resemble recent hemorrhagic infarcts. Similar lesions are found in individuals dying a few days after the onset of symptoms of epidemic influenza, and we have described them in acute vaccine virus pneumonia and have applied the term "hemorrhagic virus pneumonia" to this condition.

Conclusion. The presence of interstitial bronchopneumonia and associated lesions in spontaneous cases of canine distemper, a known virus disease, supports and strengthens our previously published conclusion that this type of pneumonia is in all probability produced by the combined action of a virus and bacteria.

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The Examination of Neoplasms of the Breast and Skin by the Method of Micro-incineration.

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An investigation of the inorganic salt content of neoplasms seemed appropriate since the technique of micro-incineration, recently adapted to cytological problems (Scott[1]) offers a precise method for ascertaining whether the mineral salts in malignant tissues differ in kind and amount from the normal. An examination by micro-incineration of those questionable lesions, considered by many as precancerous or having some relation to subsequent malignant change, seemed of especial interest. This report is limited to an investigation of neoplasms of the breast and skin, including mucous membranes covered with squamous epithelium, by the method described by Policard[2] and by Scott.[3]

Breast. The ash obtained by micro-incineration of a section of normal resting breast is flat white, indicating (according to Policard) the presence of calcium. The residue is more dense in the epithelium lining the ducts and alveoli than in the connective tissue. In the former the original cell outlines are readily determined because of the heavy ash concentration in the nuclei. Here the particles may vary in size, while in the cytoplasm minerals are depos-

[1] Scott, G. H., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 349.

[2] Policard, A., and Okkels, H., *Anat. Rec.*, 1930, **44**, 349.

[3] Scott, G. H., *Am. J. Anat.*, in press.

ited as fine, uniform stipplings. In the stroma calcium is deposited in long, punctate strands, conforming to the arrangement of collagenic fibers.

In the varied lesions known as "chronic cystic mastitis", marked differences were observed, corresponding in degree with the state of the duct and alveolar epithelium noted in stained control sections. In that type of chronic mastitis with cystic enlargement of the ducts and no evidence of proliferation of the duct epithelium, the residue of the ducts, as well as that of the stroma, is white. In the stroma it is possibly in greater than normal concentration. Where one sees, in the stained section, in addition to cyst formation, evidence of epithelial proliferation, the character of the ash in the incinerated section changes decidedly. Epithelial cells showing proliferative changes, upon incineration leave a decidedly bluish ash and a decreased amount of white ash. Likewise in every carcinoma of the breast, no matter what type, this blue color of the mineral ash of malignant epithelial cells was pronounced. In such cells the flat white ash seen in the normal breast or in cases of chronic cystic mastitis with no epithelial proliferation was markedly decreased. This color change was also noted by Policard and Doubrow.[4]

The ash of stroma in carcinoma of the breast varies from flat white to bluish white. Where there is epithelial degeneration the blue color decreases or is lost and an intensely white ash remains. The sarcoma of the breast examined showed areas of cellular degeneration in which no blue ash was seen. In the cellular areas the ash was bluish-white, but not as concentrated as in carcinoma.

Skin. As pointed out by Scott (1933, loc. cit.), the epidermis gives a decidedly bluish ash. This is probably the only tissue normally showing this property. The ash of the corium and underlying structures is white. The upper layers of the epidermis show white ash only.

Numerous warts and hyperkeratoses resulting from X-ray burns were examined. The blue color of the hyperplastic epithelial cells was intensified, although they also showed granules of white ash, mainly in the nuclei. The desquamated, intensely cornified epithelium did not show this blue color, but was of the dense, flat white seen in normal desquamating epithelium. The epithelial pearls gave a less abundant white ash. The underlying corium and adipose tissue showed mostly calcium ash.

In the naevus, whether pigmented or not, the covering epidermis

[4] Policard, A., and Doubrow, S., *Ann. d'anat. Path.*, 1924, T. 1, 63.

has the same appearance as normal skin. In marked contrast is the white ash left by incineration of the nests of so-called naevus cells. Reddish colored ash, indicative of iron, is not seen. When, however, the mole undergoes malignant degeneration and gives rise to a melanocarcinoma, the ash acquires a bluish color in addition to the large amount of flat white ash.

Carcinomata of the skin whether of basal or squamous cell type, show a greater concentration of blue ash in the nests of malignant epithelial cells. This coloration is the same in nuclei and cytoplasm. In squamous cell carcinomata the epithelial pearls and areas of cellular degeneration show a predominantly white ash. The amount of ash decreases in epithelial pearls and increases in areas of cellular degeneration.

Discussion. In incinerated tissues the white ash is either calcium or magnesium. Policard believes it possible that bluish ash indicates the presence of sodium or potassium. Exact determination of this is yet to be made, but with the evidence at hand one may safely say that there is a fundamental chemical difference in the mineral salt content of benign and malignant neoplasms. This differentiation appears in early proliferative changes, considered by some as precursors of malignant neoplasms.

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Isolation of a Crystalline Depressor Substance from the Brain.

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(Introduced by E. A. Doisy.)

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It has been shown[1, 2, 3] that a depressor substance is present in certain extracts from brain tissue. Major and Weber[2] presented evidence that the active depressor substance was not histamine choline or acetyl choline. Major, Nanninga and Weber[3] presented further evidence that the depressor activity of these brain extracts

[1] Major, Ralph H., and Weber, C. J., *J. Pharm. and Exp. Therap.*, 1929, **38**, 367.

[2] Major Ralph H., and Weber, C. J., *J. Pharm. and Exp. Therap.*, 1930, **40**, 247.

[3] Major, Ralph H., Nanninga, J. B., and Weber, C. J., *J. Physiol.*, 1932, **76**, 487.