of didymium acetate, which decomposes with separation of a basic salt, the lines thickened on heating.

Thermo-chemical Experiments.

Regnauld (Institut, 1864; Jahresbericht, 1864, p. 99) has shown that on diluting a saturated solution of a salt, as a rule there is an absorption of heat; but in one or two cases he noticed that heat was evolved. The change in colour that takes place on the dilution of saturated solutions of cobalt iodide, cupric chloride, bromide, and acetate is very remarkable. There is every likelihood that this phenomenon is due in each case to the formation of a liquid hydrate. It is impossible of belief that accompanying such a circumstance there should be no measurable development of heat; and the author's experiments have proved that in the above cases, at any rate, the heat disengaged is very considerable—amounting, for instance, on the part of cupric chloride, at least to about 2565 units when 1 gram molecule of the crystalline salt is dissolved in its minimum of water at 16° C. and brought into contact with sufficient to make the addition of 40 Aq. These numbers only roughly approximate to the truth. On diluting a solution of cobalt iodide till the red colour appears, the thermal effect must be much greater, as not only does it register several degrees on an ordinary thermometer, but it may be perceived by the hand.

The conclusions indicated by these results are obvious, but it is beyond the scope of this paper to refer to them. The writer hopes before long to complete his experiments with the view of having them communicated to the Royal Society.

II. "Note on the Intracellular Development of Blood-corpuscles in Mammalia." By Edward Albert Schäfer. Communicated by Dr. Sharpey, V.P.R.S. Received January 22, 1874.

If the subcutaneous connective tissue of the new-born rat* is examined under the microscope in an indifferent fluid, it is found to consist chiefly of an almost homogeneous hyaline ground-substance, which is traversed by a few wavy fibres, and has a considerable number of exceedingly delicate, more or less flattened cells scattered throughout the tissue. The cells here spoken of are of course the connective-tissue corpuscles. They are not much branched as a rule (at any rate their branches do not extend far from the body of the corpuscle), and they are mainly distinguished by the extraordinary amount of vacuolation which they exhibit—by which is meant the formation within the protoplasm of minute clear spherules, less refractive than that substance, and probably, therefore, spaces in it containing a watery fluid. The nuclei, of which there is generally not more than one in each cell, are frequently obscured by the vacuoles, but, when visible, are seen to be round or oval in shape and

* The animal employed was the white rat.

beautifully clear and homogeneous; they commonly contain either one or two nucleoli. It is from these cells that the blood-vessels of the tissue are formed, and within them, red, and perhaps also, white blood-corpuscles become developed.

Of the vacuolated cells above described some possess a distinct reddish tinge, either pretty evenly diffused over the whole corpuscle, or in one or more patches, not distinctly circumscribed, but fading off into the surrounding protoplasm. Others contain either one, two, or a greater number of reddish globules, consisting apparently of hæmoglobin. These vary in size, from minute specks to spherules as large as, or even larger than, the red corpuscles of the adult: in cells which are apparently least developed it is common to find them of various sizes in the same cell; whereas cells which are further advanced in development are not uncommonly crowded with hæmoglobin-globules, tolerably equal in point of size, and differing from the adult corpuscle only in shape. It is important to remark that there is, at no time, an indication of any structure within the globules resembling a nucleus: the nucleus of the cell also appears, up to this point at least, to undergo no change. In fact the formation of the hæmoglobin-globules reminds one rather of a deposit within the cell-substance such as occurs in developing fat-cells, the difference being that in the latter case the deposited globules eventually run together into one drop, whereas in the former they remain distinct as they increase in size and eventually take on the flattened form.

Before, however, this change occurs in the hæmoglobin-globules, the cells containing them become lengthened, and are soon found each to contain a cavity, within which the globules now lie. This cavity is probably formed by a coalescence of the vacuoles of the cell, or, what amounts to the same thing, by the enlargement of one vacuole and the absorption of the rest into it. The cell now comes to resemble a segment of a capillary, but with pointed and closed extremities; it is of an elongated fusiform shape, and consists of a hyaline protoplasmic wall (in which the nucleus is imbedded) enclosing blood-corpuscles in a fluid—blood, in fact.

Two or more such cells may become united at their ends, a communication being established between their cavities; indeed, by aid of branches sent out from the sides a number of cells may unite to form a complete plexus of capillary vessels containing blood, and situate at a considerable distance in the tissue from any vessels in which blood is circulating. Eventually, however, these last become united with the newly developed capillaries, and the blood contained in the latter thus gets into the general circulation.

With regard to the mode of junction of the capillary-forming cells with one another, and with processes from preexisting capillaries, it has seemed to me to occur most commonly, not by a growing together of their extreme points, as commonly described, but rather by an overlapping and coaptation of their fusiform ends, which, at first solid, become subse-

quently hollowed by an extension into them of the cavity of the cell or capillary, the partition between the two being finally absorbed.

The best preparations for demonstrating the facts above described are obtained from the subcutaneous tissue of the upper part of the fore limb, and from that under the skin of the back—regions in which, in the adult rat, this tissue becomes almost entirely converted into fat. Even in the new-born animal some portions have already undergone this change; and it is principally in the neighbourhood of such patches that the hæmapoietic cells are met with. It is only when the young rats are not more than a few days old that the formation of blood-vessels is preceded by a development of blood-corpuscles within the same cells as form the vessels: in such other animals as I have hitherto examined this phenomenon seems to occur only whilst still in the fœtal state. The immature condition in which the young of the rat are brought forth is sufficient to account for this difference.

The observations here recorded as to the intracellular development of blood-corpuscles are in many respects in accordance with what has already been described by others as occurring in the *area vasculosa* and other parts of the embryo chick. It has not, however, appeared desirable to enter into the literature of the subject in this brief notice.

III. "On the Attractions of Magnets and Electric Conductors." By George Gore, F.R.S. Received January 27, 1874.

Being desirous of ascertaining whether, in the case of two parallel wires conveying electric currents, the attractions and repulsions were between the currents themselves or the substances conveying them, and believing this question had not been previously settled, I made the following experiment:—

I passed a powerful voltaic current through the thick copper wire of a large electromagnet, and then divided it equally between two vertical pieces of thin platinum wire of equal diameter and length (about six or seven centimetres), so as to make them equally white-hot, the two wires being attached to two horizontal cross wires of copper.

On approaching the two vertical wires symmetrically towards the vertical face of one pole of the horizontally placed magnet, and at equal distances from it, so that the two downward currents in them might be equally acted upon by the downward and upward portions respectively of the currents which circulated round the magnet-pole, the one was strongly bent towards and the other from the pole, as was, of course, expected; but not the least sign of alteration of relative temperature of the two wires could be perceived, thereby proving that not even a small proportion of the current was repulsed from the repelled wire or drawn into the attracted one, as would have occurred had the attraction and repulsion taken place, even to a moderate degree, between the currents