

ORGANIC CHEMISTRY.

(PART 4.)

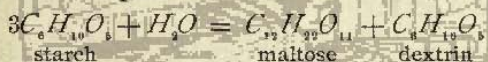
(1) See Art. **25**.

(2) See Arts. **137-140**.

(3) See Arts. **158** and **159**.

(4) Albuminous bodies chiefly differ from other chemical compounds in that they neither crystallize nor volatilize.

(5) Dextrin and maltose are obtained from starch according to the equation:



The molecular weights are as follows: starch, 162; maltose, 342; and dextrin, 162. Using simple proportions, we obtain

$486 : 342 = 392 : x$, when $x = 375.854$ kilograms maltose.
Ans.

$486 : 162 = 392 : x$, when $x = 131.743$ kilograms dextrin.

(6) See Arts. **52-55**.

(7) See Art. **57**.

(8) The pyridine bases are found in coal tar, and in oil extracted from bones.

(9) Theobromine may be prepared synthetically from guanine. See Arts. **124** and **125**.

(10) See Art. **57**.

(11) See Art. **31**.

(12) Aseptol is phenol sulphonic acid; its formula is
 $1 : 2 C_6H_4 \begin{matrix} OH \\ \swarrow \\ SO_2 \cdot OH \end{matrix}$

(13) See Art. **1**.

(14) Morphine has the formula $C_{17}H_{19}NO_2$.

(15) See Arts. **113-116**.

(16) See Art. **55**.

(17) See Arts. **28-30**.

(18) See Art. **87**.

(19) See Art. **128**.

(20) See Art. **63**.

(21) Phenol phthalcin is employed as an indicator in volumetric analysis.

(22) See Art. **15**.

(23) See Art. **1**.

(24) Quinone is obtained from benzene, according to the equations given in Arts. **20** and **21**. The amount is obtained from the molecular weight of benzene (78) and that of quinone (108) by a simple proportion:

$$108 : 78 = 134.306 : x, \text{ when } x = 97 \text{ grams. Ans.}$$

(25) (a) and (b) See Art. **138**.

(26) Thiophene (see Art. **104**).

(27) See Art. **55**.

(28) No; rather an advantage, as these two compounds possess a very brilliant color, which will increase the brilliancy of that of alizarin.

(29) See Arts. **7, 8, and 9**.

(30) See Art. **135**.

(31) See Art. **95**.

(32) Glucose is dextrorotary, while levulose is levorotary.

(33) See Art. **23**.

(34) Trinitrophenol, or picric acid.

(35) See Art. **136**.

(36) Disaccharides are characterized by being converted by hydrolysis into 2 molecules of glucose.

(37) (a) and (b) See Arts. **25** and **26**.

(38) The enlargement of the pupil of the eye.

(39) See Art. **92**.

(40) (a) In all carbohydrates oxygen and hydrogen are present in the proportion of 1:2. (b) Their general formula is $C_m(H_2O)_n$.

(41) See Art. **19**.

(42) A few drops of a ferric solution added to a solution suspected to contain phenol gives a beautiful blue color if that compound is present. Bromine water gives a yellowish-white precipitate of dibromophenol under similar conditions; and a pine shaving moistened with concentrate hydrochloric acid assumes a blue color after being dipped in a solution containing phenol and then exposed to the atmosphere.

(43) Nicotine occurs principally in the leaves of the tobacco plant.

(44) See Art. **86**.

(45) Glucose has the formula $C_6H_{12}O_6$, and a molecular weight of 180. Using formula **1**, *Theoretical Chemistry*,

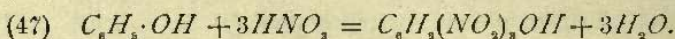
$$x = \frac{100 a n}{m},$$

we obtain $x = \frac{100 \times 12 \times 6}{180} = 40\%$ carbon;

$$x = \frac{100 \times 1 \times 12}{180} = 6.67\% \text{ hydrogen;}$$

$$x = \frac{100 \times 16 \times 6}{180} = 53.33\% \text{ oxygen. Ans.}$$

(46) See Art. **17**.

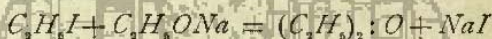


(48) The alkaloids are usually classified as "volatile alkaloids" and "non-volatile alkaloids."

(49) No; most vegetable coloring matter does not resist sufficiently the decomposing action of light, air, etc., and consequently its color fades sooner than coloring matter obtained from other sources.

(50) Stereo-isomerides are compounds having the same percentage composition, but possessing different optical activity.

(51) The method to prepare ether analogous to that of methyl-phenol ether, is given in Art. **165**, *Organic Chemistry*, Part 2. The reaction that takes place may be expressed by the equation:



(52) The alkaloids are distinguished by being more or less poisonous; they are the "active principle" of poisonous plants.

(53) Pyrogallol is used in gas analysis, as it possesses the property to absorb oxygen.

(54) See Arts. **2** and **3**.

(55) Oxyhemoglobin occurs in the red globules of the arterial blood.

(56) See Art. **67**.