

ACCORDING to the report of the principal chemist of the Government Laboratory for the year ending March 31, it appears that during the past twelve months the work of the Customs branch of the Laboratory has more than doubled in magnitude, the increase being due chiefly to the imposition by the Budget of April, 1901, of duties on sugar and cognate substances, and on the numerous articles in the manufacture of which these substances are used. More than 64,000 samples were submitted for test as compared with about 34,000 in the preceding year.

A CAREFUL experimental inquiry regarding the nutritive value of alcohol has recently been carried out in the chemical laboratory of Wesleyan University by Messrs. Atwater and Benedict, a report on which forms the sixth memoir of vol. viii., published by the National Academy of Sciences. The main question studied is the value of alcohol as a fuel in the human body and its comparison in this respect with sugar, starch, fats and other nutrients of ordinary food materials. Collaterally, the question of the effect of alcohol upon the proportions of nutrients digested from the food with which it was taken has also been examined. Metabolic experiments on an elaborate scale have been instituted with the view of investigating the problem, and no expense has been spared to obtain complete and accurate results, a large share of the costs having been borne by the Committee of Fifty for the Investigation of the Drink Problem. The results of the inquiry indicate that more than 98 per cent. of the ingested alcohol was oxidised in the body and that the potential energy of the alcohol was transformed into kinetic energy as completely as that of the ordinary nutrients. Alcohol appears to be very efficient in the protection of body fat from consumption, but not quite so efficient as the isodynamic amounts of the ordinary nutrients in the protection of body protein. The conclusion is drawn that so far as the utilisation of the total energy of the diet is concerned, there is a slight advantage in favour of the non-alcoholic diet, especially when the body is subjected to hard muscular exertion, but the difference is so small as to lie almost within the limits of experimental error.

The additions to the Zoological Society's Gardens during the past week include a Purple-faced Monkey (*Semnopithecus cephalopterus*) from Ceylon, presented by Miss M. Wheatcroft; a Bonnet Monkey (*Macacus sinicus*, ♂) from India, presented by Mr. C. F. Taylor; a Green Monkey (*Cercopithecus callitrichus*) from West Africa; a Bonnet Monkey (*Macacus sinicus*) from India, presented by Mr. R. M. Drury; an Australian Sheldrake (*Tadorna tadornoides*) from Australia, presented by Mr. W. Jamrach; an Egyptian Monitor (*Varanus niloticus*) from West Africa, presented by Mrs. Mary A. S. Deacon; two Cocteau's Skinks (*Macroscoincus cocteaui*) from the Cape Verde Islands, presented by Mr. F. Newton; two Axolotls (*Amblystoma tigrinum*) from North America, presented by Mrs. Millicent Summers; a Spotted Salamander (*Salamander maculosa*), European, presented by Mr. R. R. Green; a Common Snake (*Tropidonotus natrix*), British, presented by Mr. E. Crane; a Grand Galago (*Galago crassicaudata*, var.) deposited; a Black-necked Swan (*Cygnus nigricollis*, ♀) from Antarctic America, purchased; a Rufous-necked Wallaby (*Macropus ruficollis*), a Common Wallaroo (*Macropus robustus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

CATALOGUE OF NEW DOUBLE STARS.—Mr. W. J. Hussey publishes, in No. 21 of the *Lick Observatory Bulletin*, the fifth catalogue of one hundred new double stars which he has discovered with the 12-inch and 36-inch refractors of the Lick Observatory, all these doubles having distances less than 5".

Twenty-five per cent. of the five hundred pairs announced have distances not exceeding 0".50, 48 per cent. not exceeding 1".00, and 72 per cent. not exceeding 2".00. The average distance for the five hundred pairs is 1".52.

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HYPOTHESIS ON THE NATURE OF SOLAR PROMINENCES.—Prof. W. H. Julius has described before the Royal Academy of Sciences (Amsterdam) a theory as to the nature of solar prominences.

It may be remembered that Prof. Julius accounted for the doubling of the arcs in the spectrograms obtained by him during the last total solar eclipse, by saying that it was due to the anomalous dispersion of the chromospheric light, and he now applies this theory of anomalous dispersion to account for solar prominences. He abandons the idea of the existence of various layers of different materials in the solar atmosphere, and suggests that "throughout the gaseous body, as well inside as outside the critical sphere, the various elements are altogether intrinsically mixed (granting that in the mixture the quantity of materials with greater specific gravity must grow with the depth)." It is suggested that, in the whirls formed by the ascent and descent of heated gases combined with the rotational velocity of the solar atmosphere, we get anomalous dispersion at the points where two or more of these whirls intersect and break each other; and the author goes on to propose "that the whole chromosphere with all its prominences is nothing but this system of waves and whirls, made visible within shorter or longer distances from the sun's edge by anomalous dispersion of light, coming from deeper layers."

Prof. Julius also points out that this theory abolishes the necessity for supposing the immense velocities which Fényi and others have observed in connection with solar prominences, because it suggests that there is not a transmission of material, but only successive appearances of the same phenomena at various heights. He likens this to the apparent velocity of the line of foam caused by water waves breaking on a coast which is inclined to their wave-fronts (*Proceedings of the Royal Academy of Sciences, Amsterdam*).

VISIT OF THE ENGLISH ARBORICULTURAL SOCIETY TO COMPIÈGNE.

THE English Arboricultural Society held its annual meeting in London on Monday, August 18, and Mr. George Marshall, of Frimstone, Liphook, one of the members of the Royal Forestry Commission, was elected president for the year, in succession to Dr. Somerville, of the Board of Agriculture. M. Daubrée, Conseiller d'État and Directeur des Eaux et Forêts, was elected honorary vice-president, and four other French officers connected with the forests which were to be visited by the Society were elected honorary members.

On August 19, fifty-three members of the Society proceeded *via* Boulogne to Compiègne. Among these, besides our president, may be noted Mr. H. J. Elwes, F.R.S., of Colesborne, Gloucestershire; Mr. Coroner Graham, of Durham; Mr. F. W. Beadon, of Longley Hall, Huddersfield; Mr. J. Smith Hill, principal of the Agricultural College, Aspatria; Sir Hugh Beevor; Mr. J. Davidson, the secretary, in charge of the forests belonging to Greenwich Hospital; Mr. E. McA. Moir, late of the Indian Forest Department; Mr. Forrest, agent to the Duke of Bedford at Thorney; Mr. W. Forbes, forester to Lord Masham; Mr. Havelock, forester to Lord Yarborough; Mr. Gillanders, forester to the Duke of Northumberland; Mr. A. C. Forbes, forester to Lord Lansdowne, and many other foresters and nurserymen.

On August 20, the party proceeded to Villers Cotterêts (Aisne), the birthplace of Dumas, and spent the morning in inspecting the extensive timber yards of M. Carpentier and of the Chemin de Fer du Nord. The French band saws are the best in existence, and a very large quantity of fine beechwood is now being sawn up. The beech is sawn green during summer and then carefully seasoned, while oakwood is now being collected for autumn and winter sawing, hornbeam wood being sawn up in the spring. M. Carpentier sells much hornbeam wood in England. The system of creosoting by the Chemin de Fer du Nord is new. It is very effective, and was explained in detail and by practical illustration by the director. Large quantities of beech and oak sleepers are thus prepared, the beech absorbing three times as much creosote as the oak, and, as an experiment, a few maritime pine sleepers were being tried, this species not being yet used by this railway.

After breakfast, the party visited the Forêt de Retz (32,550 acres with a net revenue of 23,698*l.*), an undulating land 200 to 800 feet in altitude, the soil being chiefly a deep and fertile