

Oil-Cracking.

A PAPER on "Recent Development in the Art of Cracking," by A. E. Dunstan and R. Pilkethley, was read before the Institution of Petroleum Technologists on October 7. The object of "cracking" is to obtain a lighter constituent from hydrocarbon oils by temperature treatment, under suitable conditions. During the last few years there has been little advance in our knowledge of cracking from the chemical point of view, and most of the problems connected with it have been more of an engineering quality. Very little work has been done on the examination of the residues left after the cracked gasoline has been removed from the synthetic crude oil.

Vapour phase processes working at atmospheric pressure have not been very successful; most of the processes developed worked under 300 to 400 lb. per sq. in. pressure, and no particular advantage in the use of extremely high pressures is apparent. The Bergius process was at first directed towards the production of artificial coal from wood, cellulose, etc., and a black powder containing 84 per cent. of carbon was obtained at 349° under 160 atm. pressure. This was susceptible of hydrogenation by heating to 400° in the presence of hydrogen for some hours, and 70 per cent. of the product was soluble in benzene. In later experiments, natural coal mixed with oil was converted up to a 90 per cent. yield of oil, yielding fractions suitable for use as fuel oil.

The experiments of the present authors throw some doubt on the hydrogenation of the liquid products. Processes for cracking in the vapour phase, *e.g.* the Ramage plant, in which the vapour of the hydrocarbon is passed over heated iron oxide, were described. The Dubbs process is two-stage, the oil being cracked in tubes in the liquid state, then passed to a reaction chamber where carbon is deposited, and the vapours then passed to a dephlegmator which separates heavy oil from lighter cracked vapours. The pressure is about 150 lb. per sq. in., and the process is commercially successful. The Cross process differs from the Dubbs process in the form of the apparatus, and the pressure and temperature conditions.

The Auld, Dunstan and Hering process is described. It is substantially a liquid phase operation throughout, the pressure being sufficiently high to maintain all but the lightest products liquid (25-30 atm.); the yield of light spirit is restricted for definite reasons, the temperature range is definitely fixed for each oil, and the rate of flow is controlled according to the temperature. The oil is first carefully heated to below the optimum temperature, quickly raised above this temperature, and then allowed a certain time of contact in a reaction vessel, where carbon is deposited. The cracked oil is drawn off from the highest point of the vessel, condensed or dephlegmated, and discharged into a gas separator. Experimental plant recently used is also described, and the important problem of refining, including distillation over bauxite or activated carbon, is discussed.

University and Educational Intelligence.

CAMBRIDGE.—Mrs. Marshall, widow of the late Prof. Alfred Marshall, has offered to the university a most valuable selection of books from her husband's library for the use of students in economics, together with 1000*l.* to be used in expenses connected with the books and with any arrangements which may be made for facilitating economic research.

Dr. Dollo has been appointed to represent the university at the fiftieth anniversary of the founding of the *École Polytechnique* of the University of

Brussels. Prof. A. C. Seward has been appointed as a Trustee of the Percy Sladen Memorial Fund. Mr. T. A. Carroll, Sidney Sussex College, has been appointed assistant director of the Solar Physics Observatory in succession to Mr. E. A. Milne, who has resigned on being appointed to the Beyer chair of applied mathematics at the University of Manchester.

At Emmanuel College the following have been elected to Research Studentships: G. A. Reay, University of Aberdeen (biochemistry); W. W. Grave (Romance literature); and P. A. Taylor (mathematics).

CORK.—Applications are invited for the professorship of chemistry at University College. Particulars are to be had from the secretary.

LONDON.—Birkbeck College, which celebrated its centenary last year, announces in its calendar for 1924-25 that great development in accommodation and in facilities for study in the college is probable in the near future. Appended to the calendar is an imposing list of original publications by members of the staff and students, chiefly in chemistry, physics, zoology, geology, classics, and modern languages.

Prof. S. L. Loney has been elected chairman of Convocation, and Sir Josiah Stamp representative on the Senate of the Registered Graduates in Science.

DR. A. T. DE MOUILPIED, of the British Dyestuffs Corporation, has been appointed professor of science at the Royal Military Academy, Woolwich, in succession to Prof. J. Young, as from January 29 next.

APPLICATIONS are invited for the headship of the chemical department of the Midland Agricultural and Dairy College, Sutton Bonington, Loughborough. Particulars of the appointment may be had from the principal.

A LECTURER in agricultural chemistry is required at the Cheshire School of Agriculture, Reaseheath, Nantwich. Applications, upon a prescribed form, must be sent to reach the principal of the school by November 7 at latest.

DR. ALEX HILL, secretary of the Universities Bureau of the British Empire, 50 Russell Square, London, W.C.1, informs us that the six great lines engaged in the passenger service to Australia and New Zealand have agreed to grant eight free first-class return tickets, yearly, to University graduates desirous of studying problems connected with the development of the resources of the Dominions, or of holding temporary teaching posts. The selection of the recipients is to rest with a committee of the Universities Bureau.

THE Senate of the University of Sydney has resolved on the appointment of a chief executive paid officer, with the title of Vice-Chancellor, to take the place of the Warden and Registrar, Mr. H. E. Barff, who has just retired. The necessary legislation is being drafted, and in the meanwhile Prof. MacCallum has been asked to undertake the duties of Warden temporarily. Prof. J. I. Hunter and Dr. N. D. Royle have been invited to deliver the Doctor John B. Murphy oration in surgery at the meeting of the American College of Surgeons to be held in New York on October 20.

THE following candidates have been nominated for election as Parliamentary representatives of the universities of Great Britain and Northern Ireland:—CAMBRIDGE (2)—Mr. James Butler (Ind.), Sir Geoffrey Butler (U.), and Mr. J. F. P. Rawlinson (U.). LONDON (1)—Sir John Rose Bradford (U.), Dr. F. G. Bushnell (Lab.), Dr. E. G. Graham Little (Ind.), and Prof. A. F. Pollard (Lib.). OXFORD (2)—Lord Hugh Cecil