

failed to exhibit any gross changes. The carbon dioxide content of whole blood and of plasma invariably dropped to a rather low level (about 35 vol. %). Panting was induced in some animals, during which time the respiratory rate exceeded 250 per minute.

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Lipid Metabolism of Tumors.

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As a preliminary report on the lipid metabolism of tumors, of which little is known, lipids of the transplanted carcinoma of the mouse as well as malignant and benign human tumors were analyzed. The total lipids and phospholipids were determined by Bloor's oxidative method, cholesterol and other unsaponifiable substance by the oxidative method with some modifications. Neutral fat was calculated by the subtraction of phospholipid and cholesterol ester fatty acid from total fatty acid. The micro-oxidative determination of cholesterol of Okey was modified in that the cholesterol digitonide after saponification and washing on the glass filter was dissolved by hot absolute alcohol, the solution filtered then evaporated to dryness to get rid of alcohol and the residue oxidized. The total unsaponifiable substance was obtained as follows: The lipid solution was saponified with sodium alcoholate, then acidified and extracted with petroleum ether. The petroleum ether was then added to equal volumes of absolute alcoholic sodium alcoholate and water whereby the fatty acids are separated as soap in the alcohol-water while the unsaponifiable remains in the petroleum ether. The unsaponifiable substance in the petroleum ether is recovered by evaporation, determined by oxidation and calculated as cholesterol.

The average value of lipid analysis in tumors is tabulated: (Lipid content is expressed as gm. per 100 gm. dry tissue.)

TABLE I.

Tissue	Phospho- lipid	Cholesterol		Neutral fat	Residual unsapon. substance (% of total unsap.)
		Total	Free		
Human cancer	5.889	1.897	1.177	8.328	38.2
Mouse cancer	6.723	2.528	1.738	3.982	29.0
Human benign tumor	2.461	0.767	0.601	1.478	26.7

The high lipid content of malignant tumors is notable. The high phospholipid content in malignant tumors as compared with benign tumors seems to be of particular interest. The water content of tumors is generally high as has been reported, little difference was found in the content of residual or unknown unsaponifiable substance. The experiments are being continued.

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Obliteration of Vasoconstrictor Gradient in the Extremities Under Nitrous Oxide-Oxygen, Ether, and Tribromethyl Alcohol Anesthesias.

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Recent studies of peripheral vascular diseases have brought out the importance of differentiating the element of spasm from that of organic occlusion. Vasoconstriction can be demonstrated in the extremities of most individuals with normal blood vessels by measuring the surface temperatures. This action is present in varying amounts depending on the interplay of environmental conditions and the nervous mechanism. It possesses a definite gradient¹ so that it usually begins about the knee and progressively increases distally. Consequently the toes are normally the coldest parts of the lower extremity. These surface temperature differences can under certain conditions be made to disappear. In a series of 22 individuals with normal vessels it was found that this took place when the lumbar sympathetic fibres were paralyzed by spinal anesthesia. All surface temperatures of the extremities came to approximately the same level, with a variation of $\pm 1.7^{\circ}\text{C}$. from the mean. This evidently represents a condition of physiological vasodilatation in the vessels of the extremities and we have called it "the normal vasodilatation level." Its importance consists in that it permits an accurate estimate of the degree of spasm in any given case of vascular disease. The failure to react to the normal level in the latter signifies the presence of organic occlusion, the degree of which is measured by subtracting the maximum temperature achieved from the

¹ Morton, J. J., and Scott, W. J. Merle, "The Measurement of Sympathetic Vasoconstrictor Activity in the Lower Extremities," *J. Clin. Invest.*, in press.