

mental growth can have been of survival-value only when certain other phases were already present, then we may make assumptions about the sequence of these phases without waiting for the accumulation of material by the cross-section method.

Merely finding out what happens in the mind of an animal or of a child, at a certain given stage of development, calls for no method differing fundamentally from those used in ordinary psychology; only for certain special precautions. The task of genetic psychology proper is twofold: to trace the course of the changes that take place from stage to stage, and to understand, so far as possible, the reasons for these changes. Animal psychology, in the first part of its task, is greatly helped by the application of some form of the principle of natural selection; in the second, it must rely almost entirely upon this principle. Natural selection does not account for the origin of variations; it may be that they occur *per saltum*. But, even if it does not completely rationalize the process of mental evolution, it is the only universally accepted rationalizing principle we have at our service. Genetic psychology, in this sense, has scarcely begun its career. The preparatory cross-section work, even, is but just perfecting its methods; after the rash anthropomorphism of the early Darwinians there has grown up in natural reaction the tendency to accumulate facts without interpretation. But the interpretation is, nevertheless, an essential part of the science of genetic psychology.

In child psychology, however, there is little hope of getting behind the mere facts. For the present, our only glimpses of interpretation come when we can apply the laws of species development to the individual; and the difficulty and uncertainty of this attempt are sufficiently evident in the labors of the Clark University School. The individual mind may in its evolution be an epitome of the history of the species, but it is an epitome written in almost undecipherable shorthand.

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DISCUSSION

MINOR LOGIC

I HAPPEN to have been staying for some months past (to my loss) within the range of two universities which do not yet take in the JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, and I have only just seen the note by the editor of *Science*, in the second number, in reply to my little article, 'Some

Points in Minor Logic,' which appeared in the first number of the JOURNAL. That minor logic is the greatest thing in the world will hardly be asserted by any one; indeed, the very name is deprecatory, and strongly implies limitations. But that, within its proper limits, it may be legitimately appealed to, and that, in the particular instance in question, the criticism made was legitimate, are little theses which I feel called upon modestly to maintain.

What I had said was this:

"A recent writer in *Science* slips into a curious error in phraseology. He allows himself to speak of a 'superabundance of physicians going hand in hand with a shortage of patients as being attributed to,' etc. But the superabundance of physicians is the same thing as the shortage of patients (looked at from a different point of view), and a thing can not go hand in hand with itself."

Whereto the editor of *Science* objects as follows:

"I venture to suggest that Mrs. Franklin's comments illustrate the limitations of minor logic rather than a lapse in logic on the part of the writer. He was discussing the statistics of medical students, and the conclusion of his sentence (omitted by Mrs. Franklin) was: 'must be attributed to a decrease in the number of illnesses, a decrease due to the application of modern methods of preventive medicine.' The writer, of course, means that there has been an increase in the number of physicians as compared with the total population, and that, at the same time, the number of illnesses, as compared with the total population, has decreased, largely owing to the increased number of physicians. These statements are by no means the same."

Now, though this *apologia* concerning a very little matter—a matter that was designated in the first place only as an 'error in phraseology'—is very brief, it falls under two separate and distinct heads:

1. The conclusion of the sentence was 'omitted by Mrs. Franklin' because it had either no bearing upon the matter, or, if any, then one that only strengthens the indictment. For the attribution of 'the superabundance of physicians going hand in hand with a shortage of patients' simply to 'a decrease in the number of illnesses, a decrease due to the application of modern methods of preventive medicine,' so far from pointing to the explanation of the phrase as involving a double statement, distinctly points the other way. It indicates, as far as it goes, that *only* a decrease in the number of illnesses as compared with the population, and not *also* an increase of the number of physicians as compared with the population, was in the writer's mind. For surely an increase in the number of physicians *per population* could never have been brought about by

a decrease in the number of illnesses. Both Professor James, of Columbia, and Brouardel, from whom the remark of the writer in *Science* is directly and indirectly derived, make the statement correctly, and give as a reason for an absolute increase in the number of physicians the increased attractiveness of the medical profession.

2. But, even if the writer had 'of course' meant what, so far as appears, he did not mean at all, it would still remain true that he clothed his meaning in objectionable phraseology; and it was not the substance of what was meant, but the form in which it was put, that was the object of my innocent bit of criticism. 'Superabundance of physicians' is a phrase which conveys no suggestion whatever of *increase* in number, whether relative or absolute; to any one in the habit of using language accurately, it has by itself no meaning other than that of excess in comparison with the number needed, according to some understood standard. As nothing whatever appears in the context to indicate that the writer had in mind an increase in the number of physicians compared with the population, and as the subject immediately under discussion by him was the 'decided decrease in [the attendance at] the schools of medicine all along the line,' surely it can hardly be claimed that the expression which started this unexpected controversy was so blameless as to make its utilization as an illustration of a point in minor logic a thing that was not justifiable.

Finally, it may be permissible to point out that in a large domain of practical thought, this failure to notice—to notice constantly and instinctively—that some terms are necessarily of a purely relative nature, and that there is, accordingly, no distinction between two statements presenting opposite aspects of the same fact, is of very common occurrence. I refer to the domain of political economy, in which many a popular misunderstanding, the parent of prolonged and voluminous controversy, has arisen out of imperfect grasping of such truisms as that low prices mean dear money, that high efficiency of industry means low cost of production, and the like. And while much of the trouble here undoubtedly lies in the 'complexity of thought,' no one who is in the habit of following economic discussion can doubt that the trouble would be very perceptibly reduced by the avoidance of offenses against the phraseology required by minor logic, and, in particular, by the avoidance of just such haziness as to whether two statements are two or really only one as I had in mind in my little article.

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