at least as good a right to kill sick animals for the purpose of investigating the anatomical changes produced by disease, as to slaughter healthy animals for food. And even if in the pursuit of our inquiries we are compelled to inflict pain, we are perfectly right in doing so—provided that truths valuable to humanity are to be learnt by it.

The other respect in which the comparative pathologist has an advantage over the clinicist, lies in the choice of means. It is true that during the last few years much progress has been made in the application of instruments of precision to the investigation even of human diseases; but, after all, there are few of those instruments which are really valuable. In the case of animals it is entirely different. The microscope may be applied to the investigation of tissues unaltered by those changes which speedily follow the extinction of life. The measurement of the temperature of the body, whether with relation to the changes which it undergoes in disease, or to the differences between diseased and healthy parts, can be performed in animals with all the exactitude which such investigations require—in man such exactitude is impossible, because the conditions of observation cannot be controlled. Instruments of precision may be used for the investigation of the changes which disease produces in the mechanical functions of respiration and circulation, which, for reasons already adverted to, could not be applied in the sick room, or in the wards of a hospital—and if they were applied, would yield no satisfactory results.

Again, in animals it is possible to apply the ordinary methods of chemistry to investigate the modifications produced by disease in the process of nutrition; whereas in man this is attended with such insuperable difficulties, that it may be regarded as impossible.

Many other similar examples might be mentioned; but these may serve to explain the way in which we hope to see the new laboratory at Vauxhall brought into relation with the hospital for sick animals. Believing that the study of pathology, like that of physiology, of which it forms part, can only be successfully prosecuted by observing the operation of chemical and physical laws in the living diseased body, and applying the same methods as are used by the chemist and physicist to their investigation, and that the more this principle is acted on, the more rapid and solid will be the progress made, we regard the establishment of the Brown Institution as an important step in the right direction. We should have been still better pleased if it had been a laboratory of physiology, for this ought to have preceded the other. We think it, however, not unlikely that it may, by setting an example of good work, exercise a considerable indirect influence in the promotion of physiological studies in this country.

We must not omit to mention that although the laboratory is intended for research rather than for instruction, it will be open to those who may wish to engage on their own account in scientific inquiries. The only condition imposed by the directors on those who desire admission to the laboratory as workers, is the possession of "previous scientific training." Each worker will have to defray the expenses of material, but no other payment will be required of him. It is understood that the laboratory will be opened on the 1st of January, 1872.

FOREIGN YEAR-BOOKS

Jahrbuch der Erfindungen. Herausgegeben von H. Hirzel und H. Gretschel. Sechster Jahrgang. (Leipzig: Quandt und Händel; London: Williams and Norgate, 1870; pp. 472.)

THE sixth volume of this series fully sustains the high character achieved by its predecessors. Astronomy, physics and meteorology, mechanics and mechanical technology, and chemistry and chemical technology form the subjects of the respective chapters.

We cannot open any part of the work without observing the care with which it is edited. We shall select for special notice the latter part of the chapter on chemistry, which treats of organic compounds, beginning with the following paragraph upon the products of oxidation of paraffin. After describing the recent improvements introduced by Hübner in the preparation of this substance from coal-tar, and in its mode of purification, and noticing its remarkable stability (it being unaffected by concentrated hydrochloric or sulphuric acids, and by the alkalies), the reporters state that there are certain oxidising agents, and especially chromic and nitric acids, which it is unable to resist. Gill and Meusel have studied the action of these reagents on paraffin, and have arrived at the following results:—

"The paraffin in common use fuses at 56° C., and by repeated crystallisation from sulphide of carbon the fusing point may be raised to 60° and upwards. If we boil from 300 to 500 grammes of pure paraffin with 120 grs. of bichromate of potash, and 180 grs. with sulphuric acid diluted with twice its volume of water for three or four days in a glass retort till the chromic acid is completely reduced to chrome-oxide, acetic acid and other acids of the same series, and principally cerotic acid, are formed; the latter being a white solid substance that does not fuse at a lower point than 78° C., and also occurs as a main constituent of bees'-wax. If we boil paraffin continuously with five or six times its volume of nitric acid of 1·3 sp. gr., which has been previously diluted with 1½ times its volume of water, we likewise obtain cerotic acid, in addition to acetic, butyric, valerianic, and succinic acids, and other products" (p. 261).

Passing over a section on "Fats, fatty oils, and allied substances, and the products of their decomposition," in which is a notice of the explosive compounds derived from glycerine, we come to one treating of "Resins," in which there is a notice of Puscher's interesting and highly-practical communication on shellac-ammonia solutions. Perhaps the most valuable of the applications of these solutions is their property of dissolving certain of the aniline colours, as aniline green, aniline yellow, and fuchsine.

The organic non-nitrogenous acids, the carbo-hydrates, alcohol and its products, the albuminous bodies and their allies, newly-discovered organic bases, pigments and pigment-yielding bodies, both natural and artificial, nutritious matters, and disinfectants, are all duly considered. The report on artificial pigments is especially deserving of commendation. It consists of nearly fifty pages full of practical matter, and, taken in conjunction with a previous report that appeared in the second volume (for 1866), forms the most complete summary of this important department of practical chemistry, that, taking its limits into consideration, we are acquainted with.

As usual the volume concludes with a necrology for the past year.