CENTENARIES

Webster, Noah (1758–1843)

NOAH WEBSTER, the American lexicographer, was born at West Hartford, 16th October 1758. Having taken his degree at Yale in 1778 and after spending about fifteen years in the legal profession, he found his vocation in the publication of the *American spelling book* of which more than 15,000,000 copies were sold in his life-time. He collaborated with Benjamin Franklin in spelling reform. After trying journalism for about a decade, he found a substantial income by publishing the well-known series of books *Elements of useful knowledge.*

Webster was versatile and covered a vast field of knowledge. His *Brief history of epidemic and pestilential diseases* (2 vols.) (1799) and his *Experiments respecting dew* (1809) were pioneer books in science in America. It is also claimed that Webster's work as statistician and climatologist foreshadowed the census and weather bureaus of later times.

Webster's many-sided publishing activity proved an admirable preparation for lexicography. He worked at his famous dictionary for twenty-five years and brought out the first edition in 2 vols. in 1828 under the title *An American dictionary of the English language.*

Webster died at Amherst, 28th May 1843.

Tweddell, Ralph Hart (1843–1895)

RALPH HART TWEDDELL, a British engineer, was born at South Shields, 25th May 1843. Even during his apprenticeship he took out a patent for a portable hydraulic apparatus to fix the ends of boiler tubes. The success of this led him to employ hydraulic power in boiler construction. In 1865, he invented a hydraulic riveting machine, which reduced the cost to one-seventh of hand-work. In 1871, he invented the portable riveter. This process came to be used all the world over for riveting bridges and ships.

In 1874, Tweddell's system was adopted in French shipbuilding yards. He contributed several papers on the use of hydraulic pressure and earned a gold medal from the Society of Arts. In 1890 he was awarded a Bessemer premium for the paper *Application of water pressure to machine tools and appliances.*

Tweddell died at Meopham Court, 3rd September 1895.

University Library,
Madras, S. R. RANGANATHAN
May 4, 1943.

SCIENCE NOTES AND NEWS

Animal Husbandry Wing Meeting.—The fifth Animal Husbandry Wing Meeting of the Board of Agriculture was held in the last week of November in New Delhi. The main subject discussed was measures to be taken to secure betterment of the large cattle population with a view to increase their produce required for human nutrition. The Conference took the view that by offering the producers increased price and an assured market, it will be possible to secure increased output of milk and ghee. An increase in price can to a certain extent satisfy the demand by drawing upon distant rural areas but considering the fact that a shortage of foodstuffs for cattle exists, possibilities in this direction will be rather limited. The fact that "India suffers from an excess of the animal population" was realised at the meeting and also that elimination of these animals "would confer a real benefit". However in view of the present public sentiments no effective remedy could be found for this major problem.

At the various sub-committees valuable practical suggestions regarding the control of cattle diseases, etc., in India were made. These measures when taken in conjunction with better feeding and breeding programmes, should prove very useful. With a view to make the veterinary education more uniform throughout the country and useful to the cattle industry of the country, a comprehensive curriculum was suggested.

In his opening remarks, the Hon'ble Member for Education, Health and Lands, suggested that the Conference should draw out an objective practical programme of work which may be taken up by the country during the next five years. This appeal has met with the response it deserved. A sixty-point programme has been drawn up and if a concentrated effort is made to put it in practice much good ought to result. One can only wish that this had come five years earlier. It will be too much to hope that this stupendous work can be seriously taken up by the State during the present emergency. It may, however, be considered a charter for post-war reconstruction.

This meeting of animal husbandry workers has given to the country a large amount of data

for the improvement of live-stock. It is hoped that some of these will be put in practice. At any such similar meetings in future, it will be useful if some time was devoted to review the practical results of the last conference. This will give a great impetus to workers in the field.

Mice which take in Cancer with their Mother's Milk.—Researches in recent years into the cause of cancer have clearly shown that a combination of factors is concerned with the initiation of the cancerous process in any one organ. In the case of the cancer of the breast in mice, workers in several countries, but especially in America, have shown the importance of a hereditary factor. By the method of close inbreeding (*i.e.*, by mating brother to sister in each successive generation) it is possible to produce after approximately twenty generations a strain of mice in which all the individuals resemble one another very closely in those characteristics which are capable of being inherited. Pure strains have thus been established varying greatly in the incidence of spontaneous breast cancer. At one extreme are strains in which all the females develop cancer of the breast while at the other extreme are strains in which the disease is completely absent. Cancer of the breast does not occur in males owing to the rudimentary nature of the organ in this sex.

It was expected that by cross-breeding it would be possible to show how the tendency towards cancer of the breast is inherited according to Mendelian laws. But experiment soon showed that when a female of high-cancer strain was mated to a male of a low-cancer strain, the resulting hybrid females developed breast cancer, whereas if a female of low-cancer strain was mated to a male of a high-cancer strain, the resulting hybrid females did not develop cancer. These observations led to the conclusion that some factor other than that contained in the chromosomes must have been transmitted by the high-cancer mother to the offspring, and it was natural to search for this factor either in the placenta, which nourishes the offspring before birth, or in the milk, which nourishes the offspring after birth. The demonstration by J. J. Bittner in America of a cancer-producing substance in the milk of high-breast cancer mice was done in the following way. The offspring of low-cancer parents were removed from their own mothers at birth and were suckled by high-cancer mothers; later in life nearly all of them developed breast cancer. By contrast, when the young of high-cancer parents were transferred to low-cancer mothers, very few of them developed breast cancer, although if suckled normally, nearly all could have been expected to be affected.

The milk factor is highly potent and very stable, for it can exert its effect when the young are suckled by a suitable mother for only a few hours and it can in turn be transmitted by these young to their offspring. Its essential nature is still unknown. Investigations are in progress in this and other countries by which it is hoped to link up the milk factor with the part played by hormones and other substances in the cause of cancer.

(*Monthly Science News*, No. 17, Dec. 1942.)

The Nutrition Foundation.—According to *Science*, 1942, 96, 490, a group of food and allied manufacturers in America, has contributed a sum of 1,100,000 dollars to support a five-year programme of basic research in the science of nutrition. The Board of Trustees of the Nutrition Foundation has discussed the allocation of these funds for basic research in leading universities throughout the United States. Additional grants-in-aid amounting to 46,000 dollars were appropriated; in all fifty-four grants were made this year to thirty-three colleges, universities and medical centres.

Illustrative of the type of studies being supported by the foundation under the direction of the director, Dr. Charles Glen King, and a distinguished Scientific Advisory Committee, are the following: Isolation of unstable food factors, protein utilization during partial starvation, utilization and distribution of radio-active iron, protection of the teeth afforded by specific nutrients, liver synthesis of blood proteins, nutrition protection against infection, the relation of vitamin A to muscle metabolism, nutritive value of low-cost vegetables, minimum vitamin needs of adults, metabolic balances in diabetes, nutritive protection of the blood vessels and the nutrients in cows' milk under specific conditions.

The programme made possible by the food industry represents the greatest nation-wide contribution to basic research and education that any industry has made in the history of America, according to Dr. King. He believes that the work of the foundation "will mean much in terms of better public health and an improved food supply in the United States and Canada". He pointed out that "significant results to aid in the war effort are already arising from research grants approved this spring".

A World Food and Agricultural Conference.—The United Nations Food and Agricultural Conference, which opens at Hot Sprins, Virginia, on May 18, will discuss the means to satisfy the basic needs of all nations.

The agenda recognises that in the past excessive accumulations of certain agricultural products were, in fact, not surpluses at all when measured by the world's minimum needs of food and clothing and that these so-called surpluses were usually the result of maldistribution and under-consumption.

Finally it examines the conditions which are necessary to assure that what can be produced moves into consumption.

Included in the agenda under the heading food, the Conference will discuss the character and extent of consumption and the deficiencies of each country, the causes and consequences of malnutrition and measures to improve the standards of consumption and reasonable national and international goals for improved food consumption.

Under the heading of other essential agricultural products, discussion will centre round

pre-war consumption level of various countries as influenced by prosperity and international goals for improved consumption with sustained employment and expanded industrial activity.

Dealing with the expansion of production and adaptation to consumption needs, the Conference will study measures for the direction of production toward commodities the supply of which should be increased, measures for the development and conservation of agricultural resources and opportunities for occupational adjustments in agricultural populations.

Some Aspects of Insulation.—This subject for the recent two Cantor Lectures of the Royal Society of Arts (*Jour. Roy. Soc. Arts*, 1943, 91, p. 122) covers two of the most important problems, which have been neglected so far, but which will have to be considered in any post-war planning. They are respectively Heat Insulation and Sound Insulation of buildings.

(1) The importance of thermal insulation has been brought home recently by increasing fuel shortage due to exigencies of the war. In this lecture Mr. Pallot points out the necessity of heat insulation in many industrial undertakings as well as community buildings as a single factor effecting the greatest saving in fuel. He confines his remarks to a temperature range of 100-400° F., thus covering all normal domestic heating requirements and industrial installations using steam at gauge pressures upto about 200 lbs. per sq. inch. Computations based on the theory of heat transmission show that in the case of hot water pipes and Lancashire boilers (8 ft. diam.) as much as 80 per cent. of the fuel-equivalent of heat lost can be saved by efficient insulation. Most of the saving is brought about by the first few layers of insulating materials like asbestos, magnesia, slag wool, etc., which have numerous air-cells to account for their properties. Crumpled aluminium foils held in rigid casing effect a large reduction in the heat lost by radiation. Even aluminium paint will reduce the radiation loss by 50 per cent. Methods of applying such materials and their economic thickness at various temperatures have been given. Attention is also drawn to the problem of heat insulation of buildings and useful data is given of the thermal properties of building materials in terms of their "thermal resistivity" and "thermal transmittance".

(2) The study of sound insulation is a part of the work now being undertaken by the Directorate of Post-War Building of the Ministry of Works and Planning of Great Britain. In this lecture Mr. Allen has referred mainly to noise abatement by planning and by structural techniques. Planning involves use of open spaces as a sound insulator consistent with the density of population and the city area to obtain reasonable conditions of the sound level in an average office room not exceeding 70 dbs. Other means are the use of barriers and height of buildings.

Our knowledge of the behaviour of air-borne and structure-borne sound has progressed enough to evolve structural techniques like suspended ceilings, floating floors and lighter walls and partitions to ensure the necessary degree of quiet by using such materials as quilts, cork, rubber, wall boards and felt. Internal location of the noiser parts to one side in a building is also important. All these can be achieved at a small additional cost but with a large reduction in the noise resulting in a greater degree of comfort and efficiency so as to warrant their widespread use at once.

N. B. BHATT.

Brazil and Indian Jute.—According to the *Chemical and Engineering News* for October 25, 1942, the farmers of the Amazon Valley have tried to cultivate not only ramie but also Indian jute. No practical results were obtained from seeds secured in either Sao Paulo or from Japan. The following year, seeds from India were employed, but the fibre produced did not show the same characteristics as the Indian product. In 1934, some good samples of *Corchorus capsularis* were raised. Since then plantations have been gradually improved and a crop of about 400 tons of fibre is expected this year.

"Juta dos Parintins" is the name given to the jute obtained in the Amazon Valley. Brazilian jute is similar in composition to that from India. The fibres are very uniform and have good tensile strength. With a whitish yellow colour, the fibres contain 71-72 per cent. cellulose, 12-13 per cent. water, and about 0·7 per cent. ash.

Producer Gas Buses for London.—According to the weekly, *The Engineer*, dated February 5, 1943, the London Passenger Transport Board has announced that a scheme for the use of 550 buses equipped with gas producers has been adopted for Central London. The scheme is expected to be put into operation before long. By using anthracite fuel, of which about one ton per week will be needed for each bus, corresponding to a radius of operation of close upon 80 miles before refuelling is required, it is hoped to save 3·5 million gallons of petrol each year. Some of these buses are already said to be in service on east London routes and according to the *Journal*, have given satisfactory operating results. In order to deal with this new scheme of transport operation, a new panel of public service vehicle operators has been set up. Part of the duty of the new panel will be to advise the Ministry of War Transport on the operation of producer gas vehicles on public service routes. Considerable experience has already been gained, both in England and in Scotland, with the operation of public service vehicles on producer gas, but the results of a large fleet of buses operating in Central London should prove of particular interest.

SEISMOLOGICAL NOTES

Among the earthquake shocks recorded by the seismographs in the Colaba Observatory, Bombay, during the month of April 1943, there were three of slight, three of moderate asd two of great intensities. The details for those shocks are given in the following table:—

Date	Intensity of shock	Time of origin I.S.T.	Epicentral distance from Bombay	Co-ordinates of epicentre (tentative)	Depth of focus
		H. M.	(Miles)		(Miles)
1	Great	20 48	2970		..
5	Moderate	8 26	1490	Lat. 41°N., Long. 72°.5 E., near Samarkhand.	..
6	Great	22 37	10120	Lat. 33°. 5 S., Long. 73°5 W., near Valparaiso South America.	..
9	Moderate	15 19	4810	Lat. 8°. 5 S., Long. 138° E., near New Guinea.	100
11	Moderate	21 16	4490	..	..
12	Slight	10 44	3190	..	..
13	Slight	02 13	4290	..	..
15	Slight	18 05	10070	..	..

ANNOUNCEMENT

Dr. S. S. Aiyar.—We are glad to announce that Dr. Swaminath Subrahmanya Aiyar, B.A. (Madras), M.SC., PH.D. (Wisconsin, U.S.A.), F.I.C., C.R.E.S., formerly for many years Chemical Examiner at the Custom House, Bombay, and recently Chemical Examiner at the Central Revenues Chemical Laboratory, has succeeded Dr. H. B. Dunnicliff, C.I.E., M.A. (Cantab.), SC.D. (Dublin), F.I.C., I.E.S., as Chief Chemist, Central Revenues Chemical Service.

We wish to offer our heartiest felicitations to him on this occasion. We should like to add that the Central Revenues Chemical Service now has an entirely Indian personnel, the first service in India to have this distinction.

Dr. H. B. Dunnicliff.—We are happy to announce that Dr. H. B. Dunnicliff has been entertained as Director in the Chemicals Directorate of the Directorate-General of Supply. The Government of India deserve praise for their foresight in requisitioning the services of such an experienced scientist and an able administrator for promoting the war effort.

Agra University.—Mr. R. Prasada, M.SC., Assistant Mycologist in the Scheme of Investigations on Cereal Rusts under the auspices of the Imperial Council of Agricultural Research, has been awarded the D.Sc. degree on a thesis entitled "Morphological and Physiological Studies in Rusts".

We acknowledge with thanks the receipt of the following:—

"Journal of the Royal Society of Arts," Vol. 90, No. 4624; and Vol. 91, Nos. 4627, 4629, 4631 and 4632.

"Journal of Agricultural Research," Vol. 65, No. 11.

"Agricultural Gazette of New South Wales," Vol. 54, Pt. 2.

"Annals of Biochemistry and Experimental Science," Vol. 2, No. 4.

"Journal of the Indian Chemical Society," Vol. 20, No. 2.

"Journal of Chemical Physics," Vol. 10, No. 12; and Vol. 11, Nos. 1 and 2.

"Chemical Products and the Chemical News," Vol. 6, Nos. 3-4.

"Experiment Station Record," Vol. 87, Nos. 5 and 6.

"Transactions of the Faraday Society," Vol. 39, Pt. 1.

"The Review of Applied Mycology," Vol. 22, No. 1.

"Nature," Vol. 150, Nos. 3807, 3813, 3814, 3816, and 3817; and Vol. 151, Nos. 3820, 3821 and 3823.

"American Museum of Natural History," Vol. 51, No. 2.

"Journal of Research of the National Bureau of Standards," Vol. 29, No. 5.

"Canadian Journal of Research," Vol. 20, No. 12.

"Science," Vol. 96, No. 2500; and Vol. 97, Nos. 2505, 2506 and 2508.

"Indian Trade Journal," Vol. 149, Nos. 1921-24.

Books

Radio Receiver Design, Part I.—Radio Frequency Amplification and Detection. By K. R. Sturley. (Chapman and Hall, London), 1943. Pp. xii + 435. Price 28*sh.*

High Frequency Thermionic Tubes. By A. F. Harvey. (Chapman and Hall, London), 1943. Pp. viii + 235. Price 18*sh.*

A Treatise on Physical Chemistry, Vol I.—Atomistics and Thermodynamics. Edited by H. S. Taylor and S. Glasstone. (Macmillan & Co., Ltd., London), 1942. Pp. vii + 679. Price 42*sh.*

Marriage and Family in Mysore. By M. N. Srinivas. (New Book Co., Hornby Road, Bombay), 1942. Pp. 218. Price Rs. 7-8-0.

The Economic Background. By K. T. Shah, P. J. Thomas, J. C. Kumarappa, Sir Datar Singh and Sir Jehangir Coyajee. (Oxford University Press, Madras), 1942. Pp. 64. Price As. 8.

Prism and Lens Making, A Text-Book for Optical Glassworkers. By F. Twyman. (Adam Hilger, Ltd., London), 1942. Pp. iii + 178. Price 15*sh.* Postage 5*d.* extra.

ERRATUM

Vol. 12, p. 119, note entitled "Synthesis of Sulphanilamide Derivatives of Thianthrene", para 2, line 6: The melting point of the diamine *should* be 102° C. and *not* 120° C. as printed.

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