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- 354 The Method of Demonstration by Micro-localization and Optical Crystallogical Identification of the Dust Deposits in Silicotic Tissues. J.R. Ruttner and F. DeQuervain. *Ztschr. f. Unf. u. Berufskrankh.* 40 10pp. (1947) (German).

This article consists of a brief description of the method of micro-incineration and its applications in the demonstration of dust particles in the lungs. It consists in the incineration, in an electric oven at a constant temperature of 500° C., of frozen sections fixed to the slide with five per cent gelatin. After "ashing" in this way for 50 minutes, all organic matter is removed and the inorganic skeleton of the tissue with its impregnated dust particles can be examined with the polarizing microscope. When this has been done the ash can be treated with selective chemical reagents to remove various components, which leaves on the slide only the silica-quartz component. In this way polarization roentgenographic analysis can be carried out at various stages. A practical example is given.

-- Condensed from Bull. Hyg.

- 355 Tuberculosis as a Complication of Silicosis. C.H. Marcy. *Penna. Med. J.* 53, 39-40 (Jan. 1950).

A brief general paper on silicotuberculosis, presenting the problems in diagnosis. The sputum test is recommended for positive diagnosis, though sometimes difficult to obtain. Malignancy, fungus infections, pulmonary suppuration, bronchiectasis, infectious bronchitis, and pulmonary fibrosis may be mistaken for tuberculosis. Treatment and management are the same as in simple tuberculosis. The death rate from silicotuberculosis is high, and the only good preventive measure is the elimination of dust.

- 356 Impairment of Pulmonary Function in Anthracosilicosis. H.L. Motley, B. Gordon, L.P. Lang and P.A. Theodos. *Arch. Ind. Hyg. & Occ. Med.* 1, 133-159 (Feb. 1950).

An accurate evaluation of the degree of impairment of pulmonary function requires measurements of ventilation, residual air, oxygen uptake from the air breathed, oxygen saturation of arterial blood and pulmonary circulation. The wide individual variations encountered in these determinations preclude the using of any one single measurement as satisfactory for the appraisal of disability in all types of cases. Strain on the right side of the heart as indicated by electrocardiographic changes is found only in cases with a significant degree of emphysema, and as the degree of emphysema increases, a greater incidence of the strain is noted. There is no apparent correlation between the roentgenographic stage of silicosis and the degree of impairment of pulmonary function in many cases.

-- Condensed from Authors' Summary and Conclusions

- 357 Pulmonary Asbestosis; Anatomicopathologic Study of a Case. A. Franchini and G. Canepa. *Med. d. Lavoro.* 3, 161 (June-July, 1949) Italian.

A man 40 years old had worked in a factory for 22 consecutive years, applying insulating material to articles of asbestos. He never complained about respiratory disorders, and he died as the result of a streetcar accident. During the necropsy the lungs were found to be the seat of

extensive asbestosis. The author's direct attention to the disproportion between the gross features described and the awareness of trouble. The results prove the importance of prophylactic and therapeutic treatment and economic assistance to asbestos workers generally, particularly to those who apply insulating material. -- Condensed from Arch. Ind. Hyg. & Occ. Med.

- 358 Pseudo-tumoral Pneumoconiosis, simulating Silico-Tuberculosis in a Bauxite Miner. A. Germain, P. Brugere, and P. Cluzel. Bull. Acad. Nat. Med. 133, 273-276 (1949) French.

The case is reported of a man who had been employed in mining bauxite for 20 years previous to 1938. He then left this work to be taken on at the French Arsenal, when an x-ray of his lungs showed no abnormalities. Nine years later the case presented a typical picture of silico-tuberculosis. Since the man had no exposure to dust except during the 20 years he was employed in mining bauxite, the claim is made that bauxite dust was the cause of his condition. Comment is made to the effect that a single case does not constitute proof. -- Condensed from Bull. Hyg.

- 359 Pneumoconiosis and Tuberculosis in Dockers Dealing with Grains and Seeds. L. Dunner. Brit. J. Radiol. 22, 717-722 (Dec. 1949).

One hundred dockers who had inhaled the dusts of grain, seeds, and chemical material were sent to a tuberculosis dispensary because of chest trouble and were examined. Of the 100, 22 showed pneumoconiotic lesions on x-ray films, 43 were found to be tuberculous, and 3 doubtful which of the two. Three were suffering from bronchial carcinoma. (Editor's note: There is no information on the extent of exposure or composition of the dust.) -- Condensed from Author's Summary

- 360 Pneumoconiosis after Exposure to Sulfur Dioxide Fumes and Dust from Coke Fires. L. Dunner, R. Hardy, and D.J.T. Bagnall. Lancet 257, 1214-1217 (Dec. 31, 1949).

Pneumoconiotic lesions have been found radiologically among workers in a group of workers whose common history was exposure to sulfur dioxide fumes and dust from coke fires. Chemical analysis of a fraction of the dust with a particle size of about two microns has revealed iron and siliceous matter. The authors' tentative conclusion is that this pulmonary disease arises from the sulfur dioxide or coke dust, or both. However, it is admitted that the evidence now at hand is not conclusive. No dust counts or gas concentrations are given. (Discussion of the paper appears in Lancet, Jan. 14, 1950, and Dr. Dunner's reply, Feb. 11, 1950.)



- 361 The Morphology of Bauxite-Fume Penumoconiosis. J.P. Wyatt and A.C.R. Riddell. Am. J. Path. 25, 447-465 (May, 1949).

A description is given of the pathological characteristics found in six fatal cases of this disease, together with a short description of the manufacturing process with which the disease is etiologically connected, and notes on the history and clinical findings in each case. The disease

- 1007 Findings of Bronchoscopy in Silicosis and Silico-Tuberculosis.
E. Concina and O. Orlandi. *Rass. med. ind.* 20, 424-426
(Nov.-Dec. 1951) Italian.

The importance of the existence of bronchial lesions in silicosis has been underestimated. Bronchoscopy allows direct observations of changes in the tracheal and bronchial mucous membrane, deviations in the trachea and main bronchi, and modifications in the orifices of the lobes and segments. Lavage, aspiration of the bronchial section, and endo-bronchial administration of adrenaline and antibiotics may be conducted during the process. Inflammation of the mucous membranes and other changes characteristic of silicosis are disclosed by this method. Findings in 25 patients are reported.

-- Cond. from Bull. Hyg.

- 1008 The Value of the Electrocardiograph for Examining Anthraco-Silicotics.
F. Lavenne. *Institut d'Hygiene des Mines, Hasselt, Belgium,*
Communication No. 90, 5pp. (1951). French.

The author used the electrocardiograph to examine 11 cases of anthraco-silicosis with clinical signs of loss of compensation of the right ventricle, and 200 cases of anthraco-silicosis, compensated for invalidity but still ambulant, who were doubly classified according to the extent of fibrosis present and according to the amount of emphysema. The findings are presented in somewhat cryptic symbolism. They are held to justify the claim that the electrocardiograph may be of considerable value in establishing early strain on the right side of the heart.

-- Bull. Hyg.



- 1009 Asbestosis Associated with Bronchiogenic Carcinoma. R. Stoll, R. Bass, and A. A. Angrist. *Arch. Intern. Med.* 88, 831-834 (Dec. 1951) German.

Data for statistical proof of any association of asbestosis with pulmonary carcinoma are hard to collect, but three investigators have found carcinoma in 7.5 to 14.8% of cases of asbestosis. A case is reported in which a worker had been exposed to asbestos for 6 years and had refused to wear a respirator. He came under notice with weakness and a persistent cough. Clumps of malignant cells were seen in the bone marrow, and x-ray showed generalized large discrete oval shadows indicative of pulmonary metastases. After death, modules varying to 4 cm. in diameter were found scattered throughout both lungs, with interstitial fibrosis. Large areas of necrosis existed throughout the lungs, and typical asbestos bodies were seen inside and outside the tumor areas. Metastases were found in the kidneys, brain, and liver. The opinion is suggested that the silicate in asbestos must itself be directly carcinogenic. It establishes an additional reason for preventive measures in the use of asbestos.

-- Cond. from Bull. Hyg.



Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

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LEGAL ... decisions and trends

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the light microscope. Incidentally, it seemed that a particle with sharp angles, such as a quartz particle, could easily pierce the layer. It was limited on both the air-space side and the connective tissue side by an osmium-staining cell membrane; a basal membrane was not found. The partition between the blood and the air space consisted of seven layers. In places where the capillaries were not in immediate apposition to the alveolar wall the cellular tissue space was filled with connective tissue fibrils, lattice threads, elastic fibers, and connective tissue cells. Various cells, detached from the alveolar walls, and septal cells were found, but a definite decision could not be reached on their origin. -- Cond. from Bull. Hyg.

- 757 Silicosis. 11. Effect of Sex Hormones on the Amount of Silicon Excreted into Urine.
M. Anme. Nagasaki Igakkai Zasshi 31, 381-395 (1956).

Urinary excretion of silicon before and after castration was investigated. In the case of male rabbits silicon increased after castration while in the case of females it decreased. Silicon returned to the normal level after the administration of male hormone or follicular hormone. Corpus luteum hormone showed no effect. -- Chem. Absts.

- 758 Silicosis. 12. Influence of Thyroid Hormone on the Amount of Silicon Excreted in the Urine of Rabbits. R. Kakita. Nagasaki Igakkai Zasshi 31, 438-445 (1956).

Thyroidectomy increased the urinary excretion of silicon by 2 to 3 times, and silicon returned to normal level after the administration of thyroid hormone. Injection of methylthiouracil to normal rabbits increased silicon slightly. Diiodotyrosine and anterior hypophyseal hormone showed no effect. -- Chem. Absts.

- 759 The Neutralization of Silica Toxicity in Vitro. J. Marks.
Brit. J. Ind. Med. 14, 81-84 (Apr. 1957).

Phagocytic cells were protected in vitro against the toxic effect of silica dust by compound 48/80, a histamine-releasing agent formed from p-methoxy-phenylethyl-methylamine. The health of the cells was studied by direct microscopy and by measurement of their glucose consumption and dehydrogenase activity. The mode of action of compound 48/80 is not known but may depend on a reduction in silica solubility. A slight protective action was also exhibited by certain alkylmono-amines and polymyxin B. -- Author's summary

- 760 Pulmonary Fibrosis and Giant-Cell Reaction with Altered Elastic Tissue. Endogenous "Pneumoconiosis". R. L. Watford and L. Kaplan. Arch. Pathol. 63, 75-90 (Jan. 1957).

The clinicopathologic findings in 12 autopsied cases of a peculiar pulmonary elastica disease are presented and discussed. It is concluded that injured pulmonary elastic tissue may act as a foreign body or sequestrum and produce a progressive "pneumoconiosis". -- Cond. from authors' summary

- 761 Asbestosis with Pleural Calcification among Insulation Workers. J. Frost, J. Georg, and P. F. Moller. Danish Med. Bull. 3, 202-204 (Nov. 1956).

In Denmark only a few persons manipulate insulation products including asbestos, kieselguhr, magnesia, glass wool, and rock wool. The first two have been regarded as fibrogenic to the lungs when their dust is inhaled. In order to ascertain any occupational risk in the work 31 workers with more than 20 years' exposure, of 52 years average age, were carefully examined clinically and by x-ray. Abnormalities were found in the surprising number of 22. A total of nine exhibited fine mottling indicative of pulmonary asbestosis. In 19 patients pleural changes were seen, which were due to adhesions and extensive thickening with calcification. The abnormalities in the pleura were so widespread in some instances as to obliterate other pathological changes. The calcification is unusual and may be ascribed to combined exposure to calcium and magnesium in the presence of fibrogenic asbestos dust. Sample analyses of the kieselguhr in use did not reveal the presence of alpha-quartz. The finding of pronounced bilateral pleural changes in the present series definitely points to an occupational origin. -- Cond. from Bull. Hyg.

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X 270 Asbestosis and Abdominal Neoplasms. E. E. Keal. Lancet 2, 1211 (1960).

In 1953, an impression was formed at the London Hospital that women suffering from pulmonary asbestosis had ovarian neoplasms more often than other women. On the basis of this suspicion and because of the occurrence of other cases, the hospital records since 1948 were investigated. During that period, 23 women and 19 men were admitted with a diagnosis of asbestosis. In this series, there were 30 deaths (15 men and 15 women). Of these, 14 died with lung cancer (10 men and 4 women). This high incidence in men is partly due to selection, but this does not apply to the women, who were all non-smokers. Death occurred in one man with peritoneal cancer and in 9 women with ovarian or peritoneal cancer. This appeared to be more than a chance association, and spread from undiagnosed lung cancer seemed unlikely. At least 4 of the tumors were not of ovarian origin. Some evidence of hematogenous spread of asbestos fibers was adduced and it was suggested that a combination of mechanical and chemical factors may determine the peritoneum as the site of inflammatory and subsequent neoplastic change. No single satisfactory explanation for these cases could be drawn from the available material though they appeared to form a clinical entity of statistical significance.

-- Can. Med. Assn. J. Absts.

271 Occupational Medical Investigation in Cement Works. Jenny M. Battig, et al. Schweiz. med. Wochschr. 90, 705-709 (June 25, 1960). German.

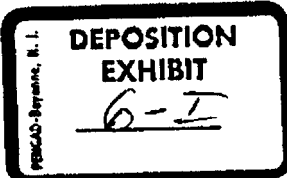
This is the first systematic investigation in Switzerland into the possibility of respiratory complaints arising from the inhalation of cement dust. No free silica is present in Swiss cement, so silicosis is not a risk, a fact confirmed by the radiological examination of some of the workers. In all, 488 employees at 3 factories were studied. The absentee rate at one of the factories was much higher than at others; the percentage of men complaining of cough and of those with sputum was also higher in this plant. The cause of this might be partly due to social factors, epidemics, etc. A study of smoking habits shows that exposure to cement dust does not increase coughing in smokers. It is suggested that those who are resistant to smokers' cough are also resistant to dust. Non-smokers show a surprisingly high proportion with chronic cough as compared with figures given by another author. Perhaps a better comparison would have been with a non-occupational group studied by the authors themselves. However, it is concluded that this shows that cement dust is irritating to the respiratory passages. Physical signs found did not lead to any definite conclusion. Vital capacity was not influenced by the length of dust exposure. In a few workers the maximum expiratory force was reduced. An attempt was made to relate the findings to the intensity of exposure by dividing the workers into 3 groups. The 2 groups most exposed to dust showed a tendency to increased pathological signs, but the difference was not statistically significant.

-- Bull. Hyg.

272 A Study of the Physiological Effects of Carbon Black. (3) Adsorption and Elution Potentials; Subcutaneous Injections. C. A. Nau, J. Neal and V. A. Stembridge. Arch. Environmental Health 1, 512-533 (Dec. 1960).

Neither blood plasma nor gastric juice elutes any significant adsorbed component when a channel black is suspended in either medium for as long as 7 days. Neither blood plasma nor gastric juice elutes any significant adsorbed component when a furnace black is suspended in either medium for as long as 7 days. Channel black "binds" benzpyrene-adsorbed "artificially" so firmly that it cannot be removed "in toto" by benzene extraction. No significant extraction of either channel or furnace carbon black was accomplished with gastric juice to which 10% cooking oil was added when contact was maintained for 7 days. Subcutaneous or intraperitoneal injection in mice of channel or furnace carbon black leads to no significant changes from the normal. Benzene extractives of furnace blacks when injected in oil into mice lead to tumor formation. Carbon blacks, channel or furnace, can absorb and bind known carcinogens so effectively that no tumors are produced when the adsorbed material is injected subcutaneously. Tricaprylin when injected subcutaneously in mice may cause tumor formation.

-- Authors' conclusions



- 757 Diffuse Pleural Mesotheliomas in South Africa. C. A. Sleggs, P. Marchand and J. C. Wagner. S. African Med. J. 35, 28-34 (1961).

Although diffuse pleural mesothelioma is regarded as a rare tumor, the authors have had personal experience with 34 cases. This remarkable experience is apparently related to the area of asbestos production in South Africa. Asbestosis was seen in 6 of the 7 autopsies, and in 9 of 11 biopsies. However, only 19 of the persons had been employed in the asbestos industry; all but two of the remaining members of the group had been born and lived in this asbestos-producing area of Cape Province. Symptoms began with bronchitis and pleural pain, progressed to pleural effusion and pleural thickening, and finally manifested thoracic malignancy. Eight patients developed peritoneal involvement. Other metastases had involved cervical nodes, subcutaneous tissue, and the tongue. Experience with therapy had been very unsatisfactory. Of the patients of the group who died, 6% did so within the first year; 4 years was the longest survival time observed.

-- APCA Absta.

- 758 Foreign Body Granulomas Caused by Glove Dusting Powders. K. Hupe. Chirurg 33, 97 (Mar. 1962). Chirurg, Der. Zeitschrift fuer alle Gebiete der Operativen, Medizin, Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf (West), Germany*).

After it had been discovered that the use of talcum powder in surgical gloves could give rise to postoperative formation of granulomas and adhesions, it had been recommended that corn starch powder be used in place of talcum. The author investigated the reaction to corn starch powder in 24 rats. Corn starch glove powder was injected subcutaneously into the fat tissue in doses of 50 or 100 mg. and intraperitoneally in doses of 200 mg. The animals were killed in groups of 4 at intervals of one month. Except in 2 animals, in which the subcutaneous fat tissue contained a nodule the size of a millet seed, 1 and 2 months after the injection of 100 mg. of powder, no granuloma formations were detectable macroscopically. None of the animals showed intraperitoneal adhesions. Histological studies on the subcutaneous fat tissues revealed in all animals, at the sites of injection, typical foreign body granulomas with macrophages, histiocytes, lymphocytes, giant cells, fibroblasts, and capillary buds. Starch granules were diffusely disseminated, and after one month about half of the granules had been incorporated into cells, and after 3 months all were intracellular. At this time lymphocytes and giant cells showed considerable retrogression. After 6 months many starch granules had been phagocytized by histiocytes and macrophages. The author concludes that although starch powders are less injurious to tissues than are talcum powders, in that they cause less inflammation and granuloma formation, the difference is only quantitative. They are not indifferent, since inoculated particles are not completely absorbed. The formation of new collagenous or elastic fibers was not observed. No intraperitoneal adhesions developed from corn starch powders.

-- J. Am. Med. Assn. References and Reviews

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 759 Myocardial Damage in Caisson Workers. I. Rozsahegyi and I. Kenedi. Arch. Gewerbepathol. Gewerbehyg. 18, 610-631 (1961). German.

The present paper, from the State Institute of Industrial Medicine, Budapest, contains an account of the study of 316 caisson workers engaged in building the Budapest underground railway and a control group of 300 men in other types of work. The purpose of the study was to determine the comparative incidence in the 2 groups of electrocardiographic signs of myocardial damage, the actual types of these signs and the relation of these signs to ability to work at increased atmospheric pressure. Among the conclusions the following are stated: (1) Abnormalities in the electrocardiogram were significantly more frequent in caisson workers at all ages than in control workers. This finding is all the more important because the precautions taken

* Address not in current List of Periodicals.

symptoms were referable to the central nervous system, and that he died from terminal broncho-pneumonia following a rapidly progressive encephalopathy associated with epileptiform attacks. He had no presenting pulmonary symptoms, and x-ray examination of the chest showed only slight abnormalities. Radiographic examination of the chests of 53 other workers in the same factory and clinical examination with lung function tests of 23 of them revealed no other definite cases of aluminum fibrosis of the lung, nor any other cases with neurological signs and symptoms. Estimations of the aluminum contents of the body tissues such as the lungs, brain, liver, and bone are also recorded. When compared with normal values, it was found that the lungs and brain contained about 20 times and the liver 122 times more than normal. The results of a survey of the dust concentrations in the factory are also given. The use of aluminum compounds in the experimental production of epilepsy in primates is reviewed, and it is suggested that the neurological signs and symptoms with epileptiform convulsions which occurred in this case might have been related to aluminum intoxication. The authors hold the view, however, that the interstitial and nodular fibrosis found in the lungs was undoubtedly associated with the inhalation and retention of aluminum dust.

-- Cond. from authors' abst.

- X 1171 Pleural Asbestosis. H. B. Eisenstadt. Am. Practitioner Dig. Treat. 13, 573 (Sept. 1962). (American Practitioner and Digest of Treatment, 227-231 South Sixth St., Philadelphia 5, Pa. *).

Because of the widespread industrial use of asbestos the number of persons suffering from asbestosis is increasing. Frequently the correct diagnosis is never established. Pleural asbestosis may occur with only minimum parenchymal involvement, and it may present itself as acute, chronic, or recurrent pleuritis or as pleural mesothelioma. Three cases were observed among oil refinery workers, one with recurrent pleurisy, one with pleural calcification followed by tumor formation, and one with primary mesothelioma. Only lung biopsy will establish the correct diagnosis. Pleural biopsy is nonspecific.

-- J. Am. Med. Assn. References & Reviews

- X 1172 Asbestosis and Carcinoma of the Lung. J. F. Cordova, H. Tesluk and K. P. Knudtson. Cancer 15, 1181 (Nov.-Dec. 1962).

Eleven cases of asbestosis associated with carcinoma of the lung are presented. A known exposure to asbestos dust was obtained in 7 of these cases. In 2 cases, evidence is presented for multifocal origin of the malignant tumor. The relationship of asbestos bodies as a carcinogen in the production of lung cancer is discussed.

-- J. Am. Med. Assn. References & Reviews

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 1173 Restoration of Hearing by Surgical Procedures. F. A. Perri. J. Occ. Med. 4, 518-520 (Oct. 1962).

The author has determined that the stapes procedures, which are more extensive than mobilization procedures, are far more likely to produce a permanent return of auditory acuity to levels within acceptable social limits. In a few instances, the operation described has been performed on patients having a loss of hearing by bone conduction at or near the 30 db. level, with improvement shown audiometrically by air conduction and bone conduction.

-- Author's conclusion

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