

The Harrison Memorial.

UNVEILING AT THE CHEMICAL SOCIETY.

WHEN, casting aside the shreds of national honour, the Germans initiated the use of chemical poisons on April 22, 1915, they added yet another phase to the invisible struggle which accompanies every modern war. In this phase of the late war, involving the chemical laboratories and industries of the combatant nations, the late Lieut.-Col. E. F. Harrison was destined to play a notable part.

Leaving a busy chemical consulting and analytical practice, he succeeded, in May 1915, despite his age, in enlisting in an infantry battalion. On account of his chemical knowledge, he was soon transferred to the Royal Engineers, and took part in the early work of the Anti-Gas Department, created to provide troops in the field with protection against the new chemical weapon. He quickly received a lieutenant's commission and thereafter rose in rank as his duties increased in importance and responsibility; by the end of 1917 he was head of the Anti-Gas Department and in charge not only of the manufacture of respirators, but also of the incessant research necessary to perfect the respirator and render it impervious to any new chemical substance the enemy might be expected to use. At this time the Anti-Gas Department was united with the Chemical Warfare Department, under the Ministry of Munitions, and Harrison was appointed Deputy Controller of the combined organisation. Shortly before his death on November 4, 1918, he became Controller of the Department.

It has been said that Harrison was one of the discoveries of the war; the discovery was a providential one for this and other countries. It revealed a man of intense, incessant energy and determination, of exceptional organising power; it brought forward a chemist of foresight prepared to face the gravest responsibilities. To this man was largely due the fact that our troops, once the initial surprise was past, were furnished with adequate and timely supplies of the most efficient respirator

employed by any nation during the Great War. No more fitting verbal tribute could be paid than that of F. H. Carr in his Harrison Memorial Lecture (*Pharmaceutical Journal*, 1919, p. 93), to which the reader is referred for a detailed account of Harrison's life and work.

Energy and devotion were the cause of his death. Attacked by influenza and weakened by his exertions, he refused to leave his work. Those who attempted to dissuade him—the present writer was one—were told that he was going to see his job through; by a week he failed to do so. But his death did not occur until the country was assured of victory and he himself had realised the final success of his labours. He gave his life to his country as truly as did those who died on the field of battle.

To Harrison and other fellows of the Chemical Society who gave their lives during the war, a memorial in the rooms of the society was unveiled by the Earl of Crawford and Balcarres on Thursday, November 16. As chairman of the Harrison Memorial Fund, Sir George Beilby stated that a sum amounting, with accrued interest, to some 1640*l.* had been collected from Col. Harrison's colleagues and friends. A portion of this sum had been utilised in erecting the upper part of the memorial; the Chemical Society cooperated in adding the lower portion, on which are inscribed the names of those Fellows who gave their lives during the war. The remainder of the fund had been conveyed in trust to the Chemical Society; the interest upon the fund



FIG. 1.—The Harrison Memorial, Chemical Society, Burlington House.

will be used in providing, every three years, a prize of approximately 150*l.* to the chemist—man or woman—not more than thirty years of age, who, during the previous five years, shall have carried out the most meritorious original investigations in chemistry. The prize will be awarded upon the recommendation of a committee composed of the presidents, for the time being, of the Chemical Society, Institute of Chemistry, Society of Chemical Industry, and the Pharmaceutical Society; it will be given, provided that a sufficiently

distinguished candidate is available, for research in any branch of chemistry, pure or applied, and no restrictions will be placed upon the manner in which the prize is utilised by the recipient. The donors of the fund, explained Sir George Beilby, hope that the prize will do something to stimulate young research chemists to greater effort, form a not unworthy tribute to the memory of Col. Harrison, and serve to remind the chemists of the future how their science was employed in the cause of right and humanity.

Sir James Walker, president of the Chemical Society, in a brief speech accepted the fund and trust deeds, and the custody of the permanent memorial. Before unveiling the latter, Earl Crawford referred with sympathetic insight to the work of Col. Harrison during the war, and to the loss suffered by the country in the death of Harrison and the remaining Fellows of the Society whose

names are inscribed upon the memorial. He expressed the hope and belief that the prize fund would fulfil the desire of the donors to encourage the younger chemists in research, a purpose which Harrison had ever in his thoughts. The unveiling of the memorial was marked by the sounding of the "Last Post"; after a minute's silence the "Reveille" concluded a simple and dignified ceremony.

The permanent memorial (Fig. 1) is the work of Mr. Ernest Gillick; it is of singular beauty. The bronze medallion bears an appropriate representation of a trench scene at the moment of a gas alarm. It is set upon marble, the natural colour of which harmonises with the bronze. In the rooms of the Chemical Society the memorial finds a most fitting home, and it is satisfactory to know that, should the Society change its quarters, it will be possible to transfer the memorial to the new rooms. C. R. Y.

Long Distance Telephony.

MR. F. GILL, the "European Engineer-in-Chief" of the Western Electric Co., chose the subject of telephony over long distances, with special reference to the international problems of communication between the various countries of Europe, in his presidential address to the Institution of Electrical Engineers delivered on November 2. Incidentally he pointed out that the passive attitude of a Government, content to satisfy the public demand only, would never lead to an efficient service. The success of the "Bell-owned" companies in the United States is due to an intensive educational campaign coupled with construction well in advance of the demand. In the United States the number of telephone stations has been increased ninefold during the last twenty years, and there is now one telephone station to every 7.7 persons. In Mr. Gill's opinion a Government Department should earn something more than merely sufficient to pay its way. If this were done there would be no difficulty in getting the capital necessary to extend the business. With a large staff it is disastrous that the idea should prevail that profit-earning is of no account.

Mr. Gill stated that the "carrier" system has greatly increased the maximum load possible on given lines. In this system carrier waves of frequency between 4000 and 27,000 per second are used, and by means of "wave filters" they can be separated into different circuits without difficulty.

On the New York-San Francisco line there are four conductors which form simultaneously two physical, one phantom, and four earthed telephone circuits. They also form part of a varying number of telegraph circuits ranging from six to twenty. The introduction of the thermionic repeater in 1914 gave a great impetus to telephonic development. As many as 23 of these repeaters have been used in tandem without seriously distorting speech. Mr. Gill gave data to prove that the telephone system of the United States is in advance of European systems.

In conclusion Mr. Gill discussed the problem of improving the through telephonic system of Europe. In Europe there is no organisation to co-ordinate the forty local systems. If a line were constructed between London and Christiania it would probably traverse six intermediate countries. The direct distance between London and Bagdad is about the same as that between New York and San Francisco, between which daily conversations take place. Under present conditions through telephony in Europe can be of little value. Mr. Gill then suggested alternative schemes for international control and urged that every endeavour should be made to secure it. The telephone authorities of Europe should hold a conference to try to find a solution, for to be interested jointly in a flourishing telephone undertaking would increase goodwill among nations.

Low Temperature Carbonisation.¹

By Prof. JOHN W. COBB.

THE report of the Fuel Research Board for the years 1920-21 on "Low Temperature Carbonisation" has been awaited with interest in many quarters because the subject has been much debated, and it was known that experiments were being carried out by Sir George Beilby and his staff at the Greenwich experimental station. On one hand, the process has been spoken of in terms of unrestricted enthusiasm and optimism as providing a simple and general solution of the smoke problem through the smokeless solid fuel which was to be produced, and as yielding large supplies of liquid fuel for naval and other purposes through its promised high yields of tar. On the other hand, critics of the process have indicated some shortcomings. The gas yield is small, and the process of carbonisation as carried on at higher temperatures in the gasworks is paid for

mainly by the large volume of gas which can carry a much higher price per thermal unit than a solid fuel because each thermal unit is worth so much more in use. Again, one of the principal by-products of carbonisation—ammonia—can be obtained only in comparatively small quantity by low temperature carbonisation, and the tars are much less valuable by current standards than those produced at higher temperatures because they lack aromatic constituents and are deficient in some other respects.

Sir George Beilby, who signs this report, has approached the investigation in an entirely sympathetic spirit. As a matter of fact, he was busy with the subject before it excited the amount of interest which is now bestowed upon it, and in this report he has detailed not only the results of experiments carried out by the Fuel Research Board, but reviewed the work of other investigators.

In a preliminary review of the situation, Sir George Beilby points out that broadly speaking this country

¹ Department of Scientific and Industrial Research. Report of the Fuel Research Board for the Years 1920, 1921. Second Section: Low Temperature Carbonisation. Pp. iv+73+8 plates. (London: H.M. Stationery Office, 1922.) 2s. net.