the existence of an excitation function. The slope of this line determines the calculated temperature of the chromium arc, which was 4060°K, with a current of 2.4 amperes and a pressure of 7 to 15 cm of mercury.

By multiplying the intensities by the proper values of the excitation factor R, as determined from the excitation curve, we obtain the intensities that would have been observed if the temperature of the arc had been infinite. This excitation correction is applied only to this supermultiplet; and the results are reported in Table III. Since this correction applies only to multiplets having the lowest term a^6D, it cannot be applied to the data on other multiplets here reported.

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Note on the Relative Transition Probabilities for Almost Closed Shells

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Three simplifications are given for calculating the relative transition probabilities of different multiplets from spectroscopic stability. They apply to configurations involving almost closed shells in Russell-Saunders coupling.

THE calculation of the relative transition probabilities of different multiplets in Russell-Saunders coupling from spectroscopic stability[1] can be simplified for electron configurations involving almost closed shells, so that transition probabilities for these configurations may be calculated as easily as those for the configurations containing the electrons missing from the almost closed shells. This simplification for transition probabilities is of the same type as that given by Shortley[2] for the energies. The simplifications apply to calculating the matrix elements of the electric moment in the zero order scheme. The first simplification is to represent the almost closed shells present in the zero order state by the quantum numbers of the electrons missing from these shells. This means that the representations for the states containing almost closed shells are obtained simply by changing the signs of m_l and m_s in the states of the electrons required to complete the shells.

In the second place, it is necessary to write the zero order states of but one of the two electron configurations[3] between which a single electron jumps. For simplicity, one chooses from the LSM_LM_S scheme the configuration with the fewer terms. It is possible to simplify the calculation further by writing only one zero order state for each set of values of m_l. The group of states with this set of values of m_l, obtained for different sets of values of m_s, will give multiples, constant throughout the matrix, of the matrix elements of a single state of the group. Once these numbers are found by inspection of a single group of states with a given set of values of m_l, they may be used as factors for each subsequent set of m_l values, having the same number of sets of m_s values associated with it. These simplifications enable one to alter the states already used previously for partially filled shells, so that the relative transition probabilities for the multiplets of the corresponding almost closed shells may be calculated from them.

[1] E. U. Condon and C. W. Ufford, Phys. Rev. **44**, 740 (1933); C. W. Ufford and F. M. Miller, Phys. Rev. **46**, 283 (1934).

[2] G. H. Shortley, Phys. Rev. **40**, 185 (1932).

[3] L. Goldberg found that this was sufficient for the case where a closed shell was represented by all its electrons. It is also sufficient for the representation considered here.