ordinary standards of chemical purity give insufficient security in biochemical work with substances so highly active as the vitamins (*Chem. and Industry*, vol. 49, p. 1 T; 1930). The difficulties experienced in detecting ergosterol as the impurity in cholesterol which is activated by exposure to ultra-violet light need scarcely be referred to in this connexion. In this case, the doubt is as to the purity of the carotin used by the various investigators who have found it to contain growth-promoting activity. Drummond has obtained carotin of melting point so high as 185°: it showed no vitamin A activity even in relatively large doses. He has also prepared di-hydro-α-crocetin: his specimen failed to restore growth in rats deprived of vitamin A. From the results obtained with liver oils, it may be estimated that the daily dose of the vitamin for a rat is probably less than 0·0001 mgm., an order of activity comparable with that of vitamin D. If this is so, preparations of vitamin A which must be given in larger doses to restore growth must necessarily be impure.

PHYSIOLOGY.

The presence of vitamin A in the diet is essential if it is to be adequate for growth and the maintenance of normal health. E. Mellanby has stressed the latter function: without vitamin A in the food, infections occur regularly among the experimental animals: administration of large quantities to human beings may cure certain infections (see NATURE, vol. 122, p. 750; 1928). It must be assumed that vitamin A is, or is the precursor of, an essential constituent of certain cells of the body: without it they can neither multiply nor maintain their normal structure. In many cases the onset of an infection appears to be facilitated by an alteration in the cells lining an exposed surface when the vitamin is withdrawn from the diet.

Unlike vitamin D, vitamin A is not synthesised in the animal body: hence it is important to see that it is present in the food. Thus the content of cow's milk in this vitamin depends on the food given the animal; it is increased by feeding green food and cod-liver oil. The vitamin D in the milk can be increased by giving it in the food or by irradiating the cow or even the milk itself.

Yeast, a source of many interesting compounds, does not contain vitamin A: previous conclusions to the contrary were the result of using a diet deficient in both vitamins A and D in testing for this vitamin. (Hume, Smith, and Smedley-Maclean, *Biochem. J.*, vol. 22, p. 27; 1928.)

The ultimate source of vitamin A is the green plant: there has been considerable doubt as to whether the presence of light is necessary for its formation or not, partly owing to the difficulty of excluding all light, partly owing to the fact that many tests have been carried out using a basal diet deficient in both vitamins A and D. The most recent work indicates, however, that vitamin A can be formed in the complete absence of light, except the minimum required to feed and handle the animals and collect the etiolated shoots. Moore found that wheat seeds contained no vitamin A, that etiolated shoots fed to rats in a diet containing vitamin D but no A stimulated growth, although given to the animals after dark, and finally that the same result was obtained when no light except red was admitted to the room in which the animals were housed and the shoots grown throughout the experiment (*ibid.*, vol. 21, p. 870; 1927; vol. 22, p. 1097; 1928). It is, however, possible that the brief exposure to the red light may have been the essential factor in the production of the vitamin: it is certain that light can accelerate the synthesis, since green plant tissues are better sources than white.

Education and Science in the Civil Service Estimates.

THE Civil Estimates and Estimates for Revenue Departments (Vote on Account) for the year ending Mar. 31, 1931, have been issued (82. London: H.M. Stationery Office. 3*d*. net). The total of the estimates for the full year is £368,095,208, against a total of £320,190,105 voted for the current year; this latter total, however, includes supplementary estimates.

The items in which readers of NATURE will be most interested occur in Classes IV. and VI., and are as follows:

	Total Estimate for 1930 (Net).	Total Net Estimate for 1929 (adjusted for transfers).
Class IV.		
Board of Education	£45,495,653	£4 ,685,899
British Museum	297,263	283,559
Scientific Investigation, etc.	232,303	228,278
Universities and Colleges, Great Britain	1,830,000	1,550,000
SCOTLAND:		
Public Education	7,197,422	6,173,485
Class VI.		
Ministry of Agriculture and Fisheries	2,312,310	2,953,863
Beet Sugar Subsidy, Great Britain	5,400,000	4,250,000
Surveys of Great Britain	143,203	140,980
Forestry Commission	837,800	600,000
Development Fund	625,000	300,000
Development Grants	200,000	—
Department of Scientific and Industrial Research	469,278	446,214
SCOTLAND:		
Department of Agriculture	574,918	484,047
Fishery Board	137,442	68,895

The details of Class IV. estimates are now available (83-IV. London: H.M.S.O. 1*s*. 3*d*. net). Under the heading "Scientific Investigation, etc.", there is an increase of £4025 over last year's estimate. The position is shown in the following table:

GRANTS IN AID.	1930.	1929.	Increase.
Royal Society	£10,000	£10,000	—
Royal Geographical Society	1,250	1,250	—
Royal Society of Edinburgh	600	600	—
British School at Athens	500	500	—
British School at Rome	500	500	—
Royal Scottish Geographical Society	200	200	—
National Library of Wales	25,334	25,333	£ 1
National Museum of Wales	28,000	27,000	1,000
Solar Physics Observatory	3,000	3,000	—
North Sea Fisheries Investigation	1,150	1,150	—
Royal Academy of Music	500	500	—
Royal College of Music	500	500	—
Royal Academy of Dramatic Art	500	500	—
British Academy	2,000	2,000	—
Central Library for Students	3,000	—	3,000
Medical Research Council	148,000	148,000	—
OTHER GRANTS.			
Edinburgh Observatory	7,269	7,245	24
	£232,303	228,278	4,025

Under the heading "Universities and Colleges, Great Britain", there is an increase of £280,000, the greater part of which, £243,110, is put down as unallocated grant.

The detailed estimates for Class VI., departments dealing with trade and industry, have also been issued (83-VI. London: H.M.S.O. 3*s*. net). From these it appears that grants for agricultural education and research are increased on those of the current financial year by £165,410, the largest parts of which are £93,400 for agricultural education and £67,760 for grants for research. The Fisheries Department estimate shows an increase of £87,519; this is largely accounted for by the provision of £80,000 for the construction of a new vessel for deep-sea research and investigation.

The estimates for the Forestry Commission show a net increase of £101,800; a large item here is the increase of £29,840 under the heading of forestry operations, the greater part of which is for the acquisition of land, buildings, and standing timber.

The Department of Scientific and Industrial Research estimate shows a net increase of £23,064 over that for the current year. Grants for investigation and research, distributed on the recommendation of the Advisory Council, are increased by £5250, and a special grant of 100,000 francs (£4000) is to be made to an international fund for the erection and endowment of a scientific station on the Col de la Jungfrau.

The staff of the National Physical Laboratory is to be increased by nine, building research requires ten more officers, chemical research five, food investigation nine, forest products six, fuel research, including physical and chemical surveys, ten, radio research eight.

University and Educational Intelligence.

CAMBRIDGE.—The Appointments Committee of the Faculty of Biology B have appointed Dr. R. Williamson to be University demonstrator in pathology.

The Allen Scholarship of the value of £250 has been awarded to S. Verblumsky, Donaldson Bye Fellow of Magdalene College.

The Appointments Committee of the Faculty of Physics and Chemistry has made the following appointments: Dr. F. G. Mann, of Downing College, to be University lecturer in chemistry; Dr. J. D. Cockcroft, of St. John's College, to be University demonstrator in physics; Dr. F. B. Kipping, of Trinity College, to be University demonstrator in chemistry.

EDINBURGH.—The University Court has received with very great regret intimation from Prof. Baldwin Brown of his desire to retire from the Watson-Gordon chair of fine art at the end of the current academical year. Prof. Baldwin Brown was appointed to this chair, as its first occupant, in June 1880, and so is now about to complete his fiftieth year as professor. The only previous instance of a professor serving in this University for fifty years was that of Robert Jameson, professor of natural history from 1804 to 1854; in his case, however, his lectures were delivered by a deputy during his last year of office.

The Court has accepted from Sir Edward Sharpey Schafer the books, portraits, specimens, and apparatus collected by him in the Department of Physiology. Mrs. Kennedy Fraser has offered and the Court has accepted a collection of 280 phonograph records of Hebridean songs, made by the Isle folk themselves. The collection has been made in the course of Mrs. Kennedy Fraser's research work in the Hebrides during the past twenty-five years.

The late Mr. W. A. Tait, son of the late Prof. P. G. Tait, has bequeathed £50 to the Engineering Library and £100 for apparatus in the Department of Natural Philosophy.

LONDON.—The following doctorates have been conferred: D.Sc. in chemistry on Mr. Bhupendranath Ghosh (University College), for a thesis entitled (1) "The Rôle of Electrokinetic Potential in Colloidal Behaviour", and (2) "Action of Alkali on Stannic Oxide Sol"; D.Sc. in physics on Mr. Leslie Hartshorn (Imperial College—Royal College of Science), for a thesis entitled "Studies in Precision Alternating Current Measurements"; D.Sc. in mathematics on Mr. W. G. Bickley, for a thesis entitled "Two Dimensional Potential Problems concerning a Single Closed Boundary", and other papers; D.Sc. (engineering) on Mr. H. S. Rowell, for a thesis entitled "Suspension of Vehicles and Laminated Springs", and other papers.

OXFORD.—The annual report of the Curators of the Bodleian Library just published contains an account of recent improvements and additions in the Radcliffe (Science) Library, which now takes rank, like the Indian Institute and Rhodes House Libraries, as a Departmental Library in connexion with the Bodleian.

THE Grocers' Company is again offering scholarships, each of the value of £300 a year, plus an allowance for expenses, in furtherance of original research in sanitary science. Applications upon a prescribed form must be received before the end of April by the Clerk to the Grocers' Company, Grocers' Hall, E.C.2.

APPLICATIONS for Beit fellowships for scientific research are invited from candidates under the age of twenty-five years on the date of election. The latest date for the receipt of applications is April 15. Forms of application and particulars as to the fellowships are obtainable from the Rector, Imperial College of Science and Technology, South Kensington, S.W.7.

THE Carnegie Trust for the Universities of Scotland endows post-graduate study and research by means of a scheme designed, to quote from the report of the chairman, Lord Sands, on the administration of the Trust for the year 1928–29, "to discover and if possible to supply within the limits of the Trust Deed the demand for higher study and research throughout Scotland". For the completer fulfilment of this purpose, the trustees have resolved that in future graduate scholarships which carry an annual stipend of £175 for two years may be extended for a third year with a stipend of £200, and that the value of fellowships, tenable for a maximum period of three years, shall be £300 per annum instead of, as at present, £250. It will now be possible for a Scottish graduate to be engaged in research under the auspices of the Trust for a continuous period of six years. Reports on the work of investigators by Prof. Arthur Smithells (physical and chemical), Prof. J. T. Wilson (biological and medical), Sir George Macdonald (historical, economic, and linguistic), and the Superintendent of the Royal College of Physicians, Edinburgh, afford ample evidence of the value of this work. Prof. Smithells notes with gratification an increasing encouragement of beneficiaries to secure the great advantage of some experience in foreign laboratories. During the past year, the actual expenditure for endowment of research was £17,514, grants to universities, etc., amounted to £48,020, and assistance to students in payment of class fees to £56,453. Repayments (voluntary) by former beneficiaries (31 men and 32 women) amounted to £2606, the largest amount ever received in this way in any year, and making with similar repayments in previous years an aggregate of £25,148 from 665 beneficiaries.