Fluids: Reference works: Ganot's "Natural Philosophy"; Deschanel's "Natural Philosophy"; Phear's "Hydrostatics"; Sanderson's "Hydrostatics." For honours stage: Text-book: Minchin's "Hydrostatics and Hydrokinetics" or Besant's and Taylor's "Mechanics," Thornton's "Mechanics."

Pure and Applied Chemistry.—With the exception of a limited number of persons who require a long course of special training connected with a particular industry, and teachers connected with our educational institutions, the majority of students will be young men engaged in industry in which a knowledge of chemistry will prove useful, or persons desirous of cultivating their powers of observation, and who are interested in chemical pursuits. The majority of workers will therefore be evening-class students. It might be possible to establish special science sections in connection with a trade such as plumbing, but at present, unfortunately, there is little appreciation or demand for science instruction as applied to industry.

The London County Council obtained a special report upon the subject of chemical teaching. The summary of the report is as follows: "(1.) That to young apprentices chemistry should be taught in close association with mechanics and physics as a mental training, and for the cultivation of powers of observation and accuracy; but such teaching should be illustrated, as far as possible, from the every-day work of the students. (2.) That for a certain class of adults, both employers and employed, there is a need of instruction in special branches of chemistry, an understanding of which is of direct use to them in their occupations, and that the teaching of chemistry in its application to any localised industry should be concentrated, as far as possible, in a small number of institutions, which should be thoroughly equipped for the purpose and placed under the direction of technical experts. (3.) That there is a limited demand for university instruction in chemistry of the highest order by persons who are prevented from attending university classes in the day-time. (4.) That chemistry may be taught for purely educational purposes in the evenings on the same lines as in secondary schools. (5.) That normal classes for teachers, under competent instructors, should be held on the lines indicated, in accessible institutions, at times convenient to teachers. (6.) That pioneer lectures are occasionally useful for pioneer purposes—*i.e.*, in order to attract students to more systematic instruction."

Clause 4 is of the highest importance to us in the present stage of science instruction. It is a necessity, if real good is to be done, that the science teaching of our primary and secondary, or intermediate, schools should receive attention. The training of teachers by experienced men is of the greatest importance, for if the basis of the work is indifferent it is almost useless establishing higher establishments at considerable cost.

Regarding the instruction of evening students, the report states "that the time which an elementary student attending an evening class can give to the study of chemistry can be most advantageously spent in the study of what may be termed 'educational chemistry,' and that this should, if possible, be preceded by a course of simple physical measurements; in fact, by such a course as the one in 'elementary experimental science.'" Strong opinions are expressed that by such a course of instruction students would be far better fitted for entering a chemical manufactory or for specialised instruction.

The report goes on to state that the teaching of chemistry should be largely carried out by means of practical work, the students being induced to form their own deductions, and to solve problems by actual experiment; that attention should be paid to the writing, spelling, and clearness of expression in all notes and descriptions of experiments, and that the teaching of these subjects may be to a considerable extent interwoven with the chemical teaching. That great good may be done by enabling scholars who have shown special aptitude for the study of elementary science to continue their studies, but that such selection should not be made by ordinary examination, but by recommendation of headmasters or others who have a personal knowledge of the fitness of a student. The committee were impressed by the evils arising from the too frequent examination of young students.

Passing from the teaching of chemistry simply as an element of education to the teaching of it with the special object of fitting a student for taking an important position in chemical work, the committee are convinced that the course of study must extend over several years, and be of university standard. They desire to emphasize most strongly the need of the highest chemical instruction for the technological chemist, and believe that the employment of men thus educated would prove of great advantage not only to the manufacturer, but to the country in general.

As to the question of or advisability of teaching chemistry with the object of its being useful to those engaged in certain trades and manufactures, there is a general impression that considerable advantage arises from the students engaged in any chemical trade attending lectures on their particular subject. As a general expression the committee do not think that much permanent good does arise from this kind of teaching, for the reason that the majority of students who attend such lectures are not sufficiently acquainted with the groundwork on which the explanations and applications given rest; thus their learning becomes empirical, and is of but little practical use, and is likely to give them an undue sense of the importance of what they have learned. Dr. Armstrong, in his evidence regarding evening classes, was of opinion that it was best to endeavour to develop their powers of observation from the commencement; yet, while training them with a purely educational object, you could, he thought, to a large extent make use of their technical experience, and teach them principles and methods by means of examples met with in their work. It was not, however, advisable to give "tips," but the men should be led to think and observe for themselves. Regarding plumbers, it was essential that they should know something about air and water, and the action of air and water upon metals and other materials; but, as a rule, on entering a class plumbers had no knowledge of the simplest chemistry, and the course of instruction most useful to them would be a course of twenty lessons in a chemical laboratory. These lessons should not be