He continues as follows :—"The Rothamsted result of 28⅜ bushels, which more probably under- than overrates the crop of the country, if calculated upon the slightly increased area this year, namely, 2,383,584 acres, gives an aggregate produce for the United Kingdom of 8,454,275 quarters. Hitherto we have always deducted 2¼ bushels per acre for seed, but this is supposed to be too high an average at the present time, and if we deduct only 2 bushels, there remain 7,858,379, or rather less than 8 million quarters available for consumption. Still estimating the consumption per head of the population at 5·65 bushels, the requirement for the harvest year would be 26,419,940, or nearly 26½ million quarters, of which about 18½ million quarters would have to be supplied by stocks and imports.

"For some reason the imports of wheat have been below the estimated requirements for the last two years. Whether, or to what extent, this is due to previous accumulations, to the home crops having been underrated, or to a reduction in the consumption of bread and flour, there is not sufficient evidence to decide conclusively. If there has been a reduced consumption, the question arises whether there has been an increased consumption of other foods. During the last few years there has been some increase in the number of both cows and other cattle kept, but there has upon the whole been a reduction in the number of both sheep and pigs. In fact, the records, neither of the home production, nor of the imports, of animal foods, afford evidence of any material increase in the consumption per head of such foods.

"Further, a careful examination of the amounts of the imports of other articles used as human food shows in the aggregate a reduction rather than an increase in proportion to the population. In such articles as rice and potatoes, for example, which would to some extent substitute wheat, the decline in the imports is very marked. Thus, whilst during the five years 1877-81, the average annual imports of potatoes amounted to 395,277 tons, during the five years 1882-86 they amounted to only 156,017 tons, or to considerably less than one-half. Nor is it probable that the amount of maize flour used has at all materially affected the consumption of wheat. The indication would thus seem to be, therefore, that if the consumption of wheat has really declined, either the total consumption of food per head of the population has also declined, or that the deficiency in the wheat imports has been compensated by increased supplies of home-grown foods. So far as potatoes are concerned, however, the 'Agricultural Produce Statistics' show a decline in area, in produce per acre, and in aggregate produce, both in 1885 and in 1886 compared with 1884. On the other hand, there has, notwithstanding an increase in the imports of other vegetables, been a considerable increase in the area devoted to market gardening during the last few years, and also an increase in the area of allotment gardens. It would obviously be a ground of satisfaction should further information and consideration show that, notwithstanding the very low prices of grain, there has been a larger consumption of some other home-produced foods.

"Whilst it is obviously of importance to the grower that his wheat crop should yield well, it has ceased to be a question of any interest to the consumer whether the yield of the home crop is a few bushels per acre more or less. Nor does such a difference, on our much reduced area, at all materially affect the supply from foreign sources. During the eight harvest years 1852-53 to 1859-60, which were the first of our estimates of the home wheat crop, nearly three-fourths of the aggregate amount consumed was of home growth, and little more than one-fourth was derived from foreign sources ; but during the eight years 1878-79 to 1885-86 little more than one-third has been provided by the home crop, and nearly two thirds by imports ; and were it not for the value of the straw for bedding purposes it is probable that the reduction in the area under the crop would have been even greater than has actually been the case.

"Although greater facilities for acquiring land have been afforded by the Acts of Parliament recently passed, there is not much probability that the result will be an increase in the area under wheat, or other grain crops ; or in fact that tillage on a small scale will successfully compete with arable farming as at present practised. Nor is it likely that there will be any permanent extension of peasant holdings of pasture land, excepting in localities where the soil and climate are specially favourable for permanent grass. But garden allotments, as distinguished from peasant holdings or from farm allotments, are of very great advantage to the masses of the population, and will no doubt continue to extend as they have done largely during the last quarter of a century."

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

KING'S COLLEGE, LONDON.—A new laboratory has been fitted up in the College. It is provided with a collection of pathological material, biological, histological, and chemical apparatus, and is intended to afford every facility for obtaining a practical knowledge of bacteriology, and for prosecuting original research in all matters relating to human and comparative micro-pathology.

The laboratory is open to all gentlemen, whether students of other departments of the College or not. The practical courses and lectures are specially intended for medical officers of health, veterinary surgeons, and analysts.

A certificate of attendance will be granted to each member of these courses.

The winter course of lectures with practical work will commence on November 1. There will be about fifteen lectures, and the practical course will last for thirty days. The lectures will be delivered on Mondays, Tuesdays, Thursdays, and Fridays, at 10 a.m.

They will be illustrated with diagrams and typical preparations and followed by practical work in the laboratory for the rest of the day.

Admission will be permitted to the lectures without the practical work.

In the case of medical men in practice, medical officers, and veterinary surgeons of the army, and others whose duties may prevent their attending the laboratory daily, special arrangements will be made for extending the days of attendance over a longer period.

For further particulars apply to Prof. Crookshank, King's College, London, or to the Secretary, J. W. Cunningham.

SOCIETIES AND ACADEMIES.

LIVERPOOL.

Astronomical Society, October 10.—Mr. W. F. Denning, of Bristol, President, in the chair.—This was the first meeting of the seventh session, and sixty-one candidates were proposed as members.—In his opening address the President referred to the last volume of their Journal as exhibiting the varied and attractive character of the work in which the members had been engaged. The angular measurements of fifty binary stars had been completed, and a valuable series of illustrated articles on lunar objects had been published. The remarkable dark patches in the "crape" ring of Saturn were observed and described by members at Bedford, and Louvain in Belgium. There had been a wide-felt regret that the objects of the Society's Eclipse Expedition of August 19 had been defeated by cloudy weather. Observations of Jupiter had been reported, and the increase in the rotation-period of his red spot fully verified. The meteoric section had made considerable progress. To the several members who had so practically aided the Society in its efforts to promote a knowledge of astronomy their warmest thanks were due. The ensuing session gave promise of increased activity, particularly in the stellar, planetary, and meteoric sections. The action of the American members in having so disinterestedly set aside national prejudices to enter into a bond of fellowship with English observers, had afforded great satisfaction, and must lead to a considerable extension in the Society's connexions and sphere of usefulness. The Society owed a debt of gratitude to Mr. W. H. Davies, F.R.A.S., the Hon. Secretary, for the untiring zeal which he had displayed in a very laborious office during several years. Undoubtedly a great future lay before the Liverpool Astronomical Society if its members continued their hitherto united policy. Individual interests and ambitions must be made subordinate to greater aims.

PARIS.

Academy of Sciences, October 17.—M. Janssen in the chair.—Catalogue of the Paris Observatory, by M. Mouchez. The revision of Lalande's Catalogue, made in 1791-1800, and containing the positions of 47,390 stars, was begun in 1854 by Leverrier, continued in 1878 by M. Mouchez, and now completed far enough to begin the publication of the results. The first two volumes, which have just been issued, contain the 7245

stars comprised between oh. and 6h. of right ascension, for which 80,000 observations are recorded. A comparison of the results shows the surprising accuracy of Lalande's observations made with instruments which would now be regarded as very defective.—On the formulas of dimensions in electricity, and on their physical significance, by M. G. Lippmann. Some of these formulas give the idea of a corresponding physical interpretation. But it is shown that no electric magnitude appears susceptible of such interpretation, except where the dimensions may be reduced to those of time, certain electric phenomena having a duration capable of being calculated.—Researches on drainage, by M. Berthelot. Numerous experiments made at Meudon in connection with the study of nitrogen in vegetable soil lead to the general conclusion that the drainage of rain-water carries off a much larger quantity of nitrogen than that supplied to the soil by the atmosphere, and especially by the rain-water itself. This result is destined profoundly to modify the views hitherto accepted regarding the conditions of natural vegetation and of husbandry.—Duality of the brain and of the spinal marrow, by M. Brown-Séquard. It is shown that anæsthesia, hyperæsthesia, paralysis, and various phases of hypothermia and hyperthermia, due to organic lesions of the cerebro-spinal centre, may be transferred from one side of the body to the other. In a word, the author undertakes to establish as the result of a prolonged series of crucial experiments that, contrary to the generally received opinion, each half of the encephalon and of the spinal marrow may equally and independently serve for all the functions of the two halves of these nervous centres. The anæsthesia and analogous affections caused by an organic lesion of the nervous centres are transferred to the opposite side under the influence of a second lesion of those centres; hence it follows that such manifestations are not necessarily effects of the destruction of certain nervous elements endowed with certain functions, but may be the results of purely dynamic actions exercised at a distance by the irritation caused by the lesion. In the same way one half of the encephalon may serve as the seat of the voluntary motions and vaso-motor actions for either half of the body; and so with the spinal marrow, at least so far as concerns sensibility and the vaso-motor actions.—Remarks accompanying the presentation of the second volume of the "Compendium Floræ Atlanticæ, &c.," (Flora of Algeria, Tunis, Morocco), by M. E. Cosson. This volume contains a supplement to the already published notice on the botanical explorations in Mauritania, together with a detailed description of the families, genera, and species from the Ranunculaceæ to the Cruciferæ inclusive.—Observations of Peters's new planet, 270, made at the Paris Observatory (equatorial of the West Tower), by M. G. Bigourdan. The observations extend over the period from October 14 to 16. On the 15th the planet was of the 10·5 magnitude.—A mechanical and automatic registering apparatus of signals transmitted by telegraph and by optical projectors, by M. E. Ducretet. The apparatus here described and illustrated has the advantage over others in general use of automatically recording all messages for the purposes of reference in case of doubt or error occurring in the transmission of signals. It is equally available for ordinary telegraphic service, and for optical, military, and other systems.—Isoclinous magnetic curves, second memoir, by M. C. Decharme. This paper serves as a supplement to the author's previous communication on the isogonous magnetic curves relative to the declination. It deals specially with the isoclinous curves obtained with the dipping needle.—On a new mode of formation of the substituted safranines, by MM. Ph. Barbier and Léo Vignon. It was shown some years ago that the nitrous derivatives of the aromatic tertiary monamines, by acting on the primary monamines, give rise to certain colouring substances. Here are given the results of studies undertaken to determine the true character of these substances.—Researches on the bovine origin of scarlatina, by M. Picheney. The experiments here described tend to confirm the conclusion arrived at in England that scarlatina has its origin in the milk of diseased cows consumed especially by children.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Mattie's Secret: E. Desbeaux (Routledge).—Unfinished Worlds: S. H. Parkes (Hodder and Stoughton).—Bees and Bee-keeping, vol. ii. part 13: F. R. Cheshire (Gill).—British Dogs, No. 12: H. Dalziel (Gill).—Meteorologische Beobachtungen in Deutschland, 1885 (Hamburg).—Report on the Meteorology of India in 1885: H. F. Blanford (Calcutta).—Charts of the Bay of Bengal and Adjacent Sea North of the Equator, showing the Specific Gravity, Temperature, and Currents of the Sea Surface.—Charts of the Bay of Bengal and Adjacent Sea North of the Equator, showing the Mean Pressure, Winds, and Currents in each Month of the Year.—The Vegetable Lamb of Tartary: H. Lee (S. Low).—Austral Africa, 2 vols.: J. Mackenzie (S. Low.)—Report of the Meteorological Service of the Dominion of Canada for the Year ending December 31, 1884 (Ottawa).—The Encyclopædic Dictionary, vol. vi. part 2 (Cassell).—Handbuch der Oceanographie, Band ii.: Dr. Kummell (Engelhorn, Stuttgart).—Cow-Pox and Vaccinal Syphilis: C. Creighton (Cassell).—A Manual for Steam Users: M. P. Bale (Longmans).—Universal Phonography: W. Benson (Chapman and Hall).—Studies in some New Micro-Organisms obtained from Air: Grace C. Frankland and Percy F. Frankland (Trübner).—The Preservation of Fish: J. C. Ewart (Griffin).—Report of the Entomologist, C. V. Riley, for the Year 1886 (Washington).—Modern Lessons in Dynamical Geography and Topography.—Journal of the Chemical Society, October (Gurney and Jackson).—Journal of the Royal Microscopical Society, October (Williams and Norgate).—Indian Meteorological Memoirs, vol. iv. parts 2 and 3.—Sitzungsbericht der K. Academie der Wissenschaften; Math.-Naturw. Classe, Mineralogie, Botanik, Zoologie, Geologie und Paläontologie, Jahrgang 1886, April to December (Wien).—Physiologie, Anatomie und Theoretischen Medicin, 1886, January to December.—Mathematik, Physik, Chemie, Mechanik, Meteorologie und Astronomie, 1886, January to December.—Journal of Physiology, vol. viii. No. 5 (Cambridge).—Annalen der Physik und Chemie, 1887, No. 10 (Barth, Leipzig).—Proceedings of the Bristol Naturalist's Society, vol. v. part 2 (Bristol).

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