Mean composition,

Carbon	93 to 95 per cent.
Hydrogen	2 to 4 per cent.
Oxygen and nitrogen	3 to 5 per cent.

(2) Burns with slightly luminous, short flame and little smoke; does not coke and yields from 7 to 12 per cent. of volatile matter.

Fuel ratio, 7 to 12.

Calorific value generally 8,330 to 8,600 calories, or, 15,000 to 15,500 B.T.U.

Mean composition,

Carbon	90—93
Hydrogen	4—4.5
O and N	3—5.5

Class B.

(1))Burns with short, luminous flame and yields 12 to 15 per cent. volatile matter; does not readily coke. Fuel ratio 4 to 7.

Calorific value generally 8,300 to 8,900 calories, 15,200 to 16,000 B.T.U.

Mean composition,

Carbon	80 to 90 per cent.
Hydrogen	4.5 to 5 per cent.
O and N	5.5 to 12 per cent.

(2) Burns with luminous flame and yields from 12 to 26 per cent. volatile matter; generally cokes.

Fuel ratio 1.2 to 7.

Calorific value 7,700 to 8,800 calories, 14,000 to 16,000 B.T.U.

Mean composition,

Carbon	75 to 90 per cent.
Hydrogen	4.5 to 6 per cent.
O and N	6 to 15 per cent.

(3) Burns freely with long flame; withstands weathering but fractures readily and occasionally has moisture content up to 6 per cent.; volatile matter up to 35 per cent.; makes porous, tender coke.

$$\frac{\text{Fixed carbon} + \frac{1}{2}\text{ volatile}}{\text{Hygroscopic moisture} + \frac{1}{2}\text{ volatile}} = 2.5 \text{ to } 3.3.$$

Calorific value 6,600 to 7,800 calories, 12,000 to 14,000 B.T.U.

Mean composition,

Carbon	70 to 80 per cent.
Hydrogen	4.5 to 3 per cent.
O and N	20 to 30

Class C.

Burns with long, smoky flame; yields from 30 to 40 per cent. volatile matter on distillation, leaving very porous coke. Fracture generally resinous.

Calorific value 6,600 to 8,800 calories, 12,000 to 16,000 B.T.U.

Class D.

Contains generally over 6 per cent. of moisture; disintegrates on drying; streak brown or yellow; cleavage indistinct.

(1) Moisture in fresh-mined, commercial output up to 20 per cent. Fracture generally conchoidal.

Drying-cracks irregular, curved lines.

Colour generally lustrous black, occasionally brown.

$$\frac{\text{Fixed carbon} + \frac{1}{2}\text{ Volatile}}{\text{Hygroscopic moisture} + \frac{1}{2}\text{ Volatile}} = 1.8 \text{ to } 2.5.$$

Calorific value 5,500 to 7,200 calories, or 10,000 to 13,000 B.T.U.

Average composition,

Carbon	60 to 75
Hydrogen	6 to 6.5
O and N	20 to 30

(2) Moisture in commercial output over 20 per cent. Fracture generally earthy and dull.

Drying cracks generally separate along bedding planes and often show fibrous (woody) structure.

Colour generally brown, sometimes black.

Calorific value 4,000 to 6,000 calories, or 7,000 to 11,000 B.T.U.

Average composition,

Carbon	45 to 65
Hydrogen	6 to 6.8
O and N	30 to 45

The reports should include not only a statement of the location and distribution of the various deposits (if possible, illustrated by means of maps and sections), but should deal with such chemical and physical qualities as are determinative of their technical utilization.

For the rest, every writer is free to act as he thinks fit, though it is very desirable that his statement should not exceed the dimension of — quarto pages of print.

The choice of language is limited to French, German and English.

It is the intention that these reports, together with the chapter prepared by the committee, shall be published before the end of 1912, so that every one interested may make use of them for all purposes, and particularly for the discussion at the meeting of Congress. Under these circumstances it is specially desirable that the separate reports reach us before January 1, 1912.

We, therefore, address ourselves to you, in the hope that you will contribute to the investigations referred to, by drawing up a comprehensive survey of the occurrences of coal in ________________

We feel sure that the plan we have presented will gain your interest, and that you will not refuse us the benefit of your valued co-operation, and we beg you to rest assured of our gratitude for the assistance that we feel confident you will give us.

All communications on this subject should be addressed to the General Secretary of the Twelfth Congress, R. W. Brock, Director of the Geological Survey, Ottawa, Canada.

G. G. S. LINDSEY, Convener.
F. D. ADAMS,
R. W. BROCK,
D. B. DOWLING,
CHAS. FERGIS,
JAS. MCEVOY,
J. B. PORTER,

Committee on Coal Resources of the World, appointed by the Executive Committee of the International Geological Congress, Twelfth Session.

The Quest for an Ideal Stope Drill

Mr. E. M. Weston, A.S.M.E., after giving the reasons for the failure of various stope drills in the Rand competition, commented as follows on the deductions made by the Stope Drill Committee in their report: (1) "Hammer drills are not at present suitable for the general stoping conditions which obtain on these fields; that is to say, for down holes the reciprocating drill has proved its superiority." One must remember that as far as the hammer drill itself is concerned there are a very large number of one type of hamm-