

The second group of investigations includes those in which attempts have been made to deduce the mechanism of these reactions from investigations on the formal relationship between concentrations and reaction velocity. The abnormal effects of strong acids as well as the effects of the addition of non-electrolytes have long been known and different interpretations of the accelerating effects have been advanced from time to time. In this discussion the summaries presented by Drs. Brönsted and Dawson respectively may be said to have been representative of the difference in point of view.

According to Dawson, the catalytic effect of an acid in aqueous solution may well be ascribed to the sum total of a number of several effects, those due to the acid and its components and of the medium. We may represent the velocity of such a reaction by an equation of the following type :



In this equation $R_1 \dots R_5$ represent the specific activities of the various catalytic reactants. In order to justify such an equation it is necessary to evaluate with accuracy the actual concentrations of the reactants; this is, in the case of electrolytes, no easy matter.

The view advanced by Brönsted and by Bjerrum is based upon the hypothesis of the existence of a quasi-complex or very unstable combination between reactants and catalyst and in mass equilibrium with them, the rate of change of this complex being so slow that the mass equilibrium is always established. This hypothesis leads to a very simple formulation of the reaction velocity :

$$v = kA \cdot B \cdot \frac{f_A f_B}{f_{AB}},$$

where f_A , f_B , f_{AB} are the activity coefficients of the reactants and complex. Whilst the theoretical evaluation of the relationship between the values of the activity coefficients and the concentrations in the case of electrolytes has not yet been completely solved, in spite of the progress achieved by Milner, Debye, and Hückel, yet their experimental determination by a number of methods does not present serious difficulties.

Brönsted and his co-workers have presented a number of investigations in which this formulation of the reaction velocity has been shown to be justified, and in the case of weak acid and salt mixtures the differentiation between primary and secondary kinetic salt effects is clearly exemplified, although the contribution by Harned and Akerlof demonstrated the complexity of the changes introduced when strong salt solutions are employed. The termination of the second day's discussion likewise proved too abrupt for either of the protagonists to make many converts to their views. ERIC K. RIDEAL.

New Buildings at the University of Leeds.

AN important stage in the ambitious but urgently necessary development scheme of the University of Leeds was reached on Tuesday, Oct. 2, when the foundation-stone of the new buildings was laid by Her Grace the Duchess of Devonshire.

After the ceremony, honorary degrees were conferred upon Her Grace The Duchess of Devonshire; Sir Albert Ernest Bain, chairman of the Finance Committee of the University; Mr. Alexander Campbell, chairman of the House and Estates Committee of the University; Mr. Morton Latham, Master of the Clothworkers' Company, 1912-13, and chairman

of the Trusts and General Superintendence Committee of the Company, 1915-28.

The Mining Block is the first of the new buildings to be erected under the scheme for the enlargement of the University, which was designed by Messrs. Lanchester, Lucas, and Lodge, the winners of the architectural competition. The Department stands at the extreme north of the University's site and forms the right wing of the new University front as seen from Woodhouse Lane. Towards the cost of this building the Yorkshire Coal Owners' Association has contributed £25,000, and the Miners' Welfare Committee, £10,000. In accordance with a decision reached by the University authorities after very careful consideration, the front of this building, as well as the other buildings, will be of Portland stone. The back elevation will be of a good local brick with stone dressings. The building is 158 feet long. The general width of the building is 44 feet, but the central portion stands farther back in the form of a single storey glass-roofed shed which is capable of easy modification should the necessity arise owing to the development of the work of the Department. In common with the other buildings in the scheme, the block will have a flat roof, and the height of the parapet above ground level is 46 feet.

The work of construction is in the hands of Messrs. William Airey and Son (Leeds), Ltd. The building is in three main floors with a partial basement. In the basement a gallery is being built the full length of the building, especially designed for carrying out experiments in mine ventilation and similar problems. The ground floor accommodates the main laboratory, machinery room, crushing shed, and subsidiary rooms for stores and other purposes. The first floor houses laboratories for research, gas analysis, photometry, and general assay work, together with rooms for the staff. The second floor is devoted to the lecture theatre, drawing office, museum, and staff rooms.

The building will be heated by hot water, un-concealed panels being used partly in the ceilings and partly on the walls instead of the ordinary type of radiator. The department will be equipped with the most up-to-date apparatus and machinery designed to give students a complete scientific training before entry into this important branch of industry.

Cotton Growing in the Sudan.

THE Sudan Government, in collaboration with the Empire Cotton Growing Corporation, has issued the "Report for 1926-27 of Agricultural Work in the Sudan," in which the programmes of work for the following season are included. The Gezira Research Farm, which was established in 1918 in connexion with the irrigation project, comprises an area of more than 400 acres and possesses well-equipped laboratories. Considerable progress has been made during the year in bringing the farm up-to-date, and the establishment of two more stations where similar problems could be tested under different conditions is now suggested.

Cotton is the principal crop dealt with. In the chemical section the salt content, salt and moisture movement, and nitrate content of soils in relation to plant growth, are under investigation. The beneficial effect of heavy applications of gypsum on the permeability of Gezira soil is most marked, the uptake, penetration, and distribution of water being greatly improved; further work on this important question is in progress.

On the botanical side, the effect of climate and other factors such as time of planting on growth, is being