

# Letters

## Human Rights and Society

Referring to C. W. Hartwig's comment [*Science* 128, 484 (1958)] on T. Dobzhansky's article "Evolution at work" [*Science* 127, 1091 (1958)], may I point out that the reference to my late colleague Whitehead is not precisely to the point.

Whitehead's remark that no society could survive if run on the principles of taking no thought for the morrow and no interest in the things that are Caesar's referred expressly to the responsibilities of individuals, not to their rights. The question whether it would be fatal to a practical social order if all men were equal in rights, and if no human being were used as means to an end, is an independent issue.

Hartwig's stricture on the "means to an end" formula is valid. All employment, all swapping of help, all "service," involves the use of human beings as means to an end. The formula is deadly without the one word that Kant used: "never as a means *only*." The word "only" makes the precise difference between employment and exploitation, and hence between industry and revolution. As to equality of rights, the phrase can run wild unless one specifies which ones among a long list of alleged rights are held "equal." Rights, strictly speaking, are not quantities; the claim of a right is either valid or invalid. And there is obviously no society in which all men have the same list of valid rights—the right to vote, for example. But it would not destroy society if all men had a right to life (barring murder), or an (equal) right to compete for (unequal) property. Properly defined, there is little difference between the "equal rights" proposition and the "never as means only" proposition. They both are demands, not scientific assertions—demands that a man be treated as a man, that is, as a self-governing organism. Acceptance of this demand, which is consistent with all the obvious inequalities in ability and disposition, including racial differentiations, and which requires no Bridgman anvil-apparatus to induce cooperation for social ends, could hardly be a peril to society.

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## Pavlov's Beliefs

This letter is offered as a footnote or postscript to the interesting paper "Pavlov and Lamarck" by Gregory Razran (1). In this paper Razran assembled the published evidence that shows that the

great Russian physiologist, I. P. Pavlov, believed that acquired characters were inherited and even believed that conditioned reflexes in mice could be transmitted from one generation to the next. The experiments that Pavlov conducted to prove this inheritance, however, were defective, and, as Razran shows, Pavlov withdrew all the claims that he had based on them (2, p. 385). After this unfortunate experience, Pavlov avoided the subject and omitted all references to it in his subsequent publications, even in those that, together, included all of his formal and informal addresses. Razran raises the important question as to whether Pavlov merely dropped the subject and directed his attention elsewhere or whether he actually abandoned his belief in the inheritance of acquired characters.

Apparently Pavlov never published anything that indicated he had definitely given up his belief that acquired characters were inherited. Razran was able to cite, however, two oral communications which are pertinent to Pavlov's reaction. One, quoted from W. Horsley Gantt, appears as follows: "Pavlov remarked to me that one of the biggest scientific errors of his life was his assertion that acquired habits could not be inherited." (Is there not a typographical error here? Should not the "not" be omitted?) The other is from Razran's own experience: "I asked him [Pavlov] specifically what his present views on the problem were. His answer was a shrug coupled with the sound of a typical Russian 'Ek' which to me meant 'Don't ask' and I preferred not to pursue the question."

The oral answers thus are ambiguous and do not tell us whether Pavlov ever gave up his earlier belief. The following items do not remove the ambiguity completely, but they contribute to our knowledge of Pavlov's beliefs and give us some of the details of his unfortunate experience. First, Pavlov read a paper in 1917 before the Petrograd Biological Society entitled "The reflex of freedom" (3). In this he cited an incident from "The river of life," a story by Alexander Kuprin. Kuprin had described how a student had been conditioned by his earlier experiences until he had the mentality of a slave, but Pavlov went further. At this time he believed that conditioned reflexes in human beings were inherited (2, p. 286): "In Kuprin's story, 'The river of life,' there is described the suicide of a student who was tormented by his conscience after having betrayed his companions to the police. From a letter of the suicide, it was evident that he was the victim of the reflex of slavery inherited from his mother who was a priji-valka (upper class servant). If he had had an insight into his condition, he would first have understood his limitation, secondly he might, by systematic

measures, have developed control and successful suppression of this reflex."

The second item dates from 1929 and should be added to our oral tradition. It occurs in a footnote in *The Story of Evolution* by B. G. Gruenberg (4): "In an informal statement made at the time of the Thirteenth International Physiological Congress, Boston, August 1929, Pavlov explained that in checking up these experiments it was found that the apparent improvement in the ability to learn, on the part of successive generations of mice, was really due to an improvement in the ability to teach, on the part of the experimenter! And so this 'proof' of the transmission of modifications drops out of the picture, at least for the present." In this statement, Pavlov may have been covering up for an overzealous assistant.

The final item shows that Pavlov came as close as he could to disavowing his earlier belief in the inheritance of conditioned reflexes without stating specifically that he had done so. On 13 May 1927 he published his near-retraction in an article in *Pravda* (No. 106). This article was cited in a footnote to a paper, "Direct adaptation or natural selection," written by A. L. Takhtadzhian and published in the *Botanical Journal* (Moscow) in 1957 (5). It seems that Pavlov told his Russian colleagues precisely what he told the members of the 13th International Physiological Congress. In the footnote referred to, Takhtadzhian repeated almost word for word what Gruenberg had recorded from the Congress. He also quoted from Pavlov's 1927 paper in *Pravda* as follows: "The first experiments with hereditary transmission of conditioned reflexes of white mice have not yet been confirmed with improved methods and stricter control, so that I should not be numbered among those writers who affirm this transmission."

Pavlov, of course, was an honest scientist, but even here he does not say specifically that he disbelieves in the inheritance of acquired characters.

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## References and Notes

1. G. Razran, "Pavlov and Lamarck," *Science* 128, 758 (1958).
2. I. P. Pavlov, *Conditioned Reflexes*, translated by C. V. Anrep (Oxford Univ. Press, London, 1927).
3. See "The reflex of freedom," in I. P. Pavlov, *Lectures on Conditioned Reflexes*, translated by W. Horsley Gantt (London, 1928), p. 286.
4. B. G. Gruenberg, *The Story of Evolution* (Garden City, New York, 1929), p. 327.
5. A. L. Takhtadzhian, "Direct adaptation or natural selection," *Botan. Zhur.* (1927), translated and published in English in *Current Digest of the Soviet Press* 9, No. 50, 9 (1958).

*There is indeed a typographical error in the statement from Gantt quoted by Razran [see "Erratum," *Science* 128, 1076 (31 Oct. 1958)]—THE EDITORS.*