LETTERS

Errata List Available

Unfortunately, it has been brought to our attention that formulae in our book *Angular Momentum* (reviewed in *Physics Today*, June 1963, p. 80) contain a number of misprints. A list of errata may be obtained from either of the undersigned. We are indebted to Dr. K. T. R. Davies for the careful study which revealed most of these.

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Science and Religion

I am an Episcopal priest and a working physicist. I get these facts out first because Charles M. Gottschalk faults Harold K. Schilling for not revealing his Christianity "until the very end of the book" (the latter's *Science and Religion*, which the former reviews in the October 1963 issue of *Physics Today*). On the other hand, Gottschalk reveals his own "scientific" (i.e., *a*theistic) humanism only by implication in such clauses as "The fundamental monotheistic faith . . . is disposed of by Huxley. . . ."—indeed?

"Humanists of the scientific persuasion reject the dualism which assigns to religion final authority in the realm of value and to science final authority in the realm of fact." So do humanists of the Christian persuasion. They are as unwilling to grant "science" (whatever that is) final authority on facts as Gottschalk is to grant "religion" (whatever that is) final authority on values. Values are judgments on interrelations of facts; ethics and epistemology are inextricably intertwined.

This is one of those false dichotomies which sounds plausible if you don't examine it too closely. Another is matter and spirit. Whatever the surd is in human experience, it does not lie at either of these junctures. This surd is a permanent element in human experience and perennially generates new dualisms. Dualisms are as intellectually unsatisfactory as monisms are pragmatically inadequate. Monistic systems of thought avoid dealing with this surd by legislating significant realms of human experience out of existence. Materialistic monism is usually as guilty of this tour de force as spiritualism. Christian thought takes this surd seriously. You might characterize it as attempting to hold dualism and monism simultaneously, in tension, in a kind of Hegelian synthesis somewhat akin to the physicist's mental gymnastics over the wave-particle duality. But Christian thought is not alone in taking this surd seriously. So, in varying degrees, do other forms of Western ethical monotheism. So does existentialism. So even, at their best, do the beatniks.

That Gottschalk's review appeared in an issue dedicated to Niels Bohr is surely a propos. Bohr tried hard, and unsuccessfully, to find teleology in physics. That he should have hoped to surprises me: the whole experimental and analytical method of physics excludes teleological explanations. But Bohr was closer to the locus of the surd than the fact-value juncture which Gottschalk rejects or than the matter-spirit juncture which he may possibly espouse in his last sentence. In order to understand our universe, we must treat it as if it were mechanistically determined; in order to act meaningfully, we must regard ourselves as purposively determined.

On the one hand, the Heisenberg uncertainty principle is no out. It merely sets a limit on the accuracy with which I can measure the causal relationships; the question as to whether the uncertainty is "really" there or only "caused" by my measuring apparatus is meaningless within the universe of discourse of physical theory. On the other hand, the attempt to dispose of purposes by exposing their "psychological" or other causes is irrelevant to their meaning *as purposes*.

One could make out as potent a psychological accounting for Gottschalk's "scientific" atheism as for my Christianity; neither accounting would be relevant to the validity of either position. The theist and the atheist hold irreconcilable viewpoints on the