and other metabolites, as noted by Levene and Meyer.[1] In malignant exudates its presence, in concentrations greater than that of the blood, would be explained by the observation of Warburg,[2] whose study of the respiration of malignant tissues showed a production of lactic acid by cancer cells many times greater than that of normal tissues.

TABLE II—Transudates.

Case	Diagnosis.	Source	Date	Lactic acid in		Excess in Fluid
				Blood	Fluid	
				mg. %	mg. %	mg. %
1	Cardiac cirrhosis	Chest	11/23	15	13	—2
		Abdomen	1/8	22	18	—4
		Chest	2/11	13	25	12
8	Portal cirrhosis	Abdomen	12/8	37	20	—17
		Abdomen	12/14	22	23	1
4	Chronic nephrosis	Chest		17	3	—14
5	Myocardial insufficiency	Chest		20	27	7
7	Myocardial insufficiency	Abdomen		14	21	7
14	Myocardial insufficiency	Abdomen		23	9	—14
17	Myocardial insufficiency	Chest		17	20	3
11	Myocardial insufficiency	Chest		33	24	—9
6	Portal obstruction	Abdomen		33	25	—8

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The crystallization of starch.

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To 3 grams of wheat starch, ground according to the method of Alsberg and Perry,[1] 100 cc. of distilled water was added at room temperature. This solution was centrifuged for 10 minutes and after removal of the precipitate, centrifuging was repeated twice. To one part of the amylose solution thus obtained two parts of 96 per cent alcohol was added the same afternoon and the

[1] Levene, P. A., and Meyer, G., *J. Biol. Chem.*, 1912, xi, 361; xii, 265.

[2] Warburg, O., *Wochenschr.*, 1925, iv, 534.

[1] Alsberg, C. L., and Perry, E. E., PROC. SOC. EXP. BIOL. AND MED., 1924, xxii, 60-61.

precipitate with supernatant liquid was allowed to stand for about 3 weeks. In the second week to a part of the precipitate and liquid an equal volume of 96 per cent alcohol was added, giving an alcohol concentration of 80 per cent.

After 3 weeks the precipitates were examined in alcohol under the microscope and were found to contain many spherocrystals. If alcohol is added in excess to the amylose solution a refractive myelin precipitate, consisting of smaller or larger irregular lumps, is formed. This myelin precipitate was later partly present as such but all gradations between amorphous masses and perfect spherocrystals could also be found. The latter consist of separate, very refractive radial needles attached to a central point or nucleus. The needles are about 1μ thick and up to 25μ long. The spherocrystal is formed by several or numerous needles. If the crystal is less perfect, lumps of the less refractive myelin precipitate are still present at its center, so that the needles project only half their length, or the top of the needle is not pointed but formed by a lump that is still amorphous, or the needle itself remains thick and less refractive than the perfect needle, with a more refractive axis in the center. The precipitate from 80 per cent alcohol showed more numerous and more perfect spherocrystals than the precipitate from 64 per cent alcohol.

With alcoholic iodine, the spherocrystals are colored brown to purple. It is suggested that the slow formation of the crystals is a continued dehydration process, as discussed in a previous paper.[2] The perfect crystals are those that are most dehydrated.

Under the polarizing microscope with crossed nicols, the spherocrystals were luminous, the needles appearing separately. A black cross could not be observed, probably because the needles are not numerous enough in all directions. If both nicols are rotated at the same time, the needles show parallel extinction.

In a previous paper[3] it was pointed out that the starch grains are built up of radial needles. The formation and behavior of the spherocrystals, arising from the precipitate which is formed if alcohol is added to amylose solution at room temperature, agree very well with these observations.

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[2] PROC. SOC. EXP. BIOL. AND MED., 1925, xxiii, 195-197.

[3] *Ibid.*, 1926, 302-305.