dozen students, so that the almshouse became a nursery as well.

In the eighteenth century the great struggle was, first, to secure admission of the German language for formal purposes, and, secondly, to ally research with study. In 1710 Augustus the Strong granted an observatory, very much in opposition to the University authorities, who, like true scholastics, deemed all teaching should be theoretical. "If a professor made chemical or physical experiments, such were utterly outside his profession. . . . Even an anatomical lecturer did something very supererogatory if, even once a term, he exhibited the position of the entrails to his class. . . ." But the *Universitas Scholastica*—not yet the actual *universitas litterarum*—even in its theoretical teaching, had to be permeated by the modern spirit, and to admit, as subjects, architecture, military science, and so forth, and even, in the *universality* of its strivings, quite technical matters, afterwards more fitly relegated to the polytechnics. Later, at the beginning of the last century, when the University of Berlin was inaugurated, Humboldt's words mark the great change. "Research and teaching must coexist, each in its place, and teacher and pupil must be partners. . . . The strength of the elder mind, more practised, but weaker and more cramped, must act in unison with the spirit of youth, less reliable but more enterprising. With this process of exchange the State must not meddle. . . . it must supply the wherewithal and select the right men." So too Schleiermacher. "The teacher must be wholly free and gather round himself a seminary of fellow-seekers, thus constituting scientific research as a means to something greater, namely, a school of character." But Prof. Wundt sees two sorts of dangers ahead. First, that politics may enter into the scholastic world and affect the choice of competent instructors, and, secondly, that university teachers, though they be civil servants, may not recognise the essential differences between them and ordinary State officials, e.g. that such rules as promotion by seniority cannot apply to them. Instances of the former peril at Leipzig have been the enforced resignations of Mommsen, Otto Jahn, and Moritz Haupt.

One great reform the University of Leipzig has accomplished. The old foundation, professing to be universal, was little more than an ultra-conservative high-school for Saxony, in which great men found it hard to breathe freely; thus Leibniz was forced outside. But the modern State institution is at least German, and not "particularistic." The teachers are drawn from every part of Germany and German-speaking Austria, and the University, if not international, as in olden time it professed to be, is a national school of a united nation.

The early attendances at the University are difficult to gauge. The practice of matriculating children, of not including teachers and students who came in *extra ordinem* (i.e. not as members of the corporation), the irregularity of attendance (varying for the terms; in the winter the students mostly went home), and the inadequacy and vagueness of the old lists, all these causes make any accurate computation impossible. The average is from 350 to 450, rising between 1609 and 1629 to 800, sinking in 1634 and 1645 to less than 100. This severe fall more or less corresponds with the Thirty Years' War. Another noticeable drop (1520-40) may tentatively be accounted for by the superior attractiveness of Wittenberg (where Luther was staying) and the troubles of the Reformation. After the establishment of the present Empire the numbers rose in ten years from 700 to 2000, and in 1908 stood at more than 2300.

Prof. Wundt's long address, which is published by Mr. W. Engelmann, of Leipzig, leaves something to be desired. He gives few details as to the modern extensions of the University, of its new buildings, of the student associations, and in his estimate of the coming problems he expresses himself indecisively, perhaps discreetly. It would, too, have been interesting to be able to correlate better the progress of German history and the developments of this ancient corporation; but perhaps there is little more to be said, for, until the revolutionising change of 1830, there was little alteration. But a university with so high a claim to veneration for antiquity, so great a repute for modern achievement, could hardly have found a more distinguished commemorator.

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INTERNATIONAL CONGRESS ON PURE FOODS AND ALIMENTARY SUBSTANCES.

THE second International Congress on Pure Foods and Alimentary Substances, held in Paris on October 17-24, will be memorable as having brought together more than 2000 delegates and members from all parts of the world. The actual number of countries represented was twenty-eight, and these included States so remote as China, Japan, Uruguay, Mexico, and Brazil. All the European States, as well as America and the British colonies, were fully represented.

The British delegation was a representative one, and included delegates from various learned societies and other associations interested in a pure food supply. The meetings were held in the College of Medicine, Paris, which was kindly placed at the disposal of the congress by the faculty, and the various class-rooms, together with the commodious amphitheatre, were taxed to their full capacity to accommodate all those present. Indeed, on the official opening day, October 18, it was quite impossible to find room for half the members who desired to hear the speeches. The address of welcome was given by M. Ruau, Minister of Agriculture of France, who dwelt on the great work being carried on by the White Cross Society of Geneva, under the auspices of which the second International Food Congress was held. The White Cross Society was called into existence as a companion organisation to the Red Cross Society, the efforts of which have proved so successful in mitigating the horrors of war. It is the mission of the White Cross Society to try to ameliorate the evils of our modern social system, and in no respect is this more needful than in connection with the food supply.

Prof. Bordas, chief of the customs laboratories of France, as president of the congress, reminded the members present that the first congress, which was held at Geneva, had defined what should be the constitution of pure food, primary products in connection with drugs, and various alimentary substances, all of which had been set forth in the *Comptes rendus*. It would be the business of that congress to continue these definitions and determine precisely what operations should be allowable in the handling of such substances. When that was complete it would then be necessary to try to unify analytical methods or show exactly what relation one analytical process bore to another, so that the results attained would be comparable equally. When such a basis of comparison was arrived at, it would then be easy to place the whole department of the supply of food and alimentary substances under legal control in all countries.

The work of the congress was divided up into various sections, the duty of which it was to come to definite conclusions in connection with various substances and report such decisions to the section of hygiene, which formed a kind of court for reviewing the work done in other departments.

The sections included:—(1) drinks and beverages, wines, liqueurs, cider, perry, beer, vinegar; (2) bread, flour, pastry; (3) confectionery, honey, sugar, sugar preparations, cocoa, chocolate; (4) spices, tea, coffee, mustard, salt; (5) dairying, milk, cream, condensed milk, butter, cheese, eggs; (6) charcuterie, the meat industry, edible fats, preserved provisions, preserved fruits and vegetables, sausages; (7) primary products in connection with drugs, essential oils, chemical products; (8) medicinal and other mineral waters, ice.

The consideration of such a formidable list necessarily meant continuous hard work, and it is only fair to say that the attendance at the sections was everything that could be desired, and the department of hygiene was crowded from first to last, it being estimated that in it alone the average attendance exceeded 500.

It would not be desirable to attempt to review the various discussions in detail, suffice it to say that the definitions were completed, and, as the president announced, will be published as soon as possible in French, German, and English. It may be of interest, however, to refer to some of the more notable decisions.

Bread was declared to be the product resulting from the baking of dough made from pure wheat flour, with the addition of yeast, water, and salt. Any other product

meant as a substitute for bread should not bear the name, and its composition should be declared at the time of sale. It was subsequently declared that the addition of baking powder, bicarbonate of soda, and tartaric acid were quite permissible and regular operations. Alum was entirely prohibited.

Coffee was clearly defined as being only worthy of that name when derived from coffee berries and when free from any foreign mixture, such as chicory or any other substance. Cocoa, on the other hand, was not so easily defined. Long discussions on the composition of this product took place in the section, and it was agreed that it would be better to refer the matter to an international commission of experts. The main question was as to whether the addition of alkali to cocoa was justifiable or not. The large manufacturers said that it was unnecessary, but the small makers, who were in the majority, held to the view that not only was it allowable, but it was necessary, so as to enable them to produce a cheaper cocoa than that sold by the large makers, and at a cheaper price. They asserted that the buyers for whom they catered belonged to a class which could not afford the high prices asked by large manufacturers. To prohibit the use of alkali meant the practical extinction of the small makers and the creation of a vast monopoly in the hands of a few. The discussions on the subject in the hygienic section were prolonged and sometimes very heated, but in the final issue it was agreed that 2 per cent. of alkali should be allowed. An international commission will consider the whole matter, as it appears that cheap cocoas are not only sophisticated with alkalis, but additions, which are simply adulterations, are common. It is strange to hear, for example, that one manufacturer uses paraffin wax in his produce!

If the discussions on cocoa were animated, so also were those on butter. At the Geneva congress there seemed to be a feeling that the definition of pure butter was a political rather than a hygienic question, and the voting seemed to be between the fresh butter and the salt butter makers. Owing to the greater attendance at the Paris congress there was a greater body of opinion, hence the discussions were more prolonged, and, for that matter, more interesting. The first question was as to the empirical standard of 16 per cent. of water, which, it was declared, was too low for general purposes. It was finally raised to 18 per cent.

The next question was in connection with the use of preservatives, and it was shown that it was not possible to conduct an export butter trade over any great distance without the addition of some boron preservative. This addition was allowed, and classed as a regular operation (*opération régulière*), which means that it is now considered as necessary in the making of some kinds of butter as is the addition of salt, and need not, therefore, be declared. Colourings for food, confections, and liquids came in for considerable attention, and it was found impossible to resist the argument that the sale of many alimentary products depended to a large extent on their appearance, and the use of harmless colours was therefore permitted. Twenty anilines were specifically mentioned as being innocuous, and they embrace every shade used for food purposes.

The discussion of ice elicited quite a display of feeling, and an acceptable definition was not arrived at without some difficulty. It was finally agreed, however, that there were two kinds of ice, namely, manufactured and artificial. The manufactured article should be produced only from sterilised or town's water. Natural ice could only be admitted for addition to, or for bringing in contact with, foods, when gathered from lakes, rivers, or canals under proper sanitary control.

Medicinal mineral waters did not emerge from the discussions well. It appears that there is quite an industry in manufacturing these and sending them out into the world under apparently genuine labels, and the "source naturelle," or natural spring, is too often the town supply of water to which a small percentage of alkaline salts is added! To control fraud such as this is difficult, and nothing short of making it a penal offence would be of much use.

In connection with drugs, a long discussion ensued upon the presentation of a brochure by Mr. C. Umney, in which

he set forth the desirability of instituting international control of specific substances, and it is not unlikely that, as the matter is of such world-wide importance, an international commission may be appointed to study the whole question in detail.

These references will show that the work accomplished was very great, for it must be borne in mind that each subject on the programme had to be discussed and resolutions arrived at. The manifest pains which were taken to arrive at correct definitions impressed those present.

The feature of this congress was earnestness and a strong desire to coordinate practice with hygienic requirements, and when the *Comptes rendus* are published it will be seen how very thoroughly the work was carried out.

It has not yet been decided where the next congress will be held. The choice lies between Rome, Brussels, and London, but a decision cannot be arrived at until later.

It may be mentioned that much hospitality was shown to the visitors. The city of Paris gave a reception at the Hôtel de Ville, and the Minister of Finance at the Ministry. Various visits to notable food factories, such as that of Messrs. Potin and the chocolate factory of Messrs. Menier, were arranged. Parties also visited the brewery of Messrs. Karcher, the Gobelins lace factory, and Sèvres porcelain works. Amongst those who dispensed lavish private hospitality were Madame and M. Paul Bolo, to whose initiative the White Cross Society of Geneva owes its origin, and whose generosity enabled it to call the first congress together at Geneva last year.

LOUDON M. DOUGLAS.

EDUCATION AT THE BRITISH ASSOCIATION.

THERE can be no gainsaying the fact that education received quite its fair share of attention at Winnipeg this year. Readers of NATURE have already had an opportunity of considering the words of warning in Sir J. J. Thomson's presidential address to the association on the excessive competition for scholarships now confronting the student of every grade in England, and on the evils which the consequent premature specialisation brings in its train—the dulled enthusiasm for knowledge and the inadequate literary culture. In the physiological section, also, Prof. E. H. Starling shed a fresh light on the meaning of the word by applying to it the conception of man as the last result of an evolutionary process.

In the Educational Science Section itself, Dr. Gray's presidential address, printed in NATURE of October 7, was concerned with "The Educational Factors of Imperialism," and in the course of it he developed an attack on the "grand old fortifying classical curriculum" with a boldness remarkable in one who is at the head of an English public school, and, as Prof. Armstrong said, is one of the most successful teachers of Greek we have.

Manitoba lags behind its younger sisters, Alberta and Saskatchewan, in that elementary education is not by law compulsory, and the pronouncement made by Dr. Kimmins, one of the vice-presidents of the section, in favour of compulsion probably attracted as much outside attention as any utterance in the section. For two days the blackboards outside the *Free Press* office, which appear to constitute the principal reading of many inhabitants of Winnipeg, informed the constant crowd that "Dr. Kimmins had expressed astonishment that education was not compulsory in Manitoba."

To the regular attendants of the section, however, the contributions of the two American vice-presidents, Prof. Hugo Münsterberg and Principal J. W. Robertson, were the outstanding features of the meeting.

Prof. Münsterberg spoke at some length on the last day of the meeting, and to a good audience, on the relations of education and experimental psychology. He began by drawing a striking contrast between the attitude of teachers here and in America towards psychology. In England psychology is neglected, and the teacher is like the farmer who turns his back on chemistry—his methods remain clumsy and old-fashioned. In America, on the other hand, the value of the subject is overestimated, and the teacher commits the grave mistake of subordinating the whole of his art to scientific psychology; but a science gives us the