variable volume-equivalents, furnishes the basis of calculation. Accordingly, our tree of chemical knowledge splits up into two main branches, to which we might apply the terms Pondo-chemistry and Impondo-chemistry. I beg to remark, in conclusion, that having resolved upon a minute and thorough investigation of this, no doubt very intricate, subject, I was surprised to find, after examining all the principal sources of information, that a complete and trust-worthy catalogue of the leading physical properties of matter was still a desideratum, but more particularly that the determination of the specific gravities of substances in the liquid and solid state had been much neglected. With the most ample resources at my disposal, I have at length succeeded in composing a catalogue of these latter. The number of *bona fide* cases entered therein amounts to about 1800; but this number is after all a mere fraction, in comparison with the hundreds of thousands of non-determined bodies. I may also state, that should a systematic revision of this most needful portion of our science be resolved upon, I shall feel great pleasure in presenting my catalogue, such as it is, to the parties entrusted with its execution.

6. On the Theory of Isomeric Compounds. By Dr A. Crum Brown.

In this paper only those bodies are considered which are "absolutely isomeric," that is, which have not only the same composition per cent. and the same molecular weight, but also the same constitutional formula. As the constitutional formula of comparatively few substances is known, this class is as yet a small one.

The following pairs of substances are probably absolutely isomeric.

1. The alcohol radicals and the hydrides, as methyl gas and the hydride of ethyl.
2. Chloride of ethyl and the product of the action of chlorine on hydride of ethyl.
3. Chloride of vinyl and chloracetene.
4. Fumaric and maleic acids.

5. Bromomaleic and isobromomaleic acids.
6. The two bibromosuccinic acids.
7. The two varieties of malic acid.
8. The two varieties of aspartic acid.
9. Two of the varieties of tartaric acid.
10. Two of the dehydrogenates of pyrotartaric acid.
11. Two of the three bibromopyrotartaric acids.

The following are shown to be probably *metameric*,—

1. The compounds of ethylene and of ethylidene.
2. The alcohols proper and the hydrates of the olefines.
3. Lactic and paralactic acids.

The next point considered is the influence which the existence of such pairs of substances has on the theory of atomicity, and particularly on the question whether all the equivalents of a multivalent atom are of the same chemical nature.

The consideration of absolutely isomeric bodies leads to the conclusion that there is a difference among the equivalents of the same atom, and that this difference is not entirely due to the structure of the molecule of which the atom forms a part. It is not, however, possible as yet to apply this principle to the explanation of particular cases.

The remarks of Professor Kekulé on the isomerism of the dehydrogenates of succinic and of pyrotartaric acids, and those of Professor Butlerow on the isomerism of methyl gas and hydride of ethyl, are then considered in detail, and Butlerow's hypothesis compared with the views of Kolbe as to the chemical nature of carbon.