

schools, therefore, is only one of several disciplines and should be treated as such. Over and over again the criticism that the school curriculum caters too much for the university candidate and too little for that majority, who complete their 'formal' education at the School Certificate stage, has been made in NATURE and elsewhere. This criticism is now meeting with a certain amount of response. Science teaching is still too much concerned with the presentation of factual information, by experiment or otherwise, and too little with its social and humanistic contacts. It is not the business of the schools to train academic, professional and industrial experts, but rather to produce intelligent and knowledgeable citizens. Dr. Chapman's views are justified from the point of view of a biologist looking for good, sound biological material to train as specialists. That scholarship candidates "come up knowing advanced genetics, but when presented with a twig of larch they do not recognize it" betrays an unbalanced syllabus. School science should "reveal the influence of scientific thought and achievement in the evolution of our present-day civilization—an appeal to social interest and utility". It has been shown that "factual knowledge and knowledge of scientific method can be imparted as successfully by demonstration as by practical work". While not advocating the complete abolition of practical work, we consider that *in schools* there is too much of it; it is too elaborate and demands more time than can be justified. (Editors of NATURE.)

Relation of Working Period to Output

THE production drive in Great Britain which started a month ago has led to a very great extension of working hours throughout industry. We would

urge that this matter should receive the attention of scientists for the following reasons. It is necessary that a scientific attitude should be maintained towards the relation between hours of work and productivity of factory labour; it was established by experience during the War of 1914-18 that increased hours of work did not in all circumstances lead to greater production. Scientific workers as well as factory hands in industry and in Government service are also being asked to work longer hours, and it is uncertain what holidays will be granted.

During the "emergency fortnight" which began in the middle of May, several large firms required their staff to work a seven-day week of total hours varying from 50 to 70. We understand that in some of these firms the emergency arrangements have now come to an end: but even in these cases the 'permanent' arrangements provide for a six-day week of 48-60 hours, and the question of holidays has not been fixed.

While it is difficult to assess the productivity of a scientific laboratory, it is evident that excessive hours and reduced holidays and rest periods are likely to reduce the rate at which scientific and technical workers conduct their theoretical, experimental or supervisory work, and will also affect the quality of the work. It is also important to remember that mistakes made in scientific work may have very serious consequences, not only in increasing the risk of injury to the workers but also in turning out faulty products.

W. A. WOOSTER.

Association of Scientific Workers,
30 Bedford Row,
London, W.C.1.
June 17.

Points from Foregoing Letters

In a note on the early use of current-bedding to determine orientation of strata in the Dingle Peninsula, Eire, A. Lamont raises the question of the parts played by Patrick Ganly, John Kelly, and possibly G. V. Du Noyer in the application of this technique.

The cross-section of atomic oxygen for elastic collision with electrons has been computed using quantum mechanics by S. K. Mitra, B. B. Ray and S. P. Ghosh. Atomic oxygen is found to exhibit the Ramsauer effect, and the value of the collisional frequency in Region F (where atomic oxygen is predominant) computed by taking the appropriate cross-section, agrees with that obtained from radio measurements. Calculation by taking the gas-kinetic cross-section yields too low a value for the collisional frequency.

On examination of the diagrams that have been said by Messrs. Riley and Fankuchen to show the Patterson projection to be expected from an insulin crystal on the cyclol hypothesis, D. M. Wrinch finds that the angle of tilt used in their construction was not 6° , as stated by them, but 36° , and that the evidence of the diagrams is in favour of the cyclol hypothesis.

Investigating the hydration of anilides of higher normal fatty acids, B. A. Toms reports that ability to 'bind' water is shown only by those in which the

fatty chain contains more than 14 carbon atoms. It is suggested that the bound water is held by a micellar structure.

By the hydrolysis of the methylated 'hot extract' of carrageen moss, E. G. V. Percival and J. Buchanan have isolated derivatives of 2-methyl and 2:6-dimethyl galactose; they discuss the bearing of this result on the structure of the polysaccharide.

E. G. Young finds that native and diluted egg-white in the ultracentrifuge shows only a single component, but diluted egg-white in the Tiselius electrophoresis apparatus shows five and sometimes six migrating boundaries. The behaviour of preparations of ovomucin and ovomucoid is also described.

J. H. Mason, J. D. W. A. Coles and R. A. Alexander find that bluetongue virus may be cultivated in fertile eggs laid by hens living on a vitamin-deficient diet. The possibility is that the vitamin concerned is riboflavin. After a few passages in such eggs, the virus grows easily in eggs laid by hens on a normal diet.

W. Lyle Stewart and A. Phyllis Ponsford find that 'pining' in sheep is not cured by cobalt administration. Deficiency of cobalt may be the initiating factor, lowering the resistance of sheep to worm infestation, death ultimately occurring from parasitic disease.