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CuCl₂.2CuO than to any other of the __ght or nine that have been described by previous investigators."

In the absence of any clearly defined principle of selection much must of necessity be left to individual taste, and as there is wide room for difference of opinion, flat contradictions are not uncommon in the literature of the abject. In Dammer's "Handbuch der anorganischen Chemie," for instance, after detailed descriptions of seven compounds of lead chloride with ammonium chloride, comes the announcement that "according to Randall, none of André's compounds exist"; hile with reference to Cross and Suguira's basic oxychlorides of lead, Pb12Cl21O4, Pb8Cl16O, and Pb4Cl7O, the editor himself ventures on the criticism, "These were obviously impurc, and probably badly analysed." P-t neither Andr nor Randall, Cross nor Dammer adduces Inclusive Mere complexity in the evalence in sup as of his contentions. formula is in itse o bar to the genuineness of a chemical compound -Mr Allan's experiments, referred to below, establish beyond question the existence of a basic nitrate of bismuth with the formula BigligeNst .

Even in the case of so important an article of commerce as white lead, it is still wholly uncertain whether the different varieties are to be regarded as distinct chemical species, as mixtures of a few individuals, or as more or less saturated (solid) solutions of carbon dioxide in lead oxide or in some basic carbonate. It is consequently hardly surprising that success in the manufacture of such substances is conditioned by strict adherence to empirical recipes, any deviation from which may seriously affect the properties—and the value—of the product.

Application of the Phase Rule.

Difficult though it might appear to find any rational basis of classification for these precipitates, there is one large group—viz., all cases where equilibrium is attained between precipitate and motherliquor—for which the problem is completely solved by two theorems due to Professor Willard Gibbs, which form part of what is commonly known as his "Phase Rule."

These theorems may be stated as follows:—Assuming that the system has arrived at equilibrium, at "arbitrary" temperature and pressure, (i) The system can in general consist of no more phases than it has components, (ii) A solution can form one of a group of n phases (n is the number of the components) only if it has attained a certain composition dependent on the temperature and pressure, and on the chemical and physical nature of the other phases present.

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