Accordingly he would replace Russell's definition: $E!(\iota x)\varphi x =_{df} (\exists y)(x)(\varphi x \equiv x = y)$, in which the definiens is equivalent to $(\exists y)\varphi y \,.\, (\exists y)(x)(\varphi x \supset x = y)$, by the weaker

$$(\exists y)(x)(\varphi x \supset x = y) \supset .\, E!(\iota x)\varphi x \equiv (\exists y)\varphi y,$$

citing as an advantage that Leonard's theory of description (XXVIII 259) would not then have to abandon the law $\varphi(\iota x)\varphi x$.

In the absence of a formal treatment one cannot fully evaluate the author's proposed revision of description theory; however, in view of the conditional nature of the author's definition of $E!(\iota x)\varphi x$, one obvious consequence would be that one could not have eliminability of the description from all contexts, as with Russell's treatment. THEODORE HAILPERIN