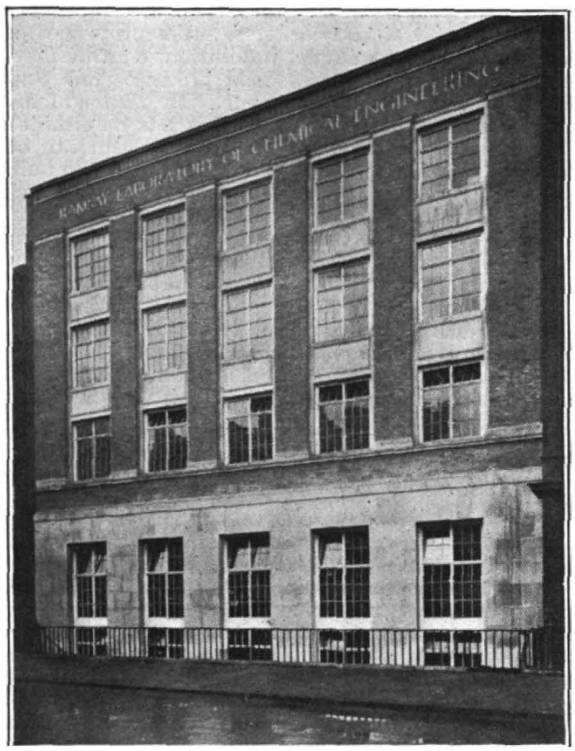
The Ramsay Memorial Laboratory of Chemical Engineering at University College, London.

THE opening of the Ramsay Laboratory of Chemical Engineering by His Royal Highness Prince George, on Nov. 26, marks an important advance in the scientific training of men for industry.



Photo] [*Larkin Bros.*

FIG. 1.—Ramsay Laboratory of Chemical Engineering.

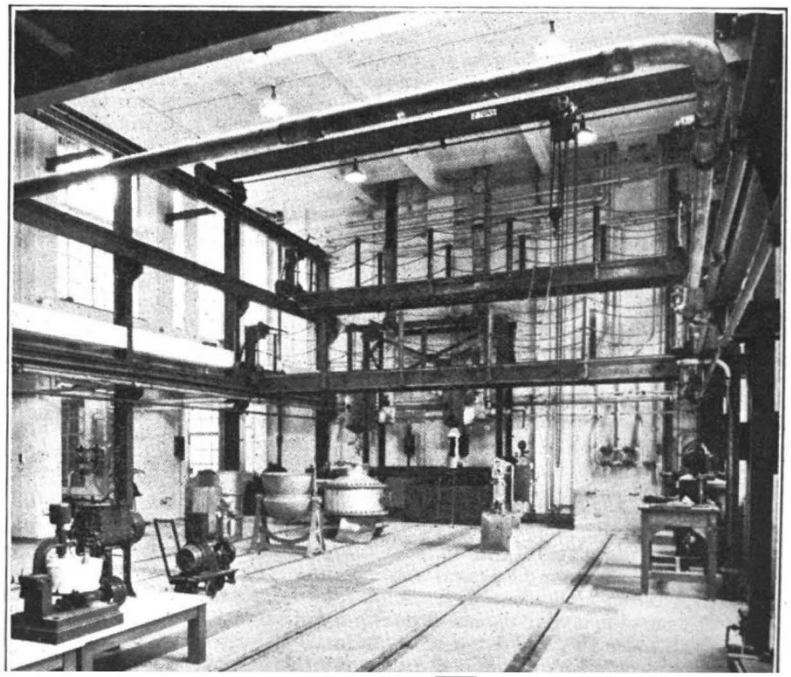
The new laboratory is the first in Great Britain to be designed specifically for chemical engineering training and research. It provides facilities whereby men who have already graduated in chemistry or engineering can obtain a supplementary training, both theoretical and practical, in the principles underlying the design, fabrication, testing, and operation of the different types of plant which are used in the industrial operation of a chemical process.

The course of training normally occupies two years. During the first year, the student receives a systematic training in chemical engineering principles by means of lectures and relevant experimental work. The subjects dealt with include the flow of fluids and the transfer of heat, the physical and chemical characteristics of construction materials and the methods of plant fabrication, the principles of mechanical and structural engineering and the production and distribution of energy in works, the design and operation of unit types of chemical plant, the preparation of flow sheets of materials and energy balances, and the lay-out of plant, factory administration, and industrial economics. The lectures are supplemented by practical training in machine drawing, in plant fabrication, and in the erection, testing and operation of both small and semi-large scale plant units.

During the second year, the student carries out original investigations, either in the laboratory or in a works.

The new laboratory (Fig. 1) has been built as an extension to the old building, which, in addition, has been completely rearranged. The laboratory now occupies a frontage of 60 ft. on Gordon Street, from which it extends for 120 ft. in the direction of the chemistry building. The new building is constructed of steel and reinforced concrete, and is faced with 2-inch Suffolk brick and Portland stone. It consists of five well planned and appointed stories. A noticeable feature of every room is the generous lighting provided by the large and well planned windows.

In its arrangement and equipment, the building presents many new features. In addition to the usual lecture-room, library, and general laboratory facilities, there are a finely equipped machine shop, in which semi-large scale plant can be constructed or repaired, and a large and lofty industrial laboratory (Fig. 2) which is well equipped for the erection, testing and operation of semi-large scale plant. Special laboratories are provided for distillation, for the testing of fuels, and for crushing and grinding operations. The second floor is devoted entirely to the study of fluid flow and heat transfer on a scale which is comparable with that obtaining in works practice. On the top floor are three research laboratories, each of which is capable of accommodating five or six workers.



Photo] FIG. 2.—Industrial laboratory. [*Larkin Bros.*

At the rear of the building and just outside the machine shop is an unloading bay, served by a two-ton travelling crane, which can deliver heavy goods either into the machine shop or through trapdoors into a wide service corridor which runs through the basement to the industrial laboratory.

Perhaps the most striking feature is the industrial laboratory, which occupies practically the entire basement of the new section. This laboratory is 60 ft. long, 40 ft. wide, and 25 ft. high. It is equipped with a two-ton travelling crane, and is spanned by two portable platforms, respectively at 11 ft. and 17 ft. above the floor-level. The concrete floor is provided with special slots to facilitate the fixing of plant; there are also ample drainage facilities. Staging is provided at one end of the laboratory for liquor stock tanks and feed tanks.

Five thousand gallons of softened water can be stored beneath the basement floor, whence it can be pumped to large service tanks on the roof. From there, it can flow by gravity to two 3-inch ring mains surrounding the industrial laboratory, or to the fluid flow laboratory on the second floor. This water can be used as boiler feed or for cooling or condensing purposes. Other ring mains are provided in the industrial laboratory for mains water, gas, steam and compressed air.

Steam for process working is obtained from a vertical boiler, arranged for oil or coke firing, and capable of evaporating 600 lb. of water per hour at pressures up to 200 lb. per sq. in. Two smaller boilers are provided at different points in the building.

The machine shop measures 45 ft. × 18 ft. × 25 ft. high, and is situated in the basement of the old building. It is fitted with a one-ton travelling crane, and contains the machine tools necessary for turning, milling, slotting, shaping, drilling and sawing. Running along one side of the shop is a gallery equipped with precision lathes and sensitive drilling machines for fine instrument making. There is also equipment for welding and small forging.

The erection and equipment of the new laboratory have been made possible by the far-sighted generosity of a number of leading firms and individuals in the chemical and allied industries, who subscribed a capital sum of more than £26,000 and guaranteed an annual income of £4000 for a number of years. Valuable equipment has been provided by many manufacturers of chemical plant.

The laboratory will accommodate fifty students and research workers. This session, the total number of students in the laboratory is thirty. In its organisation and general atmosphere, the laboratory seeks to resemble the development department of a modern chemical works. Every effort is made, also, to maintain and develop the closest connexion with industry. Each member of the staff has had extensive industrial experience both in Great Britain and abroad. Many of the present students, also, have held important positions in industry.

Psychology and Organised Religion.

THE *Journal of Social Psychology* (vol. 2, No. 4) has an article by Prof. Raymond Pearl discussing some points of psychological interest arising out of the American Census of Religious Bodies, 1926. His aim is to see if any evidence, other than that of general opinion, exists to support the view that there has been for some time past a gradual decay of religious influence in European civilisation. He quotes from an eminent man of science, a Wesleyan minister, a Church of England vicar, and a young American clergyman, all of whom maintain that there is increased indifference to organised religion.

If this is so, then here is a problem of social psychology that ought to be studied. Prof. Pearl makes a beginning by analysing such official returns as are available, namely, those provided by the census of religious bodies in the United States. This is a census of religious organisations and is taken every ten years.

During the period 1916–26 the tables show that while church membership has increased at a rate slightly more than the rate of the growth of the population as a whole, yet the increase is very small. It has always been recognised that religious organisations have played an important part in the social life of their members, being at some periods almost the only means of organised social diversion. Hence it seems pertinent to compare the growth of religious organisations with the growth of other forms of social activity. National banks have increased at rather more than three times the rate of the churches, the consumption of alcoholic liquor increased by 4·5 per cent in one year, the manufacture of playing cards by 80·3 per cent, and cigarettes by 97·4 per cent, and still greater was the development of motion-pictures, automobiles, and radio apparatus. It looks as if several non-religious forms of diversion grew in magnitude and presumably in influence during the decade considered.

Again, organised religion has always realised the importance of training the young, and for this end has evolved the Sunday School. Analysis of the records shows that in the older and more highly developed sections of the country the number of scholars has either decreased or increased by an insignificant percentage, whereas in the newer and less developed sections of the country there have been substantial increases. Comparing the membership of the different denominations, a tendency is shown for those characterised by a narrow and rigid body of doctrine, and therefore appealing to the less intelligent groups of the population, to grow more rapidly than those the more liberal doctrines of which appeal to the more intelligent.

The paper is important, not so much for the generalisations, which are admittedly tentative, as for the method employed and for the interest of the point of view.

In *Human Biology* (September 1931), John R. Miner discusses the relationship between church membership and commitments of prisoners. From data available from the Netherlands and the United States, he concludes that there is little evidence that the churches play any large part in the prevention of crime.

Orbit and Mass of Pluto.

LICK Bulletin 437 contains an exhaustive study by Dr. E. C. Bower, of Pluto, the new planet discovered in 1930. All the prediscovery images have been utilised, except those obtained on Flagstaff plates in 1915. Reference is also made to a possible image on a Franklin-Adams plate taken in 1903. Mr. P. J. Melotte, who detected this image, now considers that it is too ill-defined and doubtful to use, in the absence of any confirming images in neighbouring years. The perturbations have been treated in the manner adopted by Dr. P. H. Cowell for Halley's comet. The centre of gravity of the sun and the four