THE CEREAL BALANCE.

AS the harvest year of 1917-18 approaches its end the question of the relation between supplies and rate of consumption of bread-corn assumes increased interest and importance. Europe and North America are breaking into their last reserves of home-produced cereals of the 1917 crop. If these prove inadequate to meet requirements from the present time until August next, what is the world reserve available to bridge the gap between the old and the new crop? The reply is given by the International Institute of Agriculture in a valuable analysis of supplies and requirements recently issued.¹ The analysis covers the agricultural season beginning with August, 1917, and ending with July, 1918, and is based upon returns as to production and estimated consumption of cereals in all important countries where international trade has been maintained, including, therefore, all Entente and neutral countries, but excluding Russia and Roumania.

As regards supplies, the relative yields of cereals in 1917 (northern hemisphere) and 1917-18 (southern hemisphere) as compared with the previous season (a), and with the average of the three preceding seasons, 1914-16 (b), are shown by the following summary:—

	(a)		(b)
	per cent.		per cent.
Wheat ...	103.2	...	90.4
Rye ...	94.2	...	91.7
Barley ...	103.8	...	101.3
Oats ...	114.0	...	110.6
Maize ...	121.0	...	113.3

In the aggregate the cereal crops of 1917 show an increase of 223 million quintals over 1916, or 72 million quintals over the average of the three years 1914-16, the increases being mainly due to last summer's abundant crops of oats and maize in the United States. Wheat alone shows an increase of 19 million quintals over 1916, and a decrease of 64½ million quintals as compared with the three-year average.

To these supplies the carry-over from previous crops needs to be added, but very few countries have been able to show any such reserves in excess of the usual carry-over, Australia being the outstanding exception.

When these estimates of supplies are compared with the estimates of requirements up to next harvest supplied to the institute by the various Governments, the following margins of assets over liabilities (in millions of quintals) are shown for the different crops:—

Wheat ...	44½	Oats ...	62½
Rye ...	2½	Maize ...	157
Barley ...	12½		

or a total reserve of assets beyond requirements of 279 million quintals. The preponderance of oats and maize in this surplus is a factor to be considered in determining its real value. The light natural weight of the oat grain interferes with transport under conditions of shortage of

tonnage, and consequently in many countries the consumption must be limited to the home-growth, within a very small margin. The handsome surplus of maize is the result of the very large crop of the United States, but so far it has unfortunately been most difficult to transport owing to the risk of heating consequent on an abnormally high moisture-content.

Earlier forecasts of the situation suggested the probability of an actual deficit of supplies, and it is all the more welcome, therefore, to find, now that more trustworthy data are available, that so far from this being the case the world, taken as a whole, has ample supplies to meet all its requirements.

The real gravity of the situation lies in the fact that the large reserves are in a few countries, such as Australia, Argentina, British India, and North America, while there is a large deficiency in Europe. Transportation is notoriously surrounded with difficulties owing to the scarcity of tonnage and the enormous rise in rates of ocean freight. The cost of carrying a quarter of wheat from Argentina to Great Britain is twenty times what it was before the war, and other freights have advanced in like manner.

It is clear, therefore, that the disclosure of a substantial world reserve of cereals in no way diminishes the need for the utmost effort to extend cereal production and to economise in cereal consumption in the countries where a deficiency exists and in countries nearest to them. The greater the success of this effort the more effective will the world reserve be in augmenting supplies and reducing prices in the future when a greatly increased tonnage becomes again available for the grain trade.

DR. G. K. GILBERT.

ON May 1 a very notable figure passed away from the field of geological discovery and research. Dr. Grove Karl Gilbert was born in Rochester, N.Y., in 1843, and had thus almost completed his seventy-fifth year. In his "Report on the Geology of the Henry Mountains," issued by the U.S. Geographical and Geological Survey of the Rocky Mountain region in 1877, he developed the theory of the expansion of intrusive igneous sheets into the great cauldron-like masses that he conveniently styled "laccolites" (stone cisterns), and the rapid recognition of laccolites throughout the world bore witness to the cogency of his exposition. From 1879 onwards he was attached to the staff of the U.S. Geological Survey, and it is not too much to say that his reports helped considerably to direct general scientific attention to the earlier publications of that body. His "Contributions to the History of Lake Bonneville" in 1882, and his monograph on "Lake Bonneville" in 1890, became classics for the treatment of vanished lakes in other areas, and also raised important questions as to crustal yielding under load.

An excellent example of Dr. Gilbert's approach to difficult problems may be found in his study of

¹ "Statistical Notes on the Cereals," No. 7, pp. 136. (Rome: Internat. Inst. Agric., 1918.)

the origin of the features of "The Moon's Face," in a presidential address to the Philosophical Society of Washington in 1892. In 1890 he had described the history of the Niagara River for the Commissioners of the State Reservation, and in 1907, when schemes for utilising the water-power of the falls threatened the normal continuation of their erosive action, he reported on their rate of recession both on the Canadian and on the American side. Almost simultaneously his unflinching judgment was called on to investigate the disastrous earthquake of 1906 at San Francisco. Among his later work may be cited an experimental study on river-transport (U.S. Geol. Surv., Professional Paper 86, 1914).

Dr. Gilbert was a man of strong build and fine presence, equally considerate to his colleagues and to the younger workers whom his methods and personality inspired. Those who were privileged to meet him in various lands will readily acknowledge that he was and remains one of those who have well deserved the title "great."

GRENVILLE A. J. COLE.

NOTES.

THE report of the council of the British Association was received and adopted at the statutory meeting of the general committee held on Friday last, July 5. Much disappointment was expressed that no ordinary meeting had been held for the second year in succession, and a resolution was adopted unanimously asking the council to arrange for a meeting in London next year if it should not be possible to meet at Bournemouth. It was left to the council to decide whether the meeting should be of the usual kind, with the various sections of the Association in session, or should take the form of a conference at which some of the national aspects of scientific work would be presented. We urged the desirability of a London meeting several months ago, and are glad, therefore, that the general committee has expressed itself so decidedly in favour of it.

SIR EDWARD SCHAFER, professor of physiology in the University of Edinburgh, wishes it to be known that he is adopting the name of Sharpey before the surname of Schafer.

WE regret to see the announcement of the death, on June 29, at sixty-five years of age, of Prof. Alfred Senior, professor of chemistry and lecturer in medical jurisprudence and hygiene in University College, Galway.

PROF. J. N. LANGLEY, professor of physiology in the University of Cambridge; Sir F. W. Dyson, Astronomer Royal; Prof. Horace Lamb, professor of mathematics in the University of Manchester; and Sir E. Rutherford, Langworthy professor of physics in the University of Manchester, have been elected foreign members of the Reale Accademia dei Lincei, Rome.

WE regret to record the death on June 24 of Prof. F. P. Treadwell, professor of analytical chemistry at the Polytechnic Institute, Zurich. Prof. Treadwell was a native of the United States, where he was born in 1857. He came early to Europe, and entered the University of Heidelberg in 1875, graduating three years later. For some time he acted as lecture assistant to Bunsen, and then proceeded to Zurich, where

he served in a similar capacity under Victor Meyer. Eventually, in 1894, he received the appointment to a professorship, which he retained until his death. During his long stay of more than thirty years at Zurich Prof. Treadwell became a well-known and respected figure in the town. His name is familiar in this country and abroad by reason of his two-volume treatise on analytical chemistry, of which eight editions have appeared. That he retained an active interest in the branch of chemistry to which he had devoted himself is shown by the fact that not long ago, with a collaborator, he worked out a new method for estimating thiocyanic acid and hydrogen sulphide iodometrically.

AMONG the points discussed by Lord Moulton in his presidential address to the Institute of Gas Engineers on June 4 was the question of replacing the existing statutory illumination standards for coal-gas by standards based upon calorific value. With the use of the incandescent mantle now almost universal, it has become immaterial whether gas possesses illuminating power or not. The effect of the mantle depends on the calorific value of the gas, not on its light-giving properties. Provided that the gas will give out the requisite heat to raise the mantle to its proper degree of incandescence, the illumination obtained is from six to eight times that given by gas of statutory quality when used without the mantle. The illuminating properties, moreover, are conferred upon gas by the heavy hydrocarbons (olefines and benzene), which could be better used in other ways—partly as fuels, partly as a source of the important hydrocarbons which yield us our dyes, explosives, and other chemical products. That a large portion of these valuable substances should be sacrificed in imparting to coal-gas a property which has ceased to be of value is a loss to the community which should not be allowed to continue.

At a symposium of the Zoological Society of America two addresses (reported in *Science*, May 17, pp. 473-81) were delivered on the value of zoology. In one of these Prof. M. F. Guyer, of Wisconsin University, deals with the utilitarian value, shrewdly premising (1) that widening the intellectual horizon and casting out the twin devils of superstition and ignorance are more useful gains than those which make for material well-being; and (2) that nowhere outside zoology "are there greater opportunities for developing that questioning, impartial, problem-solving attitude of mind which must obtain, if truth and sanity are to rule the world." He then proceeds to give vivid illustrations of the contributions zoology has made to the problems of health and disease, agriculture and animal husbandry, the conservation of natural resources, the utilisation of fisheries, and human eugenics. The other address, by Prof. H. B. Torrey, of Reed College, deals with the value of zoological science to the individual—the mythical average man—as organism, as citizen, and as personality. He justly sets great store on the educative value of getting, or trying to get, a clear view of distinctively biological concepts, such as organism, growth, development, behaviour, adaptability, evolution. These are all vivid, dynamic conceptions, the lack of which has often been a handicap, even to minds of the first rank. He indicates that amelioration of human life must have a scientific foundation (though other than cognitive factors may also be fundamental), and that zoology includes a vast realm of important facts bearing on or directly touching this complex life of ours. On another tack he points out that zoology is rapidly progressive, with problems for all comers to work at, a wholesome stimulation to all intellectual combatants. In bio-