

at Wolfeboro, N. H., have been found to reveal a logging operation between the growing seasons of 1794 and 1795. The evidence for it appears in the sudden "release" of the then small hemlocks, as shown by the change from suppressed growth and very narrow rings to normal growth and broad rings after 1794.

Although such evidence of release of young trees by removal or death of much larger trees is commonplace to students of forestry, it is thought that the observations here recorded form something of a record in that they date an event in the eighteenth century. A total of 129 annual rings had been formed under the new conditions by each of the six trees chosen at random from about ten times as many cut early in 1924. This precise agreement showed that the release was not due to natural causes but to an act of man, and the history of the site confirmed the idea because it was then adjacent to the cultivated land on the well-known estate of John Wentworth, provincial governor of New Hampshire. From our analyses of other hemlocks on other sites, the release of individual young trees is evident, but, even though growing within a few rods of each other, their sudden increases in rate of growth occur in different years.

It is also possible to make a preliminary announcement that this study of climatic effects on growth rates of the hemlock, *Tsuga canadensis*, has produced positive evidence in favor of a marked control of growth by rainfall *during the growing season*. Drouth years in particular are marked by narrow rings, while seasons with abundant rainfall usually give relatively wide rings. Since the trees used for analysis have as many as 335 rings of wood, the results should add to our knowledge of rainfall in New England well back into the seventeenth century.

This work is being supported in part by a grant from the American Association for the Advancement of Science, and a detailed report of it will appear later. In the meantime, information concerning old growth hemlock stumps and butt logs in New England (with known dates of cutting) will be welcomed as an aid to the collection of accurate data from widely separated sites in the area.

CHARLES J. LYON

DARTMOUTH COLLEGE

NATIONAL WELFARE, BUSINESS PROFITS AND INDIVIDUAL BENEFIT

IN an admirable article in *SCIENCE* (Vol. 81, No. 2090, January 18, 1935, pages 55-62), Professor Wesley Mitchell has presented what may eventually be considered the definitive case for national planning. Although he has neglected the vital distinction between an *oligarchic* "planned" society and a co-operative or *democratic* "planning" society, Professor

Mitchell has, I think, demonstrated the inevitability of some kind of large-scale social planning. By whom and for whose good the planning shall be done now becomes the crucial issue.

I am, however, concerned by Professor Mitchell's apparent retention of an outworn theory of motivation as the psychological basis for economic behavior. He states that the "*application* [of scientific discoveries] has been effected *mainly* by men who were seeking profits." By implication, these fundamental discoveries themselves were *not* made because of the driving power of the profit motive. Granted that capitalistic enterprise since the industrial revolution may be equated with the "profit system," it is a defective picture of human nature to assert that even the work of the competitive business world has ever been *mainly* performed under the incentive of profits. At least 95 per cent. of the people (in which I would include most of the readers of *SCIENCE*) make no "profits" in the technical meaning of the term as the positive difference between sales price and cost of production, including administrative salaries. They do, however, secure personal "benefits" and "advantages," *i.e.*, individual "gains," which are an altogether different matter. Human needs demand gratification, but the "need" for profits is a feeble acquired want in most men. The mere existence of technicians and professors who are gratified by an elevation in rank with an accompanying drop in compensation (not a rare combination in recent years!) is sufficient refutation of the strength of the "profit" urge among applied scientists. Certainly industrial psychology and personnel management would be non-existent fields if the lure of an excess monetary reward were the only, or even the principal, factor making for cultural advance.

Economists, executives and advertisers are keenly aware of the reality of "non-financial" incentives. It is, therefore, all the more strange that in philosophizing about the present social order, so many of them make such an inadequate and false distribution of emphasis in cataloging the motives underlying their own activities.

GEORGE W. HARTMANN

THE PENNSYLVANIA STATE COLLEGE

CHINESE MAGIC MIRRORS

A RECENT news item in the *Herald-Tribune* of New York was to the effect that certain scientists had started an investigation as to how the Chinese magic mirrors were constructed. This interested me very much, for I recall how the late physicist, Dr. Thomas Corwin Mendenhall, with whom I was associated on the board of trustees of The Ohio State University, had become interested in the same question while teaching in Japan, how he had discovered