

which seemed at that time to be in conflict with the viscosity law. No simple relation between molecular weight and viscosity was discovered until measurements were made upon synthetic colloids of high complexity, and there has been reluctance to depart from the older interpretation of viscosity by micelle-formation, since viscosity is not always a simple function of the length of the molecular chain. This is particularly true of heteropolar colloids, for example, albumen, the viscosity of which is largely due to its tendency to polymerise to macro-molecules.

Prof. Staudinger deals in this paper with certain conflicting evidence and he finds a reasonable explanation. He contends that the law is applicable over a very wide range of colloidal substances. It is valid for molecules ranging in length from 10–20 Å. to 1450 Å. and he claims that it is reasonable therefore to deduce values by extrapolation for the molecular weight of cellulose with a molecular length of 4000–5000 Å.

The main criticisms which have been directed against these views appear to have been based upon measurements of solutions of technical samples of cellulose acetate and of certain complex acids. In the former case, the solutions were not sufficiently dilute to allow of complete molecular mobility—in fact gels had been employed in some cases. By applying suitable correction factors the results have been brought into line with the viscosity law. In the case of the complex acids, it is contended that unless the molecular length exceeds about 600 Å., there is a decided tendency for the molecules to form complex aggregates. This is sufficient to account for deviations from the viscosity law.

### University and Educational Intelligence

OXFORD.—Mrs. Mary Jane Williams, of Whitley, Surrey, who died on July 24, has left £30,000 to the University, to be expended by the Board of the Faculty of Medicine as it deems best for the promotion of Oxford medical education.

A LIST of the public lectures to be delivered at the University of Leeds and the Philosophical Hall, Park Row, Leeds, during the session 1934–35 has recently been published by the University. Among the lecturers will be Lord Rutherford, Prof. C. Burt, Prof. A. Harden, Prof. W. J. Tullock, Prof. B. Melvill Jones, Prof. F. A. E. Crew, Prof. Hans Driesch, Prof. R. W. Whytlaw-Gray, Prof. R. Whiddington and Sir G. Elliot Smith.

CITIZENSHIP as an objective of university education is the theme of an article by Prof. Ashbaugh of Miami University, Ohio, published in *School and Society* of February 3. Like many other articles that have appeared recently in the same journal it testifies to the "amazing and universal increase", to quote from President Roosevelt's review of his first year of office, "in the intelligent interest which the people of the United States are taking in the whole subject of government." The writer gives particulars of two schemes whereby university administrators have attempted to give effect to the ideal of developing socially efficient citizens. One, launched a few years ago at the University of Toledo, comprised a variety of courses spread over the first two undergraduate

years under designations such as "Principles of Human Behaviour", "College Life", "Modern Literature", "Problems of Modern State and City Governments", "Chemistry of Everyday Life", "Modern Logic". This attempt failed because "the conservative faculty insisted upon the prerogative of their traditional departmental organization". The other is in course of elaboration in the writer's own department (the School of Education) of Miami University. It stresses the necessity for courses which will not merely impart information but also include genuine training calculated to implant appropriate ideals and attitudes and to strengthen them by actual practice in the workshop of the world. A similar concern for equipping the student for worthily playing his part in present-day community life has marked in some instances the development of the 'junior college' movement in the United States, but too often the pressure of the minority definitely bound for a full and formal university curriculum has obscured the ideal of adequate training for the many whose formal education does not extend more than a year or two beyond the high school.

SCIENCE curricula in the universities are discussed in an article by Prof. L. N. G. Filon in a recent issue of the *Universities Review*. The enormous extension in the last thirty years of the boundaries of knowledge has invalidated some of the assumptions on which was based the existing organisation of undergraduate studies in the science faculties and has thus given rise to problems calling urgently for solution. The article outlines a tentative scheme, involving on one hand the raising of the level of entrance into the university to the Higher Certificate stage and, on the other hand, an abandonment of "the research fetish"—a postgraduate degree (M.Sc. ?) being used to mark the completion of a course of study extending over at least one year to meet the needs of those concerned to consolidate their gains—to fill the gaps, increasingly inevitable, in the knowledge acquired in undergraduate courses. These courses would be, during the first two years of university study, in three subjects, the course in each subject being the same for all students. This work would be tested by an examination corresponding roughly in standard and extent to the present pass or general degree examination, but conducted so as to be a very severe and searching test of minimum knowledge, and including a compulsory paper on the English language, *not* merely an essay. The third year's work would be adjusted to the students' varying capacities and prospective careers: (a) those who failed in the minimum knowledge test would be allowed to prepare for a second attempt at the end of their third year; (b) those intent on a broadly cultural equipment would have the option of taking a course in some chosen field lying wholly or partially outside those to which the first two years were devoted, for example, education, history of science, border-line sciences of their group, social sciences and so on; (c) intending specialists would prepare for a special degree examination on the lines of those now in use, but with no subsidiary subject; and (d) those wishing to carry further their selected scientific studies without aspiring to be specialists would take a course for a 'general' honours degree. The successful passing of the third year examination would be marked by the award of a pass degree to candidates of class (a) and an honours degree to the others.