

long. It was found necessary, on some of the days, to have all the eight groups representing sections and subsections in operation simultaneously, and thus members had to make an invidious choice between the various groups at which papers of rival interest were being presented. In the circumstances, it was difficult to suggest a remedy for this state of affairs other than the expedient of cutting down the time allowance for individual papers so far as to detract seriously from their interest. The general maximum time allowance for a paper was twenty minutes, but in the case of certain communications, which might be regarded as lectures to individual sections, this allowance was increased up to one hour. Such sectional lectures were: Prof. J. Pierpont: Non-Euclidean Geometry from a Non-Projective Standpoint (Section II.); Prof. V. Bjerknes: Solved and Unsolved Problems in Dynamical Meteorology (Section III, (b)); Prof. J. B. Pomey: Sur les nouveaux appareils multiplex de télégraphie (Section IV. (a)); Prof. G. Puppini: Principe de réciprocité dans les sciences appliquées (Section IV. (a)); Sir Charles Parsons: Physics and Engineering (Section IV. (a)); Prof. J. G. Gray: Gyroscopic Stabilisers (Section IV.); General Charbonnier: Sur le balistique extérieur (Section IV. (b)); Prof. A. L. Bowley: Use of Mathematics in Economic, Social, and Public Statistics (Section V.).

The numbers of papers presented to the various sections were: Section I. (Algebra, Theory of Numbers, Analysis), 56 papers; Section II. (Geometry), 40 papers; Section III. (a) (Mechanics, Mathematical Physics), and III. (b) (Astronomy, Geophysics), together, 55 papers; Section IV. (a) (Electrical, Mechanical, Civil and Mining Engineering), and IV. (b) (Aeronautics, Naval Architecture, Bal-

listics, Radiotelegraphy), together 47 papers; Section V. (Statistics, Actuarial Science, Economics), 24 papers; Section VI. (History, Philosophy, Didactics), 13 papers.

The classification of papers into the various sections, a matter always arbitrary to a certain degree, was left almost entirely to the judgment of the authors themselves, who would naturally seek the most sympathetic audience. It will be seen that, as usual, the Section on Analysis had more communications than any other, being closely followed by the combined Physics and Astronomy Section. Section IV., embracing the various branches of engineering science, was a new development for this Congress. Although the number of papers in Section V. was not large, yet the meetings of this section were very successful, and recognition is due to the activity of Mr. Robert Henderson, of the Equitable Life Assurance Company of New York, in helping to stimulate American interest in this section.

In order to increase the interest of the meetings and to facilitate discussion, the organising committee had abstracts of the papers printed and ready for distribution among the members on registration. These abstracts were supplied by the authors. This was a very successful measure so far as it went, but many authors failed to send in abstracts although asked to do so in the preliminary circular. If funds permitted at future congresses, it would be a good plan to urge upon authors more strongly the desirability of furnishing such abstracts for printing and distribution during the meeting.

The place of meeting of the Congress which is due to be held in 1928 is not yet fixed. It is to be hoped that the political restrictions on the membership of the congresses will be removed before that date.

Miners' Flame Safety Lamp Gauzes.¹

ALTHOUGH a period of 109 years has elapsed since Sir Humphry Davy gave to the world the first wire-gauze safety lamp, the mesh of the gauzes in use to-day is identical with that adopted in the original Davy lamp. In the near future, however, it is highly probable, as a result of the valuable researches conducted under the auspices of the Miners' Lamp Committee, that safety lamp gauzes will have 400 apertures per square inch (20 mesh) instead of 784 apertures per square inch (28 mesh).

These researches showed that two 20-mesh gauzes of 27 S.W.G. wire could be regarded as safe, and that this type of gauze, by affording increased ventilation to a lamp fitted with it, materially increased the candle power that could be obtained from it. Acting on the advice of this Committee, the Secretary for Mines arranged with the co-operation of leading manufacturers of flame safety lamps for comparative tests to be carried out at the Mines Department Lamp Testing Station of (1) lamp fitted with the present standard gauzes (28 mesh), and (2) similar lamps fitted with gauzes having 20 meshes to the linear inch. By the direction of the Secretary of Mines, the Superintendent Testing Officer's report on these tests has now been printed.

The tests carried out consisted in the main of (1) photometric tests; (2) tests in a still explosive atmosphere, and (3) gallery tests in a current of the most explosive mixture of petroleum, ether, and air.

The photometric tests which were made by a Bunsen disc photometer against a one candle-power standard pentane lamp yielded the following results:

AVERAGE CANDLE-POWER GIVEN BY VARIOUS TYPES OF FLAME SAFETY LAMPS.

Type of Lamp.	Candle-power with 28 mesh Double Gauzes.	Candle-power with 20 mesh Double Gauzes.	Average Increase in Candle-power.
Marsaut	0.62	0.82	Per cent. 32.3
Marsaut with short inner metal chimney	0.70	1.01	28.0
Marsaut deflector . . .	0.71	0.85	19.7
Marsaut deflector with short metal chimney . .	0.77	0.94	22.1
Marsaut with inner metal chimney and inner glass Bottom feed with bottom air admission ring . .	0.89	1.10	12.2
Air feed from middle ring to below the wick . . .	1.05	1.20	14.3
	1.80	1.85	3.0

From statistics published in the Final Report of the Miners' Lamp Committee it would appear that in the event of the new gauzes being adopted, approximately 402,000 Marsaut type lamps would obtain the benefit of an average increase of 32.3 per cent. in candle power, whilst 182,000 lamps of other types would benefit by an average increase of 16.1 per cent. in candle-power.

Although the Safety Tests were of a most severe character, none of the lamps submitted failed to pass the test satisfactorily, and Capt. Platt, the Superintendent Testing Officer, is of the opinion that the factor of safety under test conditions is sufficiently great with the 20-mesh gauze.

¹ Report on Tests of Miners' Flame Safety Lamps fitted with Open Mesh Gauzes, carried out at the Mines Department Lamp Testing Station, Eskmeals, by Capt. C. B. M. Platt. (London: H.M. Stationery Office.) 3d.