better, why has its advent in psychology caused such a furor?

We are frequently reminded that psychology is a young science—not far removed from the parent philosophy and it must be remarked that this attitude with respect to behaviorism, both on the part of "believers" and "non-believers," is eloquent testimony as to its immaturity. This is not saying that behaviorism is this or that but merely that some psychologists and others are as yet in a state of mind which might be labeled semi-scientific and semi-philosophical with respect to the investigation of mental life. Scientifically, their thinking is belated.

If we consider the history of scientific effort and investigation since the beginning of man's curiosity about the world and himself we find that he has been observing behavior and recording its uniformities and irregularities. To make it intelligible he has invented theories and constructed hypotheses and scientific laws which are nothing more or less than statements of uniformities in behavior. The chemist looking at a precipitate in a test-tube, Newton regarding the falling apple, if the story is true, were observing behavior. So, too, each in his own sphere—the geologist, the physiologist and the biologist. No one says uncomplimentary things about these scientists because they study the behavior of certain aspects of nature and are thereby behaviorists in so far. Why, then, should the psychologist incur the anathemas of various and sundry, including some of his own relations?

Behaviorism may be right or it may be wrong, but it is no more so in psychology than in any other science. The confusion arises because oftentimes the psychologist and those interested in psychology try to be or try to do two things at the same time, with the result that neither is done well. They confuse fact and purpose, finite and infinite, uniformity and teleology, science and philosophy. Most scientists find enough to do at home and are content to observe, record and explain behavior as found in his own field. Not so with a considerable number of psychologists. As to the ultimate behind, beyond or beneath, they should not presume to discuss as physicists, chemists or psychologists. It is not their field. Some attempt to be philosophers as well as psychologists. Except in the case of a monumental genius the two attitudes produce nothing but confusion. The psychologists should be scientists first, last and always, leaving the ultimates to the philosophers. In the realm of intellect, it is their function to provide perspective, to evaluate findings, to correlate the results of the various sciences into a world-view as also to furnish an interpretation as to what is the meaning of the behavior of that which we investigate and observe. (If ever such a service was needed it is needed now, for the world is suffering from scientific indigestion.) This confusion of aims on the part of the psychologists is the result of an imperfect separation from philosophy really amounting to an immaturity of outlook and attitude.

The psychologist is only a scientist when he is thoroughly objective. Mental facts are observable only as the behavior of the organism. When, however, any one asserts that there is nothing but the response of the organism he is as mistaken as other pseudo-philosopher. That is how the behavioristic school has shown its youth and immaturity as much as any other school of psychology. A denial of consciousness is just as much beside the mark as its affirmation, and the behaviorist is quite as absurd as those whom he condemns. The psychologist as a scientist should do neither. He should be content to take human nature for granted and investigate his special field, just as other scientists take their special fields for granted. The finals, the interpretations, the unifyings, the harmonizing, the ultimates of all sorts and kinds come within the ken of the philosopher. If that division of labor is carried out then a self-imposed burden is removed from the psychologist and he will find time to be a scientist.

Behaviorism, then, is a scientific attitude common to all scientific endeavor, and if the psychologist takes that attitude as a scientist then he ought not to incur an odium from those whose intellect is alive. As long, however, as he mixed the factual with the purposive, confusion of thought is bound to occur both in his own mind and in the minds of others. Let him, content to be a humble scientist, let others soar to philosophic heights. As soon as psychology becomes purely objective this dualism of outlook will disappear. At present it has not reached that stage. Psychologists, by being scientists will be better psychologists, and by being better psychologists will be better scientists. Their philosophy may suffer, but that may be no great hardship.

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QUOTATIONS

INTERNATIONAL COOPERATION

AT a Conference of Institutions for the Scientific Study of International Relations, held in Copenhagen in June, 1931, progress was made in the fundamental study of international relations, and the possibility of a systematic study of actual problems on interna-

tional relations, either on the lines of the Institute of Pacific Relations or by entrusting particular researches to individual institutions, was discussed. A study of the international implications in the relations between government authority and private economic activities of individuals and groups, with special reference to the new forms of public management, control, and supervision, national or international, direct or indirect, which have grown up since the war, and the motives and policies underlying them, is contemplated at the next conference. The possibility of a fundamental scientific study of the problem of disarmament was also suggested.

In industry, where an international outlook has become much more prevalent and the importance of scientific leadership is increasingly recognized, the possibilities visualised by General Smuts have found even more concrete expression. Sir Harry McGowan has already thrown out the suggestion of an International Council for Chemical Industry which would plan chemical industry as a world unit in regard to production, research and development. The World Social Economic Conference held at Amsterdam last August led to definite proposals for a five-year world plan which was to be based on world solidarity, the modification of national economic policy in accordance with its effect on world economy, and the pooling of losses due to the war. The plan involves a general moratorium on all war debts and reparation payments, a series of international loans and agreements in regard to markets and production, and the establishment of a World Research Council or Planning Board to stimulate thought and action in the planning and rational organization of the social and economic life of the world.

Were not scientific workers, as Ruskin remarked, "still eager to add to our knowledge, rather than to use it," the new opportunities confronting them of making a vital contribution to the solution of our present difficulties would have been seized with avidity. Not only industry but also whole sections of the nation are disposed to accept the leadership of science and to adopt a well-thought-out and comprehensive scheme of national and international reconstruction based upon an authoritative and scientific analysis of the whole situation. No such scheme can, however, be produced until scientific workers are sufficiently concerned with the economic and social consequences of their work to cooperate with industrialists and others who are imbued with the scientific outlook and capable of assessing the value of scientific method and knowledge. In such cooperation there should be adequate safeguard against the neglect or abuse of human values, which Bertrand Russell fears and depicts so vividly in his sketch of scientific society and scientific government.

There are all the signs that the age of individualism and competition is passing and will be succeeded by an age of cooperation and planning on a world scale. The danger is still acute that old prejudices may delay the transition and precipitate a conflict from which the recovery of civilization will be impossible. The existence of political prejudices in government circles should not lead us to overlook the facts that nowhere does prejudice and individualism linger more persistently than among the very scientific workers whose discoveries have made world cooperation and the renunciation of war at once inevitable and urgent. Even the difficulties and limitations on the intellectual classes and the intellectual progress of mankind directly imposed by the burden of armaments under present conditions have not sufficed to rouse general interest among scientific workers, or to induce them to make their fitting contribution in the analysis of the problem. Statesmen, indeed, need to take account of our prejudices as well as of the facts of life. Reason alone may be an incomplete guide for the control of human affairs and lead us into a tyranny which becomes intolerable to human nature because of its disregard for human values. Knowledge and leadership must be indissolubly linked if disaster is to be avoided, and to no class of the community is there a stronger challenge in the present emergency than that addressed to scientific workers to declare with a united and unequivocal voice the potentialities of science in the evolution of a better world order and the lines upon which a systematic policy can be evolved.—*Nature.*

SCIENTIFIC APPARATUS AND LABORATORY METHODS

INFLUENCE OF METHOD OF SHAKING ON AMOUNT OF PHOSPHATE DISSOLVED FROM SOIL BY WATER

DISCORDANT results were obtained during the course of experiments designed to determine the optimum time for shaking a soil-water suspension in order to dissolve phosphate. Much more phosphate was dissolved from sandy soils when vigorously shaken than when gently agitated. There was only a small difference in the amounts extracted from clay soils whichever method of shaking was used. This note is written merely to direct attention to the facts observed,