

ments which are taking place even now in America are likely to produce far-reaching changes, such as the so-called wired wireless, by which radio trans-

mission is conducted for part of its path by an ordinary wired line. What these developments do, however, must be left for the future to determine.

Third International Congress of the History of Medicine.

THE papers read at this Congress, which was held in London on July 17-22 under the presidency of Dr. Charles Singer, may be classified in four main groups according to their subjects, viz., epidemiology, anatomy, pharmacy, and veterinary medicine. Among the papers on epidemiology special mention may be made of those by Prof. Jeanselme, on bubonic plague in the Middle Ages, in which a relationship between famine and plague was shown; by Dr. Ernest Wickersheimer on the black plague at Strasbourg in 1349, with extracts from a contemporary document; by Miss M. Buer on the decrease of epidemic diseases in the 18th and early 19th centuries, a decrease attributed by her to improvements in agriculture, improvements in house and town planning and the advance in medicine; and an interesting account by Sir William Collins of Sir Edwin Chadwick, the father of English sanitary science. Other papers of epidemiological interest were those of Dr. Torkomian of Constantinople on inoculation against small-pox by the ancient Armenians, of Dr. Belohlavek of Prague on epidemics in Bohemia in the Middle Ages, and of Dr. Neveu of Paris on plague in Tuscany in the fifteenth century.

Perhaps the most interesting contribution to the history of anatomy was the paper of Prof. Wright on Leonardo da Vinci's work on the structure of the heart, in which it was stated that Leonardo was the first to show the exact attachment of the chordæ tendineæ to the cusps of the auriculo-ventricular valves, the first to direct attention to the dilatations of the origins of the aorta and pulmonary valves, the first to note the occasional presence of an inter-auricular foramen or foramen ovale, and the first to describe the moderator band in the right ventricle of the heart. Dr. Donald Campbell made a communication on the significance of the Arabic MSS. of Galen's work on anatomical administration, in which he suggested that the preservation of this work when portions of it were totally lost otherwise indicated that the Muslims did not completely destroy the second library of Alexandria, as is generally supposed. In a paper on the anatomical studies of Descartes in Holland, M. Fosseyeux showed by extracts from contemporary literature that Descartes, who was the grandson and great grandson of medical men, studied anatomy both in the human subject and in animals at Amsterdam, Utrecht, Leyden, and Harlem between the years 1630 and 1638. Other anatomical papers were those by Dr. T. Wilson Parry on the collective evidence of trephination of the human skull in Great Britain during prehistoric times, by Dr. Kathleen Lander on women as anatomists, by Dr. Krumbhaar of Philadelphia on the beginnings of anatomical instruction in the United States, and by Dr. J. D. Comrie on early anatomical instruction in Edinburgh.

In an historical sketch of pharmacy in Great Britain and Ireland, Mr. J. B. Gilmour showed that it was not until the 16th century that any beginning was made with the regulation of the practice of medicine or the sale of drugs, and even down to the 18th century the sale and dispensing of drugs was chiefly in the hands of the physicians and apothecaries. The paper deals successively with the evolution of the pharmacist, the history of pharmacy law, the origin of the Pharmaceutical Society of Great

Britain, pharmaceutical education and science, the protection of professional interests, pharmacy in Ireland, and the history of pharmacopœias and pharmaceutical literature. In his paper on art in the Italian pharmacy of the 15th century Prof. Castiglioni of Trieste stated that at the beginning of the 15th century the practice of medicine was closely associated with that of the apothecary, so that the druggist's shop was often an intellectual centre which served not only as a consulting-room for the doctor but also as a place where books and curiosities were exhibited. Prof. Castiglioni showed a large number of photographs of pharmacy jars from his private collection, illustrating the development of medicine in the 15th century. Mr. C. J. S. Thompson traced the history of "Hiera Picra," a remedy composed mainly of aloes and colocynth, which was first used, according to tradition, in the temples of Æsculapius in Greece and is still sold in the pharmacies of Great Britain and the Continent. M. Buchet contributed a paper on the history of legislation concerning poisons, and M. Fialon described the ancient statutes of the apothecaries of Lyons.

Major-General Sir Frederick Smith gave an interesting description, illustrated by lantern slides, of the position of veterinary anatomy in England during the 16th, 17th, and 18th centuries, in which he emphasised the following points: (1) The comparative absence of information on the subject, in spite of the fact that up to the 15th century practically only the anatomy of animals was studied by students of human medicine. (2) The interest shown by lay writers on a subject in which they were ignorant, but the importance of which in the advancement of veterinary knowledge they fully recognised. These men wrote on the subject and drew on their imagination. (3) The absence of any veterinary school in this country until the end of the 18th century, when one was founded in 1791 with Vial de Sambel as professor. Prof. F. J. Cole of Reading read a paper on Ruini on the anatomy of the horse, a work which, published in 1598, was the first monograph on the anatomy of an animal. Other papers on veterinary medicine were read by Mr. F. E. Bullock on "Mulomedicina Chironis," a compilation of ancient veterinary treatises; by M. H. J. Sevilla on the syndrome of colic in the Greek Hippocratic writings, and by M. Moulé on the history of glanders in Greek and Roman writers.

In addition to the papers on the history of epidemiology, anatomy, pharmacy, and veterinary medicine, communications on various topics of medico-historical interest were read. In a paper entitled "Magistri Salernitani nondum cogniti," Dr. Capparoni of Rome gave an account of a manuscript which he had found in the cathedral of St. Matthew at Salerno, containing the names of thirty-one hitherto unknown medical men from the second half of the tenth to the sixteenth century, most of whom were monks or ecclesiastics of some kind. This discovery confirmed Dr. Capparoni's view that scientific medicine at this period was mainly practised by monks until the papal prohibition in the 12th century to practise medicine outside the cloisters, with the result that the school of Salerno was founded by laymen. In a paper on Dante and Averrhoism in Italy, Prof. Castiglioni discussed the relations of

Dante with medicine. Though opposed to the view that Dante himself was a medical man, the professor stated that the poet studied medicine at Bologna, was closely connected with Alderotti and Pietro d'Albano, two of the most distinguished physicians of that time, was prior of the corporation of physicians and apothecaries, and was given the title of magister in a contemporary document.

Other papers on miscellaneous topics were those by Dr. F. J. Poynton on doctors and the dawn of aerostasia, by Dr. J. D. van Gils of the Hague on the doctors of Molière and Shaw, and by Mme. Panayotatou of Alexandria on hygiene and dancing in ancient Greece. It is proposed to hold the next Congress of the history of medicine at Geneva in 1925.

The Research Association of British Rubber and Tyre Manufacturers.

PROBABLY in no industry is the old ground of knowledge less thoroughly explored and the new unbroken field for useful research so extensive and attractive as in the rubber industry taken as a whole. A hundred years or a little more have passed since the discovery that rubber could be converted into a workable form by solution in suitable solvents or by mechanical kneading, and the process of vulcanisation was discovered eighty years ago. These operations, which are yet applied unaltered in principle and very little different in practical detail, still represent the foundation of rubber manufacture of the present day; compared with them, all the other innovations have been of minor importance. The disadvantages, however, inherent to these fundamental operations are so marked as to cause surprise that so little further advance has been made during the last half-century. It is almost astounding that so large a portion of the effective history of the industry should be found recorded in the remarkable "Personal Narrative" of Thomas Hancock, published in 1857, after his retirement.

If anything further had been needed to emphasise the importance of the rubber industry, particularly that section of it dealing with the production of rubber tyres for various types of vehicles, and the call for its further scientific development, the period between 1914 and 1918 supplied the necessary stress in an unmistakable manner. It was natural, therefore, that members of certain companies interested in the manufacture of rubber goods should decide to take advantage of the assistance offered by Government to found a Research Association of British Rubber and Tyre Manufacturers. An energetic Committee under the chairmanship of Mr. Alexander Johnson saw the Association pass from the embryo stage to a state of healthy and vigorous existence with Mr. B. D. Porritt as director of Research.

On account of the early part of the year 1920 being inopportune for the purchase of premises and equipment, the Research Association first found a temporary home in University College, London, thus enabling a commencement with a preliminary, albeit necessarily restricted, programme of work, more particularly of a purely physical and chemical nature. Later, after careful search and inspection of suitable premises, purchase was completed of two detached houses at 105 and 107 Lansdowne Road, Croydon. These possessed several advantages, and after necessary alterations have been converted into a prepossessing unit. The space between the two houses is now occupied by a substantial connecting building which provides increased accommodation in addition to inter-communication. The frontage of

the site is 120 feet and the depth 206 feet, the latter leaving ample room for future extensions.

The building, which was formally opened by Lord Colwyn on July 26, comprises administrative offices, library, experimental laboratory for the preparation of rubber, incorporation of compounding ingredients and vulcanisation, workshop, mechanical testing laboratory, physical laboratory, chemical laboratories, storage accommodation and caretakers' quarters. All the necessary heavy experimental plant is contained in the basement of the inter-communicating building, and one of the two original houses has been kept entirely free from running machinery in order to permit the use of delicate instruments without risk of disturbance from vibration.

Those responsible for the founding of this Association have realised that the importance of research to industry lies not so much in the possibility of very occasional discoveries of a revolutionary nature as in the sure benefits which are the abundant fruit yielded by the application of science to the improvement of existing methods. The functions of the Association, while not excluding the study of fundamental problems, include more prosaic considerations such as improvement in the control of manufacturing operations and the testing of raw materials and final products. In such directions there is indeed urgent need for work, such vital matters as the reasons for the use and selection of various necessary "compounding ingredients" and the methods adopted for the production of vulcanised rubber possessing special physical properties, *e.g.* resistance to cutting or abrasion, resilience, toughness or even hardness, being based on almost entirely empirical grounds, often of the least desirable type.

Whatever requirement may have to be left unsatisfied in such an Association as this, it should be able to anticipate with the utmost confidence an abundant and unceasing supply of problems for investigation.

D. F. T.

University and Educational Intelligence.

PROSPECTUSES of Universities and Colleges for 1922-23 are beginning to appear. Leeds University publishes an extensive programme of evening courses (advanced) in engineering, dyeing, textile and leather industries, and geology, and afternoon courses in coal-mining. During each of five evenings of the week from five to nine classes will be held. The faculty of engineering of the University of Bristol announces additional vacation courses to be held in 1923. University College, Exeter, is establishing new courses, intermediate and final, in horticulture and in agriculture, the final course in agriculture being at the Seale-Hayne Agricultural College, Newton Abbot.

SECONDARY education in the United States is, as every one knows, conducted chiefly in public (that is to say, in State) schools. But the part of the field occupied by the private high schools and academies is not inconsiderable. Advance sheets from the biennial survey of education in the United States, 1918-20 (Bulletin, 1922, No. 9 of the Bureau of Education), show that in 1919-20 there were 2093 of these institutions, attended by 184,153 secondary students and, in addition, 250,000 elementary pupils. A remarkable growth occurred between 1905 and 1920. During this period the number of their secondary students increased by 72 per cent. Nearly 75 per cent. of the institutions are under denominational control; of these 60 per cent. are Roman Catholic, and the following analysis shows that to the Roman Catholic schools is chiefly attributable the above-