

(1) The preparation of a national inventory of equipment for research, of the men engaged in it, and of the lines of investigation pursued in co-operating Government bureaux, educational institutions, research foundations, and industrial research laboratories; this inventory to be prepared in harmony with any general plan adopted by the proposed Government Council of National Defence.

(2) The preparation of reports by special committees, suggesting important research problems and favourable opportunities for research in various departments of science.

(3) The promotion of co-operation in research, with the object of securing increased efficiency; but with careful avoidance of any attempt at coercion or interference with individual freedom and initiative.

(4) Co-operation with educational institutions, by supporting their efforts to secure larger funds and more favourable conditions for the pursuit of research and the training of students in the methods and spirit of investigation.

(5) Co-operation with research foundations and other agencies desiring to secure a more effective use of funds available for investigation.

(6) The encouragement in co-operating laboratories of researches designed to strengthen the national defence and to render the United States independent of foreign sources of supply liable to be affected by war.

Co-operating Bodies.—Arrangements have been made which assure the Council of the hearty co-operation and support of members of the Cabinet and other officers of the Government; the officers of many national societies; the heads of the larger universities and research foundations; and a long list of the leading investigators in Government bureaux, research foundations, industrial research laboratories, and educational institutions.

From the cordial interest shown by all those who have learned of the work in its preliminary stages, it is evident that as soon as a widespread request for co-operation can be extended it will meet with general acceptance.

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PSYCHOLOGICAL EFFECTS OF ALCOHOL.¹

THE literature on the alcohol question is already vast, but it promises to be bigger still if the ambitious programme of Prof. F. G. Benedict and his colleagues is accomplished to the full. It must be more than thirty years ago that, feeling the tyranny of the ultra-teetotal party in America, the late Prof. Atwater founded a famous committee with the object of freeing, at any rate,

¹ "Psychological Effects of Alcohol: an Experimental Investigation of the Effect of Moderate Doses of Ethyl-alcohol on a Related Group of Neuro-muscular Processes in Man." By Raymond Dodge and Francis G. Benedict. Pp. 281+32 figures. (Carnegie Institution of Washington. Publication No. 232. 1915.) Price 2.50 dollars.

the scientific section of the community from the limitations of opinion and research on the question which the so-called temperance party sought to impose upon them. Excellent work they did, but in the intervening years the methods of research have been so improved that the work of that committee urgently needed revision. So in January, 1913, Prof. Benedict invited the co-operation of physiologists throughout the world to share in a gigantic investigation of the numerous problems presented by the dietetic use of alcoholic beverages, and obtained sympathetic answers from a large number of eminent people in all countries. In the present volume a long list is given of these, and grateful acknowledgment is made of friendly, helpful letters from the majority of them.

This appears to have completed the measure of their co-operation, and Prof. Benedict, so far as actual work is concerned, has been left to tread an almost lonely furrow. The brochure from the pen of himself and Dr. R. Dodge deals only with quite a limited branch of the subject, but the results obtained are of considerable importance. The experiments were performed with moderate doses of alcohol (30 to 45 c.c.), and were carried out with great perfection of technique and with proper controls. The majority of the subjects were normal young men, a few were psychopathic owing to previous misuse of alcohol, fewer still were the number of actual teetotalers who consented to lend themselves to the experiment, and one only was a confirmed heavy drinker; the results obtained with him can be left out of account, as he soon rebelled against a limitation of his usual supply of whisky. Otherwise, with differences in detail, the main results were the same in all cases.

The principal question investigated was whether or not these small doses of alcohol produced any delay of, or interference with, various neuro-muscular processes, and the selected processes were some of them simple, such as the knee jerk, others more complex, such as reflexes, in which the eyes were concerned, and others, still more complicated, involved mental operations, such as association of ideas and memory. Electrocardiograms and pulse records were also taken, and the cardiac acceleration noted was found to be due to a depression of the inhibiting mechanism. The answer to the main inquiry is certainly a rather unexpected one, so insistent are the claims of the teetotalers that even a moderate drinker is putting an enemy into his mouth to steal away his brains. For it was found that, whereas these small doses of the drug depressed the simplest reflex actions, such as the knee jerk, the more complex the neural arc involved in a reflex, the less was this effect manifested, whilst in operations involving mental work and memory the effect was either nil or an improvement was noted. In other words, the lower centres (*e.g.*, the vagus centre and the knee-jerk centre in the lumbar cord) are depressed most, and the highest least. "If alcohol had selectively narcotised the higher centres it would have been used as an anæsthetic centuries ago." W. D. H.