using the Rourke-Ernstene[1] technic. This method has been used for several years and has always given apparently consistent and reliable results in the rheumatic patients. Salicyl was administered by mouth in the form of acetyl salicylic acid combined with sodium bicarbonate. The celerity with which the "rise" occurred after discontinuing the drug suggests that this salicyl compound may have the ability to lower the sedimentation rate as well as the temperature and the leucocyte count in this disease.

In seeking an explanation of this reaction, the studies of Bendien, Newberg and Snapper[2] appeared to be pertinent. These authors noted that when sodium salicylate is added to human blood *in vitro,* the erythrocyte sedimentation rate is greatly reduced. In a few preliminary experiments, we have been able to confirm their findings, but the minimal effective concentration of sodium salicylate, using this method, is 90-120 mg %. This represents at least 3 times the value given by Hanzlik[3] as an average blood level obtainable in rheumatic patients.

Further studies are in progress to learn the true mechanism and the significance of this phenomenon.

13223 P

Pigment of Anthracosis.

F. A. TAYLOR. (Introduced by S. R. Haythorn.)

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Black pigment of the human lung, from the time of its earliest observation, was considered to be a collection of coal particles. Pearson in England first applied the term anthracosis in 1813. In Germany, on the contrary, this view was combatted and as late as 1855 Barthelmess discussed the condition as "pulmonary melanosis" and thought it was the result of hemorrhage and inflammation. By 1867 there was general agreement that the pigment was inhaled coal or soot. Klotz[1] has reviewed the subject. No modification of

[1] Rourke, M. D., and Ernstene, A. C., *J. Clin. Invest.,* 1930, **8**, 545.

[2] Bendien, W. M., Newberg, J., and Snapper, I., *Biochem. Z.,* 1932, **247**, 306.

[3] Hanzlik, P. J., *Medicine,* 1926, **5**, 197.

[1] Klotz, O., *Am. J. Pub. Health,* 1914, **4**, 887.

that view appeared until 1940. Then Woodruff[2] and Moerke[3] reverted to the old opinion that the pigment is endogenous. Their pigment was isolated by dissolving the tissue in concentrated hydrochloric acid at room temperature—a procedure known to produce abundant humin in the hydrolysis of protein at the boiling point.

In the present experiments, both clean (calf) and anthracotic lungs (human) were examined for pigment by solution of the tissue in the above solvent as well as in alkaline hypochlorite and by a combination of papain digestion followed by hypochlorite. Only these latter methods sufficed to reduce the clean lung tissue to a negligible residue.

Destruction of uncontaminated lung in concentrated hydrochloric acid left a residue which was soluble in neither organic solvents nor dilute alkali. It was dark red-brown in color, contained 8-10% N in different preparations and 1-1.2% ash. The material of Moerke contained 4-5% N and presumably was a mixture of the above product with anthracotic pigment. As there was no black pigment to be seen in the microscopic examination of the calf lung, the residue is obviously an artefact resulting from the process of digestion of the tissue, and the hydrochloric acid method is not satisfactory for the isolation of the pigment of anthracosis.

When, on the other hand, clean lung tissue was dissolved by treatment with alkaline hypochlorite or papain followed by hypochlorite, and the soaps removed by appropriate solvents, only a trace of insoluble residue was obtained. These procedures, then, constitute satisfactory methods for destroying the tissue. It is not so easy to prove that the pigment will be unaffected. From the character of the pigment finally isolated from black lung, however, it seems extremely unlikely that it would be susceptible to the mild conditions imposed.

In Table I are shown results of analysis of pigments isolated

TABLE I.
Analysis of Pigments.

	Material	N %	Ash %	C %	H %
1	Human Lung	0.4	20.0	65.9	1.4
2	" "		21.6	62.7	1.5
3	" "	0.6	40.0		
4	" "	0.8	49.0		
5	Soot	0.4	15.7		

[2] Woodruff, C. E., and Moerke, G. A., *Am. J. Path.*, 1940, **16**, Proc., 652.

[3] Moerke, G. A., Abs. of Papers, 99th Meeting Am. Chem. Soc., Cincinnati, 1940, B-2.

from human lungs and for comparison the analysis of a sample of soot from soft coal. In the Kjeldahl digestion for N the pigment can not be dissolved. The figures were obtained by digestion with sulfuric acid until maximum values for N were secured.

It is to be noted that the soot and pigment samples are very similar, the low N figures especially indicating the absence of material derived from tissues, such as was formed in the hydrochloric acid method. In contrast, the residues from clean lungs by the latter procedure contained 8-10% N and only 1-1.2% ash.

If the H of the pigments is calculated as H_2O, then the sum of the C, H_2O and ash obtained by combustion is nearly equal to the quantity taken for analysis. Perhaps if the pigment were dried sufficiently, the H_2O would be decreased.

Although quantitative determinations of pigment in lungs have been reported by several investigators,[1] no previous analysis of the pigment itself has been found in the literature. The present figures leave no doubt that the pigment is exogenous. In both high ash and low N content it resembles soot. If it were melanin, the N content would be in the range of 8-14%.

For the microscopic examination of the tissues, I am indebted to Dr. S. R. Haythorn.

13224 P

A Pharmacological Study of Mannitol Hexanitrate.*

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Although mannitol hexanitrate† has been used for many years for the treatment of essential hypertension and as a prophylactic against anginal attacks, few pharmacological studies are available in the literature. This paper is the first of a series designed to test this drug clinically and experimentally.

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† Due to the chemical instability of mannitol hexanitrate, this compound was used, except where specified, in the form of Maxitate, a stabilized preparation furnished by the R. J. Strasenburgh Co., which contains lactose and starch as diluents.