

The experiment was repeated with 10 other animals and 9 of these likewise developed a cervical cellulitis resembling Ludwig's angina.

Thomas⁸ collected 106 cases of Ludwig's angina from the literature and found that the mortality was 40%. Van Wagenen and Costello have shown that with earlier diagnosis, earlier and more prompt surgical interference, the mortality is reduced. The administration of neo-arsphenamine or sulph-arsphenamine in the initial stages of fuso-spirochetal infections of the lung has been helpful in treatment⁹ and therefore arsenical therapy would appear to be indicated in those cases of Ludwig's angina due to a fuso-spirochetal infection.

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Some Metabolic Changes Occurring in Prolonged Diathermy Treatments.

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Studies on the respiratory exchange and the sugar, non-protein nitrogen, chlorides and carbon dioxide content of blood, were made on anesthetized (morphine + amytal) dogs. Tracheotomy was done and connection made to a Benedict universal apparatus. Blood analyses were done by standard methods. The high frequency current had the following characteristics: wave length—200 meters, relatively high voltage, currents from 500 to 1000 milliamperes. Electrodes were placed on the left upper arm and right thigh, or on either side of the head. Treatment continued from 1 to 3 hours. Temperature measurements were made with thermocouples and mercury thermometers.

The respiratory metabolism invariably increased—in some cases 150%. Body temperatures were elevated 5 to 7°C. When blood sugar was initially relatively high there was a gradual depletion during diathermy; in cases of low initial concentrations a preliminary rise was noted followed by a fall. The end result was a marked hypoglycemia (30 to 50 mg. per 100 cc. blood). Non-protein nitrogen was in some cases increased to 200% of normal. Chlorides

⁸ Thomas, *Ann. Surg.*, 1908, xlvii, 161.

⁹ Smith, *J. Am. Med. Assn.*, 1930, xciv, 23.

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