atom of chlorine. This, expressed in volts and referred to a single molecule is 13.7 volts, in excellent agreement with the experimentally determined value of 14.0 volts.

Our experiments accordingly afford a surprising confirmation of the theories of Born, Fajans and others, showing that their deductions on the magnitude of the electron affinities of the halogens from the grating energies of their crystalline salts is well founded. Were it not for the electron affinity of chlorine, hydrogen chloride would ionize at about 18.8 volts, far greater than the observed value. Hence, our value of 14.0 volts leads to an experimental determination of the electron affinity of chlorine expressed by the relation $E_{Cl} = 18.8 - 14.0 = 4.8$ volts.

Hydrogen chloride is known to possess no characteristic visible or ultra-violet spectrum, in agreement with natural consequence of the above observed peculiar type of ionization and the observed non-existence of a resonance potential. Any radiation emitted which is characteristic of hydrogen chloride would be produced by the union of hydrogen ion and chlorine ion, giving rise to a quantum of $h\nu = eV$, where V is 14.0 volts. The corresponding wave length in the extreme ultra-violet is $\lambda = 880$Å, radiation which might be observed, although the experimental difficulties would be considerable.

Since positively charged hydrogen atoms are formed on ionization of hydrogen chloride, we might expect that on recombination a portion of these atoms would attach electrons to themselves instead of chlorine ions, thus giving rise to the spectrum of monatomic hydrogen. Hydrogen atoms might combine to form molecules so that some molecular hydrogen is likely produced as a result of electronic impact in hydrochloric acid vapor. A high voltage discharge through hydrogen chloride shows the ordinary spectrum of hydrogen.

It is interesting to note that, as predicted by Haber, the attraction between a hydrogen nucleus and a halogen ion is about the same as the attraction between the hydrogen nucleus and the electron in the neutral hydrogen atom.

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NOTE.

Correction.—In the article entitled "Reactions of β,β'-Dichloro-ethyl sulfide," appearing in the June, 1920, number of THIS JOURNAL, the following corrections should be made: on p. 1221, in the table, the boiling point should read, 222–3° *at 21 mm.*, and the melting point given as 101° should read, 171°; and on p. 1223, in the table, the boiling points should read, respectively, 173–5° *at 21 mm.*, 193–5° *at 22 mm.*, 223–3° *at 21 mm.*, and 170° *at 4 mm.* These errata should also appear in the Summary.

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