

cylinder of oxygen arriving at a rescue station sampled and analysed. It advises, for use *underground*, only such cylinders as contain 98 per cent. or more, and for surface work (practices, etc.) such as contain more than 97 per cent. The danger of hydrogen in electrolytically prepared oxygen is also pointed out.

The Committee recommends the prohibition of the use of any breathing apparatus in mines under the Coal Mines Act unless the apparatus be "of a type for the time being approved by the Secretary of State." The necessity for this is very evident to anyone who has had practical knowledge of the very serious condition in which some apparatus is supplied, and for which the makers are entirely responsible. The Committee also proposes that an inspector should be appointed "to



FIG. 6.—Aerophor apparatus, back view.

advise the Chief Inspector of Mines as to the safety of these apparatus," and to see that the regulations regarding rescue operations are properly carried out.

Many other interesting and valuable recommendations are made; the dangers of existing apparatus and means for overcoming these are pointed out, and the training of rescue brigades, methods of signalling, etc., described. The report is most instructive and interesting, and will well repay time spent in its perusal.

In most districts the rescue teams are composed of volunteers from each pit—men who are willing to risk their lives in the work of rescue or recovery in the event of any form of mine disaster. Work in our coal mines at the best is always attended

with a certain amount of risk to life and limb. After an explosion or fire this risk is increased considerably. It is only just, therefore, that the construction of the apparatus itself should be such as to involve the least possible risk to the wearer, and that claims made by makers for their apparatus should be capable of complete justification.

The work of the Mine Rescue Apparatus Research Committee and the publication of its reports will be one of the best means of realising this aim.

J. I. G.

#### INTERCHANGE OF UNIVERSITY STUDENTS.

WHEN in March last Mr. Balfour proposed that a mission consisting of representatives of the universities of the United Kingdom should be sent to the United States, he did the cause of university education notable service. To the members of the conference convened at the Foreign Office, Mr. Balfour described, on the basis of his own recent experience, the influence which university opinion carries in all matters of policy, whether domestic or international, of our great Ally. He then laid emphasis upon the need for the creation by British universities of opportunities of corporate expression. He advocated the establishment of a representative body which would be able to speak for the universities as a whole.

To the conference which had already been called for the next day by the Universities Bureau of the British Empire was remitted the responsibility of selecting a group of men and women to visit the United States. The "Balfour Mission" reached the far side of the Atlantic some two or three weeks ago. Accounts of its proceedings and of the distinguished welcome which the delegates are receiving in all the chief universities of the American continent on both sides of the border have appeared in the papers from time to time.

Acting upon Mr. Balfour's suggestion that our universities should find means of giving expression to their collective views, a Standing Committee, consisting of all their executive heads—vice-chancellors or principals, as the case may be—was appointed by the conference for purposes of consultation and mutual counsel. Whether in constitution this committee remains as at present, or whether in the future some other and more direct method of selecting its members be devised, the universities have, through the delegates whom they sent to the conference, agreed to the institution of "a Senate of the Senates," to use a phrase adopted by Mr. Balfour. They have taken a step which is likely to have a profoundly important effect upon their usefulness and prestige.

One of the main objects of the mission is to promote interchange of students. In the Middle Ages a student was free to migrate from one university to another in search of the most eminent teachers of the faculty of his choice. Like his professors, who had by graduation secured their *jus ubique docendi*, he was matriculated in the



universities of the world. The members of the mission will make themselves acquainted with the resources of the universities of America, and reciprocally they will endeavour to make known in America the opportunities for advanced study and research which our own universities afford. The eighteenth-century conception of a university as a glorified public school is to give way to the earlier and sounder view that it is a centre for the creation of knowledge. Made famous by great teachers, one university is especially distinguished in this branch of learning, another in that. A lad is not "finished" as soon as he has been admitted to a degree, whether in Manchester or in Manitoba. He is but fitted to begin to prepare himself to be a leader in his chosen subject. It is scarcely necessary to hint at the encouragement in teaching and stimulus to effort which an enthusiastic worker would derive from the knowledge that it rests with him to lay the foundations of a school which will not merely, as at present, bring undergraduates in increasing numbers to the university which he serves, but will also attract to its walls students from other universities both shortly before and immediately after graduation.

Nor is it necessary to point out that if such opportunities for higher work are to be developed, the universities will need to be supported more generously than they are at present. It is absolutely necessary that departments which show capacity for specialised work should not be limited, or even hampered, by lack of funds. The conception of a university as a place in which all subjects are taught and the claims of all departments equally balanced must give way to the conception that, whereas in every university students are equipped with such elements of education as fit them to tackle their chosen subject with success, each must endeavour to gain a reputation for very special distinction in the subjects which its local situation marks out as its own peculiarly appropriate sphere.

On the other side of the Atlantic migration for purposes of advanced study is already an established habit. Canadian graduates pass to the universities of the United States, and before the war graduates of the United States migrated in large numbers to Europe with the view of studying for two or three years in countries in which the methods of teaching and research, and even the language, are different from their own. A degree which justifies the prefix "Dr." is regarded in America as an indispensable qualification for a higher teaching office. It is looked upon as the recognised symbol of successful post-graduate work. Its title is of little moment. We may not like "Ph.D." The origin of this so-called degree is obscure and almost certainly disreputable, but it has an accepted value. An American who has studied for two or three years after graduation and has done some original work asks for this distinctive label. There is little doubt that British universities will have to concede a similar recognition to their advanced students, whether native or from overseas. Agreement upon

the title of the degree is, however, but a detail in the great movement which is now on foot for the fostering of mature and strenuous work. It is obvious that the ablest students must be encouraged to persevere with their studies until they are qualified to undertake work which will make for the advancement of knowledge and its application to human activities of every kind.

If the universities are to be enabled to produce such fruit, their growth needs to be stimulated and strengthened both in material and in *personnel*. Financially they must be placed in a position to keep their equipment in a condition of excellence somewhat in advance of the calls which the moment makes upon them. Their teachers must be encouraged by a sense of opportunity. In whatever part of the kingdom their university home may be, it must be open to them to do something more than earn their pay—not that their pay is as a rule more than adequate remuneration for the routine instruction which they are called upon to give. In the higher work, which naturally interests them most, it is not sufficient that they should have the satisfaction of securing so-and-so many "passed with honours," comforting as such success is and always should be. Nothing would contribute more directly to vitalise their own studies and to stimulate to research than the presence in their classrooms and laboratories of students attracted thither from other universities and especially from universities overseas.

LT.-COL. E. F. HARRISON, R.E., C.M.G.

THE death of Col. Harrison on November 4 deprives the nation of an officer who rendered most magnificent service to the British Army and the Armies of our Allies. The loss is deeply deplored now, closing as it does, at the early period of forty-seven years, a career that gave sure promise of continued high achievement in the coming days of peace. Had it occurred earlier it would have been a calamity to the cause of the Allies that one shrinks from contemplating. But, happily, his great war task was accomplished; his true worth was acknowledged; he had been appointed Controller of Chemical Warfare, and in a few days it would have been known that the quiet, inconspicuous consulting chemist had passed by the force of merit through all the grades from private to Brigadier-General in the Army. Many have helped in the task suddenly imposed upon the Allies by the perfidy of the enemy in inaugurating gas warfare, but it may safely be said that no name should stand out more conspicuously for gratitude and renown than that of Col. Harrison.

Edward Frank Harrison was educated at the United Westminster Schools, and in 1884 was apprenticed to a pharmaceutical chemist in North London. In 1890 he gained the Bell scholarship of the Pharmaceutical Society, and proceeded to its school in Bloomsbury Square. There he was awarded medals and certificates in chemistry, botany, and materia medica, and after passing the