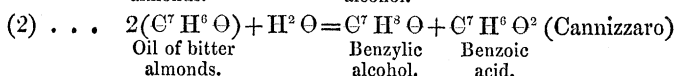
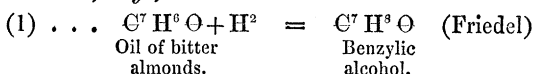


Thus viewed, both transformations appear strictly analogous to the known transformations of oil of bitter almonds and many other substances; *e.g.*,



and may be regarded as supporting the views of Berthelot, who has suggested that opianic acid ought to be classed as an aldehyde rather than as a true acid.

With regard to the constitution of hemipinic acid, the authors suppose that it may be a dimethylized derivative of a bibasic but tetratomic acid, $\text{C}^8 \text{H}^6 \text{O}^6$ (analogous to tartaric acid, $\text{C}^4 \text{H}^6 \text{O}^6$), the two atoms of methyl occupying the places of the two atoms of hydrogen, which, though outside the radical, are incapable of being replaced by metals: hemipinic acid would thus be comparable to Wurtz's ethyllactic acid, the body at one time described by Butlerow as valerolactic acid.

An analogy is further pointed out between the derivatives of malic acid and the substances obtained from cotarnine. This analogy becomes apparent on comparing the two following series of formulæ:—

Cotarnic acid	$\text{C}^{11} \text{H}^{12} \text{O}^5$	$\text{C}^4 \text{H}^6 \text{O}^5$	Malic acid.
(?) Cotarnamic acid	$\text{C}^{11} \text{H}^{13} \text{NO}^4$	$\text{C}^4 \text{H}^7 \text{NO}^4$	Aspartic acid.
Hydrochlorate of cotarnamic acid	$\text{C}^{11} \text{H}^{13} \text{NO}^4 \cdot \text{HCl}$	$\text{C}^4 \text{H}^7 \text{NO}^4 \cdot \text{HCl}$	{ Hydrochlorate of aspartic acid.
Cotarnine, or methyl-cotarnimide	$\text{C}^{11} \text{H}^{10} (\text{CH}^3) \text{NO}^3$	$\text{C}^4 \text{H}^4 (\text{C}^6 \text{H}^5) \text{NO}^3$	{ Malanile, or phenyl-malimide.

The authors intend to continue their experiments.

II. Postscript to a Paper read January 15, 1863, "On the Formation of Fibrin from Albumen." By ALFRED HUTCHISON SMEE, Jun. Communicated by ALFRED SMEE, Esq., F.R.S. Received March 2, 1863.

Since the paper was read before the Royal Society the following additional facts have been elicited. Fibrin was obtained from

serum when subjected to oxygen gas, when acetic acid was added to it, although another portion of the same serum had refused to yield it without that addition. In this experiment the acetic acid should be added until the serum is either neutral, or produces a slightly acid reaction on test-paper. Care must be taken in these experiments to prevent the temperature rising too high, for a coagulation then takes place. If blood-cells be present in the serum, the addition of acetic acid attacks the cells in preference to the alkalies of the serum; and on subsequent exposure to a temperature of 100° F. during the period it is under the influence of oxygen, the whole is transformed into a semisolid mass.

It is a curious fact that serum which has been placed on a dialyser for the removal of the salts by Graham's method was not improved in its power of producing fibrin, over serum which had not been submitted to that treatment previous to its oxidation. On the other hand, albumen purified from salts by Graham's method, and then subjected to the influence of oxygen, yielded the largest amount of fibrin. By this method it is most probable that I should have been able to have transformed the whole of the albumen into fibrin, had not an accident unfortunately brought the experiment to a termination. Nevertheless, although the experiment was not continued long, half the albumen was changed into fibrin.

When experimenting upon albumen nearly free from alkalies and alkaline salts, great care must be taken to keep the temperature as low as possible. I found that a temperature between 80° and 90° F. was the best, for above 98° the albumen had a very great tendency to coagulate.

When albumen was placed in a tube which contained about an equal bulk of oxygen, and in which a platinized platinum wire had been inserted extending the whole length of the tube, to facilitate the action of the oxygen on the albumen, and which tube was subsequently sealed and placed in a water-bath of 98° F., no fibrin made its appearance even after the lapse of 36 hours, but in its place a small quantity of an amorphous material subsided to the bottom of the tube. When, however, a tube of similar size was filled with albumen having free access to the air, and then placed on the same water-bath for an equal length of time, on the surface of the albumen which this tube contained small masses of

fibrin were formed, which had an appearance identical with that of blood-fibrin under the microscope, giving a conclusive proof to my mind that, during the formation of fibrin by the action of oxygen on albumen, a volatile constituent is formed and carried off by the excess of oxygen which passes into the albumen in solution.

The following are the chief physical and chemical properties of the fibrin artificially formed by the action of oxygen on albumen :—

It has a lighter specific gravity than albumen, being always found floating on the surface of the albumen, provided it is free and not entangled or attached to the side of the vessel or platinized platinum wire that has been inserted in the albuminous solution.

It has a fibrinated appearance under the microscope, and is capable of being teased out into filaments in the same manner as blood-fibrin.

Acetic acid completely dissolves it after some time.

Soda and potash cause it to swell up and dissolve. Concentrated solution of ammonia, after the lapse of some hours, causes the fibrin to swell up in a gelatinous mass, similar to that which occurs when blood-fibrin is submitted to the same reagent.

A hot or cold solution of nitrate of potash does not dissolve it when it is digested in that menstruum for some hours.

With Millon's test it becomes of a brick-red colour.

With nitric acid a bright yellow colour became visible.

Fibrin heated with hydrochloric acid gave a blue colour, and subsequently dissolved, giving a blue tint to the liquid.

An acid solution of acetate of lead caused both blood-fibrin and fibrin artificially prepared to swell up and become translucent after digestion for a certain period.

III. "On Diffusion of Vapours : a means of distinguishing between apparent and real Vapour-densities of Chemical Compounds." By J. A. WANKLYN and J. ROBINSON, Esq. Communicated by Dr. FRANKLAND. Received March 10, 1863.

The density of the vapour given off when a chemical compound is heated is not necessarily the *vapour-density* of that chemical com-