

been at fault. But on the economic ground alone the analysis of the existing system had not revealed any advantages arising from social ownership and control which could not be achieved under capitalism. From the psychological point of view the case was different. While granting that the best organising ability might not be forthcoming in a socialised mining industry, he contended that in coal-mining the absence of the best trained direction was of less importance than in other industries. On the other hand, the technical staffs were willing to work under a socialised industry, and the miners would co-operate in no other. Without the technical staffs and the manual workers the industry could not function at all, and therefore, on the balance, the introduction of socialised ownership and control was, from the psychological aspect, inevitable.

The third sitting of the Section was devoted to financial problems. The address of Mr. A. H. Gibson covered a wide field, and was mainly historical in its treatment of its subject, "Credit: Inflation and Prices." After a survey of the development of credit institutions, Mr. Gibson pointed out that banks having by common consent collectively become custodians of the available purchasing power, this imposed on them the duty of not expanding credit at a rate proportionately greater than the increasing supplies of commodities, otherwise inflation would necessarily follow. In theory there was no limit to the expansion of bank credit, subject to the banks being able to obtain sufficient legal tender to meet current demands. He explained that "ways and means advances" by the Bank of England had had the effect of increasing the cash reserves of the banks during the war, and therefore banks were compelled to stop expansion of credit. He expressed the opinion that the banks would meet all the demands made on them for legitimate trade requirements. Traders would find that after a time the restriction of credit would enable them (by causing a fall in prices) to conduct their businesses on a lesser amount of floating capital than at present. He reviewed the necessary steps to be taken for deflation, the chief of which, he maintained, was the increase of production without a further increase in wages or profits. Other remedies were the reduction in the purchasing power of the community, the funding of the present floating debt by direct subscriptions from the public and not from the banks, and further retrenchment in public expenditure. The purchasing power of the community was now 1,800,000,000*l.* greater than before the war, and 85 per cent. of this represented bank credit expansion.

One of the worst evils of inflation was that it considerably reduced the export trade of the country because of higher costs of production. Under these

conditions high prices would remain, for this country would have little to offer in exchange for imports of foodstuffs and raw materials from foreign countries. Thus the inflation, which appeared of little consequence to the Government during the war, had all the seeds of disruptive forces within it in the case of a country situated like the United Kingdom, dependent for its existence on foreign trade. It had been a suicidal policy, and the harvest was yet to be reaped. High prices, discontent, labour troubles, and the probable loss in the future of a considerable part of our former volume of export trade were some of the fruits of this monetary inflation policy. The Government and the banks would make every effort to make the deflation as gradual as possible, but the process was bound to be accompanied by severe labour troubles and social discontent. He held, however, that however bitter the pill might be, it would be to the ultimate benefit of Labour to accept the inevitable reduction of wages and exert the maximum combined effort with Capital to increase production. A considerable increase in production might even allow the present level of wages to remain. Labour consumed probably 90 per cent. of the fruits of production, and had everything to gain by intensified output and everything to lose by wilfully diminished production.

At the last sitting of the Section the chief contribution was a paper by Mrs. Wooton on "The Future of Earning." Mrs. Wooton's thesis was that there is nothing inherently sacred in the notion of earning; that in recent times the payment of subsidies which had no relation to the value of work done had taken an increasing part in the remuneration of the worker; and that the time had come to recognise the new ground of remuneration and to pay subsidies avowedly as such and not disguised as wages. As evidence of the tendency she pointed to the increased acceptance of the idea of a minimum wage and the growing favour of time- as distinguished from piece-wages. When the minimum wage paid exceeded the value of the work done for which it was paid, then it was no longer earned, but it was really a subsidy to the worker, and it was incompatible with the continuance of payment of a wage.

In the course of the last two or three years research has been carried on by sub-committees of the Section into problems of credit and currency and into the place taken by women in industry during the war. Already several printed reports have been issued by these committees. The Committee on Women in Industry will probably issue a final report, and the Committee on Credit and Currency has been continued for another year and will issue its report in the summer of 1921.

The International Congress of Physiologists.

AMONGST the results of the outbreak of war in 1914 was the making of it impossible for physiologists to assemble together as was their wont every three years. But now that Europe is recovering from the conflict, physiologists from different countries have been able to assemble, and they did so in Paris on July 15-20.

The congress was under the presidency of Prof. Richet, of the chair of physiology at the Sorbonne, who was assisted by the vice-president, Prof. Gley, of the chair of general biology at the Collège de France. It was informally opened on the evening of Wednesday, July 14, by a *réunion amicale* in the laboratories of physiology at the Sorbonne. This conversation gave opportunities for old friends to

forgather and to make arrangements for the congress-week.

At ten o'clock on the following morning the congress was formally opened by a convocation in the great lecture-hall of chemistry at the Sorbonne. The amphitheatre had been transformed by means of crimson curtains and gilded chairs into a *salle d'honneur* for the occasion. Prof. Richet occupied the chair, and was supported by the Minister of Public Instruction, Prof. Gley, Prof. Fano, Prof. Fredericq of Liège, Profs. Sir E. Sharpey Schafer, Langley, Sherrington, Waller, and others.

The presidential address was simple, dignified, and impressive. The president began by recalling the names of those physiologists who had passed away

from their labours since the last congress at Groningen in 1913. No sooner had he finished this part of his discourse than the whole assembly rose to their feet and remained standing in silence for some short time. It was quite spontaneous, so French, so exactly the thing to do at the moment, yet without a trace of anything theatrical or insincere.

The latter part of the address was an interesting survey of such advances in physiology since 1913 as have necessitated changes in our views regarding certain problems. In particular, reference was made to the value of the researches of the American physiologists under Benedict into metabolic exchanges at rest—the so-called “basal metabolism.” Prof. Fano, the new occupant of Luciani’s chair at Rome, was the next speaker, the subject of his discourse being the two cerebral attributes of volition and inhibition. He made use of data obtained through injuries to the human brain in the late war.

The afternoon was devoted to the reading of papers and to witnessing demonstrations, for which purposes the congress was divided up into five sections, which had to meet simultaneously.

At half-past eight the members were invited to witness a display of scientific cinematography at the Institute of Oceanography in the Rue St. Jacques. At this *séance* the Prince of Monaco and his suite were present. The demonstrations were exceedingly interesting, those of the amoeboid movements of the leucocytes in frog’s and in human blood being particularly instructive. The rate of reproduction of the films had been accelerated to sixty or eighty times the normal, so that, instead of seeing leucocytes advance on bacilli in the leisurely fashion of their own positive chemiotaxis, they appeared to bolt in and out amongst the *rouleaux* of red discs like so many rabbits amongst the bracken of a warren. Another set of illustrations was equally remarkable: men and animals had been photographed walking, running, and leaping, not only at the rate necessary for the normal reproduction of these movements, but also so rapidly that the transit of the pictures could be brought down to a very slow rate without, however, producing any flicker.

The illusion in the artificially retarded series was very curious; one saw, for instance, a man with a pole in his hand approach a high gate, slowly place the pole on the ground, rise leisurely into the air, float slowly over the gate, and then, having left the pole upright behind him, sink slowly down on the other side. The pole meanwhile fell on one side with a dignity and grace that would not have shamed a Vere de Vere. As a physiological study of the various groups of muscles co-ordinated in actions of this kind, the demonstrations were very valuable. Other series were: the cure of avian beri-beri; the heart and lungs in action in the opened thorax of the cat; hydro-medusæ in their tanks; a cat let fall back downwards rotating itself so as to alight on the ground on all fours; and the flying of birds and butterflies in artificially retarded action.

The secretion of pancreatic juice after the injection of secretin into a dog was clearly demonstrated, as also the artificial digestion of a cube of albumen by activated pancreatic juice in presence of the necessary controls. This last demonstration was very remarkable, for in a few moments we were shown the chemical disintegration of the protein into soluble substances, which in reality occupies more than nine hours.

Saturday, July 17, until six o’clock, was given up to the scientific work of the congress. At nine in the evening Prof. and Mme. Richet received the members in their large and handsome house in the

Rue de l’Université. It was fortunately a fine, warm evening, so that we were able to stroll about the illuminated garden, where the conversations were not exclusively on scientific subjects.

On the Sunday no scientific work was undertaken, but an excursion was made to the park and château at Chantilly, a place best known to many Englishmen as the site of a racecourse. This proved a very enjoyable visit; the interior of the château is decorated in the stately and gorgeous style of the Renaissance, and the house contains some fine paintings, besides miniatures, valuable gems, and other treasures.

Monday, July 19, saw the congress busily at work again until five o’clock, when there was a large reception at the Hôtel de Ville. This was given by the Mayor of Paris and the City Council; it was a full-dress affair, as might be inferred from the costumes of the ladies and from the uniforms and cocked hats of the attendants by whom we were ushered up marble staircases to painted halls. There were speeches of welcome and speeches of thanks in response, as well as generous entertainment.

At nine o’clock the same evening a *soirée* was given by the Club de la Renaissance française in the Rue de Poitiers. This consisted of a concert of chamber music, in which piano, cello, and harp all took part. Not for long had some members of the congress, they said, enjoyed an evening so much, for they were enabled for an hour or two to escape from the auditory discords of the streets and to live in an atmosphere of pleasing sounds.

On Tuesday, July 20, the congress was at its work again until half-past two, when the *séance de clôture* took place. At nine o’clock the same evening the Rector of the University of Paris gave a formal reception to the congress in the magnificent salons of the Sorbonne. This was a full-dress conversation, the entertainment provided, besides some singing, being a recitation by a young actor of one of Alfred de Musset’s poems.

During the week several dinner-parties and lunches were given, both the president and Prof. Gley acting frequently as hosts. The number of ladies who as physiologists participated in the congress was larger than at any previous meeting, Great Britain being particularly well represented in this respect.

Not many American or Canadian physiologists attended the congress. American physiology was, however, represented by Prof. Neil Stewart, of Cleveland University, Ohio; Prof. Frederick S. Lee, of Columbia University, New York; Prof. Graham Lusk, of Cornell University, New York; and Dr. L. G. Henderson, of Harvard University.

From Canada there were only Prof. J. J. R. Macleod, of Toronto University, and Prof. Fraser Harris, of Dalhousie University, Halifax, N.S.

The subjects discussed at the congress are too numerous to be dealt with in the detail they deserve. The physiology of adrenalin was the subject of prolonged debate. In particular, doubt was cast upon the trustworthiness of some of the methods for the detection of that hormone in the blood and upon the alleged rapidity with which adrenalin is increased in a very large number of different conditions, some accompanied and some not by emotional factors.

The topics of diabetes, the psycho-galvanic phenomenon of Waller, human calorimetry, the transport of carbon dioxide in the blood, and the condition of the respiratory centre in shock were all discussed at as great length as the overloaded state of the programme permitted.

The congress was too short to deal adequately with all the difficult problems presented for solution. Some of us were just beginning to know one another and

to discuss subjects of mutual interest when it was time to part. It was all too short for any lover of Paris, for no lover of brightness and beauty leaves Paris without regret. Some departed for the shell-scarred battlefields of the greatest war in history; others, ere they returned to the routine of their lives, gave one more glance at the gardens of the Tuileries lying in the golden sunshine of the perfect July afternoon as it brought out all the vivid colours of the flowers grouped with such unerring taste.

Memories of the past had been crowding in all that week; did not the word "Sorbonne" at one time import everything that strove against scientific enlightenment, and connote everything that stood for the obscurantism of the Middle Ages?

The historically minded could not but recall that it was in the gardens of the Tuileries one day in 1819 that Laennec devised the first stethoscope. He had been watching some children place their ears on logs of wood to hear sounds conveyed through them, and, seizing on the principle underlying the children's play, he soon invented the stethoscope, one of the earliest instruments of modern medicine.

As we strolled across the gardens we gave a parting glance at the sun-bathed roofs of the Louvre, the most magnificent palace in Europe, a building the history of which is an epitome of the wonderful story of France herself—of her glories, her triumphs, her crimes, and her sorrows. D. FRASER HARRIS.

University and Educational Intelligence.

THE Patent Office Library is open to the public daily except on Sundays, Good Friday, Christmas Day, Whitsun Eve, and Bank Holidays. On and after October 1 the hours of opening will be from 10 a.m. to 9 p.m., except on Christmas Eve and Easter Eve, when the library is closed at 4 p.m.

DR. R. M. CAVEN has been appointed to the chair of inorganic and analytical chemistry in the Royal Technical College, Glasgow. This vacancy was caused by the transfer of Dr. F. J. Wilson to the chair of organic chemistry in succession to Dr. I. M. Heilbron, who was recently appointed professor of organic chemistry in the University of Liverpool. Dr. Caven was for many years lecturer in chemistry at University College, Nottingham, a position he resigned to become Principal of the Darlington Technical College.

THE new session of the Battersea Polytechnic opens on Tuesday, September 21. A general introductory course has been arranged for students desiring either to qualify for the scholarship or entrance examinations of any of the diploma courses, or to take the Matriculation Examination of London University before taking up a science or engineering degree course. Day and evening courses are provided for those desirous of taking the Intermediate and Final Examinations of London University in science (pure and applied) and in music. Day courses are also available in engineering and other technical subjects, including teachers' courses in sanitary and domestic science. Evening courses are wider in scope; engineering, physics, photography, languages, music and domestic science are among the subjects with which the lectures will deal. Full particulars of all the courses will be found in the Polytechnic Calendar, which can be obtained from the secretary.

A COMBINED effort is at present being made by students and friends of the City and Guilds Engineering College, the Royal School of Mines, and the Royal College of Science in support of the Imperial College War Memorial scheme. The first object in view is the

erection in the college buildings of simple memorial tablets bearing the names of the old students—some three hundred in all—who fell in the war. Closely connected with this purpose, and arising out of the desire of ex-Service men and relatives of the fallen to do something of permanent practical value for the students of the college, is the scheme for the acquisition of a sports field. This particular provision for physical development has hitherto been lacking at the Imperial College, and the enterprise now on foot aims at supplying what is generally admitted to be an essential part of the equipment of an educational institution. In response to an appeal issued in May last for 12,000*l.* to enable the scheme to be carried out in its entirety, a sum of more than 6000*l.* has already been subscribed or promised. This has been considered sufficiently encouraging to warrant the acquisition of a suitable ground over which an option had been secured, and the committee is now appealing to all old students and other friends of the Imperial College who have not so far subscribed to take their share in providing the balance of the purchase price and the cost of equipment.

Societies and Academies.

PARIS.

Academy of Sciences, August 17.—M. Henri Deslandres in the chair.—G. Humbert: The expression of a non-Euclidean area of the fundamental domain related to an indefinite Hermite form.—T. Carleman: Singular integral equations with a real and symmetrical nucleus.—M. Galbrun: The deformation of a helical spring the extremities of which are constrained.—L. Barbillion and M. Dugit: A new class of measuring apparatus for the direct evaluation of magnitudes which are functions of two variables. Forms of apparatus now in use, based on the determination of the position of intersection of two rectilinear needles with reference to a curve, are liable to errors of parallax which are difficult to reduce. The type now described is based on the use of a rectilinear needle and a curved needle rotating on a common axis. Two examples of application of the method are suggested: speed indicators for aeroplanes and control of carburettor in internal-combustion motors.—C. Nordmann: The absorbing powers of the atmospheres of stars. A method of comparing them and of determining the minimum numerical values.—H. Gault and R. Weick: A case of isomerism in the series of the aromatic α -keto-acids. In addition to the two isomers of phenylpyruvic acid described by the authors in a recent paper, a third isomer has now been isolated, and the conditions under which these isomers can be transformed into the other forms have been worked out. A study of the reactions of these three compounds leads to the conclusion that two are stereo-isomers possessing the enolic form, and the third is the ketone.—R. Fosse: The synthesis of a second diamide, oxamide, by the oxidation of sugar and ammonia. Oxamide has been isolated as one of the products of oxidation of cane-sugar in presence of ammonia by calcium permanganate.—MM. Tiffeneau and Orékhoff: The hydrobenzoin transformation. The influence of the nature of the reagent. With the exception of the case of triphenylglycol, which reacts in the same manner with different dehydrating agents, according as strong or dilute sulphuric acid is employed, the dehydration of the alkylhydrobenzoinis may take place in various ways.—H. A. Brouwer: The nature of the diamond-bearing conglomerate of Diamantina, Brazil.—P. W. Stuart-Menteath: The tectonic of the Western Pyrenees.—J. Kunstler: A treatment preventive of