TABLE 3. SUNFLOWERS GROWN IN ENGLAND FROM AFRICAN SEEDS

Source of seed	Composition of fatty acids in the oils (per cent wt.): In seeds from Africa: Linoleic	Oleic	Satd.	As grown in England (average): Linoleic	Oleic	Satd.	English flower heads examined
Southern Rhodesia	72	14	14	70	20	9	5
Tanganyika Southern Province	65	21	14	69	22	9	2
Nigeria Zaria	58	30	12	74	15	11	1
Tanganyika Kongwa	57	31	12	65	24	11	7
Lake Province	44	43	13	70	21	9	6

It is also evident from these results that changes of atmospheric temperature during the period of ripening of a seed (which frequently extends over several weeks) would result in different proportions of the predominant unsaturated acids being synthesized at different stages of the ripening. Thus, a plant which commences to fruit in midsummer but of which the seeds are not completely matured until early autumn might be expected to develop a more unsaturated seed fat in the later stages than in the earlier stages when the temperature was higher. Again, the few instances in which later development of less unsaturated fat has been reported are probably due to the same causes operating in the reverse direction.

Any further discussion of possible alternative synthetic mechanisms must be of a speculative nature owing to lack of factual evidence of intermediate stages in the fat-synthesis; yet it is perhaps pertinent to recall that, in addition to the 'aldol-condensation' hypothesis which at present appears to account at least for the nature and variety of the saturated straight-chain acids found in the natural fats, it has been alternatively suggested that the higher acids may be formed from direct association and subsequent modification of hexose (Emil Fischer[26]) or triose (Stotz[27]) units. It may be not without significance that condensation of triose units would appear to offer opportunity in the unsaturated acids finally produced for the emergence of double bonds in those positions which are typified by oleic, linoleic and linolenic acids:

—C.C.C— . . . —C.C.C— . . . —C.C.C— . . . —C.C.C—
. . . —C.C.C— . . . —C.C.C—
—C.C.C = C.C.C = C.C.C=C.[C$_7$].CO_2H (linolenic)
—C.[C$_4$].C = C.C.C=C.[C$_7$].CO_2H (linoleic)
—C.[C$_7$].C=C.[C$_7$].CO_2H (oleic).

However this may be, the present state of our knowledge of synthesis of fats in vegetable seeds leads to the following conclusions.

(1) Each species of plant elaborates its own specific mixture of acids in its seed fat; but nearly all seed fats include considerable proportions of oleic and linoleic acids (with, in some cases, the triene linolenic acid or, in others, specific unsaturated acids of a different nature).

(2) In seeds of the same species, the relative proportions of oleic and linoleic (linolenic) acids may vary considerably, and such variation is conditioned mainly by the temperature of the locality where the seed ripens. Low temperatures (and rate of development of the seed) tend to the production of a more unsaturated mixture of acids, and conversely.

(3) This variation is confined to the *unsaturated* acids in the seed fat—in comparison, the *saturated* components show almost negligible variation in amount.

(4) This suggests strongly that the typical *unsaturated* seed fatty acids are built up by a different mechanism to that which operates in the biosynthesis of the *saturated* acids. Moreover, the rate of the unsaturated acid syntheses *in vivo* is evidently much more affected by temperature than that of the synthesis of saturated acids.

(5) In this article attention has been mainly directed to the possible theoretical implications of these features of seed fat production. Their bearing on agricultural practice in oil-seed crops is, of course, equally obvious and has been stressed in some of the recent publications which have been mentioned. For example, sunflowers, according to where they are grown, may yield oil (of relatively low unsaturation) eminently suitable for edible fats, or oil (with the highest proportions of linoleic acid) which is useful as a drying oil.

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OBITUARIES

Miss D. M. A. Bate

MISS DOROTHEA M. A. BATE, who died after a brief illness on January 13 at the age of seventy-two, was for more than fifty years one of the outstanding personalities at the British Museum (Natural History). When only seventeen, and with neither qualification nor encouragement, she started work in the Bird Room as a voluntary worker; but her interests lay chiefly in palæontology in relation to the Recent fauna, rather than in the Recent fauna itself. Although she wrote notes on the natural history subjects, particularly the birds, of the areas to which her work took her, her chief interest was in the Pleistocene mammals and birds of the Mediterranean region and latterly of Africa.

During 1901–2 Miss Bate explored the caves of Cyprus and made some notable discoveries, such as

the remains of pigmy elephants, and soon extended her interest to cave deposits in Crete, the Balearics—where she discovered the unique 'antelope' *Myotragus*—Malta and Sardinia, working meticulously and earnestly and always alone. But her best work was done in Palestine where, at the invitation of Dr. Dorothy Garrod, she spent several seasons in the Mount Carmel and Bethlehem areas, her enthusiasm being in no way abated by the disturbed and often dangerous state of the country. Her paper on the faunas yielded by the Wadi el-Mughara caves (1937) was a classic example of palæo-ecological interpretation, and she continued this line of research in relation to other Palestinian faunas. Latterly she had turned her attention to African faunas, particularly of the Sudan, and shortly before her death completed a critical work on African buffaloes.

Though she always preferred to study specimens she had excavated herself, she was frequently consulted by archæologists from many countries concerning fragmentary animal remains; her long experience and careful methods of study enabled her to extract significant information from the most unpromising material, and her unique knowledge will be as greatly missed as will the charm of her generous and indomitable personality. E. I. W.

We regret to announce the following deaths:

Prof. G. H. Langley, during 1926–34 vice-chancellor of the University of Dacca, and honorary treasurer of the Aristotelian Society, on February 14, aged seventy.

Mr. A. W. Lay, until recently with Marconi's Wireless Telegraph Co., Ltd., who was known for his work in medical physics and electronic instrumentation, research, design and development, on February 3, aged fifty-eight.

Prof. J. Mattfeld, reader in the Botanical Gardens and Museums in Berlin-Dahlem, on January 19, aged fifty-six.

Dr. W. Bryant Mumford, British director of the Special Services Department of Public Information, United Nations Organization, formerly head of the Colonial Department at the University of London Institute of Education, on January 28.

NEWS and VIEWS

Bedford College for Women, London: Dr. Norah L. Penston

Dr. Norah L. Penston, who has recently been appointed principal of Bedford College for Women, University of London, in succession to Miss G. E. M. Jebb, will take up her duties in September. Miss Penston graduated in the University of Oxford in 1927 with first-class honours in botany, and afterwards undertook research in plant physiology under Dr. W. O. James. The work, for which she was awarded her doctorate in 1929, involved a detailed study of the distribution of potassium in the potato plant. Dr. Penston was appointed demonstrator in the Botany Department of King's College, London, in 1929 and remained there until 1945, becoming in turn assistant lecturer and lecturer. She was also acting head of the Botany Department during the later years of the War. At King's College she continued her studies on the physiological importance of mineral elements in plants and published a number of papers, until her increasing administrative duties left little time for research. In 1945, following the amalgamation of Swanley Horticultural College with the South Eastern Agricultural College, Dr. Penston was appointed the first vice-principal of Wye College, University of London, and, since 1946, with the resignation of Mr. R. T. Pearl, has also been acting head of the Department of Biological Sciences of the College. An able player at tennis and badminton, Dr. Penston has more recently included archery among her activities. Her experience as teacher, research worker, administrator and warden of a students' hostel make her well fitted for her new appointment in Bedford College.

Scientific Civil Service: Research Promotions

It is announced that further special posts have been created this year for individual research workers of exceptional merit under provisions included in the White Paper on the Scientific Civil Service (Cmd. 6679; 1945). The promotions this year again include two to the grade of deputy chief scientific officer, which is regarded as broadly equivalent in status to an appointment to a university chair; this is the second occasion on which special promotions on individual merit have been made under this scheme at this level.

Deputy Chief Scientific Officers.

Dr. J. S. Anderson, an inorganic chemist of high distinction, outstanding for his contributions in the field of solid systems. His recent work has included a comprehensive study of the oxides of uranium, in the course of which the existence of a non-stoichiometric system was clearly demonstrated; work on thorium which showed that this element can form both divalent and trivalent compounds; and the development of a method for the study of diffusion in solution using radioactive tracers.

Dr. A. M. Uttley, who was trained in mathematics and psychology, his earlier researches being in the field of visual perception. In recent years he has been engaged on a variety of electronic researches at the Telecommunications Research Establishment, including R.A.F. training equipment, servo mechanisms, astro navigation and circuits. More recently he has suggested and applied fundamentally new concepts in the design of computing machines.

Senior Principal Scientific Officers:

Mr. R. D. H. Barklie, of the Royal Naval Scientific Service, has had wide experience as a research chemist in industry, in academic circles and in the Government service. He served in both World Wars, was an executive officer in the R.N.V.R. during 1940–45 and was mentioned in dispatches three times. He has carried out valuable researches on chemical and physical problems of particular concern to the Royal Navy, and his work has been remarkable for its elegance and precision.

Dr. L. R. Cox, of the British Museum (Natural History), is the author of numerous palæontological papers dealing mainly with Mesozoic and Tertiary Molluscs. His investigations of fossils from many parts of the world have thrown light on the geological age and relationships of the strata concerned, and his