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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

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67 Pneumoconio-Tuberculosis. Results of Combined Medical-Surgical Therapy.
CH. Gernez-Rieux, E. Dalgairins, G. Voisin and P. Fournier.
Am. Rev. Respiratory Diseases 82, 835-842 (Dec. 1960).

The present study is based on a survey of long duration of 395 cases of pneumoconio-tuberculosis in coal miners. Of a group of 277 patients treated with long-term therapy, only 69 healed. Of these, 13 patients were last seen 2-6 years after completion of drug therapy; there were 7 relapses. The results of chemotherapy for tuberculous coal miners were poor compared with those for non-coal-mining tuberculous patients. This bad prognosis was already evident when the fibroconiotic lesions were roentgenographically latent. The results of chemotherapy and surgery in 113 patients were good. The lesions of 81 of a group of 106 patients who were last seen 2-7 years after surgery healed. These results justify surgery therapy after preoperative 6-month chemotherapy without roentgenographic improvement and when the functional respiratory value and the extent of the tuberculous lesions make it possible. Pre- and post-operative functional respiratory re-education and post-operative chemotherapy are necessary. The gravity of pneumoconio-tuberculosis stresses the importance of early diagnosis and treatment of conglomerations. -- Authors' summary

68 Complications of Asbestosis Demonstrated at the Post-Graduate Medical School of London.
P. Hugh-Jones and B. E. Heard. Brit. Med. J. 1, 1345-1353 (Apr. 30, 1960).

The authors described the history, clinical findings and postmortem appearances in a case of asbestosis affecting a man aged 50 who had worked with asbestos for 11 years. The asbestosis had caused honey-combing in peripheral parts of the lungs, principally the left where the lower posterior subpleural zone, the diaphragmatic surface, and to a small extent the anterior surface and apex were affected. A columnar-cell carcinoma was present in the posterior segment of the right lower lobe, and there were numerous metastases in the lungs, hilar glands, liver, brain, adrenals and bones. In addition there were present rheumatic heart disease and old rheumatoid arthritis. The detailed presentation of the case was followed by a full discussion. Hugh-Jones referring to the radiological appearances, stated that specific changes may be absent in some cases of undoubted asbestosis, and that in such cases pulmonary function tests provided useful diagnostic evidence; it seemed reasonable to deduce the presence of asbestosis where, in addition to a history of exposure to asbestos, the patient was found to have interstitial fibrosis causing alveolar-capillary block, finger clubbing and chest rales, whether or not the x-ray film showed characteristic changes. The authors referred to the interesting problem that, in this and other cases of asbestosis, the distribution of the fibrosis does not always correspond to the distribution of asbestos. -- Bull. Hyg.

69 Experimental Asbestosis in Guinea Pigs and Rats. M. Yoshikawa.
J. Sci. Labour (Tokyo) 36, 192-195 (Apr. 1960). Japanese.

The authors used guinea pigs and rats, and induced asbestosis by the technique of compulsive inhalation of asbestos fibers in saline. There was a high mortality soon after innalation, due to asphyxia from obstruction of relatively large bronchi and to atelectasis and pneumonia from obstruction of smaller bronchi. The essential changes proved to be non-specific alveolitis with giant cells and formation of asbestosis bodies; in rats, but not guinea pigs, there was no proliferation of collagenous fibers in the fibrous lesions. The finding of asbestosis bodies in rats is regarded as new. It had formerly been assumed that asbestos fibers less than 5 microns in length are harmless, but the author's findings suggest that this is not true. -- Bull. Hyg.

70 A Clinical and Roentgenological Study of Kaolin Workers. R. W Edenfield.
Arch. Environmental Health 1, 392-403 (Nov. 1960).

A brief history of the kaolin industry in Georgia has been presented, and some of the significant physical and chemical properties of kaolin have been described. A study made over the past 5 years has shown that the general health of 1,130 workers in this industry does

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

210 Air Pollution Control Association Meeting.

The 54th Annual Air Pollution Control Association Meeting will be held June 11-15 at the Hotel Commodore in New York City. Approximately 500 of the nation's leading authorities on air pollution control are expected to attend. The theme of this year's meeting is "Air Pollution is Everybody's Business". Eighteen technical sessions have been planned, at which scientists, researchers, physicians, industrialists, and officials of federal, state and local governments will present 80 papers on a wide variety of subjects. Included among the papers will be discussions on instrumentation, pollution standards, health, incineration, fuels, control equipment, meteorology, research and many others. On display will be an exhibit featuring the latest instruments and most modern advances in the air pollution abatement equipment field.

211 New England Health Institute Meeting.

The 27th Annual New England Health Institute, with participation from 6 New England States, is meeting this year at Colby College, Waterville, Maine, on June 11, 12, 13 and 14. In the past, attendance at this Institute has numbered around 800 people from professional and lay organizations in the New England Area. The attendance includes personnel of state and local departments of health, physicians, nurses, sanitarians, health educators, laboratory technicians, dental hygienists, medical social workers, nutritionists, and extension workers. There have also been registrants from the voluntary health and welfare agencies along with parents, teachers, and health-minded community workers. Further information may be obtained from the New England Health Institute, c/o Department of Health and Welfare, Augusta, Maine.

212 U. S. Death Rate Cut in Half Since 1900.

Since 1900 the U. S. mortality rate has gone down 45%, thanks largely to the fact that medical science has brought the contagious diseases under greater control. According to the Health Information Foundation, the death rate for influenza and pneumonia has dropped 86% in the last 60 years, while that for tuberculosis has gone down 97%. Since the turn of the century, the mortality differential between nonwhites and whites in this country has narrowed. In 1900 the mortality rate for the nonwhite population exceeded that for the white by 47%. But by 1959 the rates were 9.9 and 9.4 per 1,000 persons—an excess for nonwhite of only 5%. Women have benefited more than men from declining death rates in the United States, the Health Information Foundation reports. The mortality rate for females dropped from 16.5 per 1,000 population in 1900 to 8.0 in 1959, a decline of 51.5%. For males the corresponding drop was from 17.9 to 10.9, or 39.1%.

213 Air Pollution.

An advisory committee to the Surgeon General of the Public Health Service issued a report in December which recommends that support of air pollution research be increased from a current estimated level of $11 million annually to about $32 million a year by 1968. The report further recommends that the government assume 40% of this cost, industry 28%, and the

267 The Classification of Chest Radiographs for Coal Workers' Pneumoconiosis. A Study of the Performance of Two Readers Over a Period of Six Years. J. R. Ashford.
Brit. J. Ind. Med. 17, 293-303 (Oct. 1960).

This paper is concerned with the performance over the past 6 years of the 2 doctors responsible for the classification of chest radiographs obtained by the National Coal Board's Pneumoconiosis Field Research. A brief description is given of the categories of pneumoconiosis used in the Research and of the procedures adopted to decide the final or "definitive" classification. The readings obtained are then considered in detail and 3 main points emerge from the analysis. First, it is shown that there have been marked systematic fluctuations in the reading levels of these 2 very experienced observers. In spite of these individual variations it is found that the standards applied on the definitive readings, which are based on the joint discussion by the 2 doctors of films on which their individual readings are inconsistent, remain remarkably constant over a period of several years. The third main feature of the analysis is the considerable differences in the magnitude of the reading errors between the various categories of pneumoconiosis. It is concluded that, although the existing procedures provide a satisfactory way of estimating the prevalence of pneumoconiosis, it would be desirable to increase the number of film readers. The beneficial effect of the system whereby a running check is kept on film reading standards is also established. -- Author's abst.

268 Emphysema, Soot, and Pulmonary Circulation. Macroscopic Studies of Aging Lungs.
C. P. Oberr. J. Am. Med. Assn. 172, 1991-1993 (Apr. 30, 1960).

Two hundred lungs, obtained from persons dying of diseases other than pulmonary tuberculosis, were fixed in the inflated state to permit study of the relation between emphysema and deposits of soot. The evidence showed that chronic emphysema usually develops first in small areas of trapped parenchymal soot deposits; it is manifested by abnormal fenestrations in the interalveolar septums and by increased diameter of the alveolar ducts. The emphysema accompanying deposits of soot can be explained as resulting from tissue defects and disarrayed mechanical forces. Precapillary vessels are found protruding into the air spaces of the alveolar duct level, providing a possible mechanism for correlation between aerodynamics and hydrodynamics in the lung parenchyma. The morphological basis for an extensive semishunt mechanism is demonstrated in the periphery of each lobe. -- APCA Abstr.

269 Radiological Diagnosis in Asbestosis. R. Williams and P. Hugh-Jones.
Thorax (London) 15, 103 (June 1960).

The authors studied the lung function in 40 patients at the Royal Free Hospital, London, who had been exposed to asbestos dust in their work for varying periods of time. Of these asbestosis had been certified by the pneumoconiosis medical boards in 21; 10 patients with a prolonged exposure did not have definite roentgenographic signs of asbestosis; in the remaining 9 patients the diagnosis of asbestosis was doubtful. The changes of pulmonary function observed in the patients with asbestosis were those common to patients with other interstitial fibroses, and consisted of a lowered diffusing capacity together with a reduced inspiratory capacity, hyperventilation (often accompanied by arterial desaturation) on exertion, with no evidence of air-flow obstruction except in patients in whom asbestosis was complicated by asthma or emphysema. Many patients also showed inequality of ventilation and ventilation-perfusion ratio. These functional changes were related to an independent grading of physical signs and roentgenographic appearances. Changes in lung function, specific for an interstitial fibrosis, often precede definite changes in the chest roentgenogram, so that finding them in patients with a history of exposure to asbestos is suggestive evidence of asbestosis whatever the roentgenographic appearances may be. -- J. Am. Med. Assn. Abstr.

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Asbestosis and Abdominal Neoplasms. E. S. Kent. Lancet 1, 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 1943 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. Abstr.

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 smoker's 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.

A Study of the Physiological Effects of Carbon Black. (3) Adsorption and Elution Potentials; Subcutaneous Injections. C. A. Nau, J. Neal and V. A. Stemoridge. 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

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were reported. The author concludes that there are cases with the symptoms of byssinosis in the mill surveyed but cannot say whether these symptoms are associated with a diseasing condition. No pulmonary function tests were made. -- Bull. Hyg.

468 Fever in Workers in Malt. W. Miskolczy.
Zentr. Arbeitsmed. u. Arbeitsschutz 10, 184-189 (Aug. 1960). German.

The investigation described was made because workers with malt in a brewery complained of attacks of fever with catarrhal symptoms. In this brewery, maize, molasses and rice are additions in the making of beer. Numerous examinations were carried out at different points in the brewery to determine the number and size of the malt dust particles in the air. Bacteriological tests of the dust were also made. The findings of these examinations yielded no explanation of the cause of the feverish attacks and it is considered therefore that the cause must lie in the chemical structure of the seeds from which the malt is prepared. Extracts were made from 3 different kinds of malt and used in intracutaneous skin tests of a number of malt workers and control workers. All malt workers and only one of the controls gave a positive skin reaction. It is concluded that there is some allergic substance in the malt and its dust which plays a part in the cause of the feverish illness of the malt workers. The workers state that after 2 or 3 hours they begin to cough. In the evening the body temperature rises to 37.3° to 37.8°C but the next morning it is normal. X-ray shows increase in transparency and size of the hilum. Vital capacity was found to be reduced in all patients.
-- Cond. from Bull. Hyg.

469 Pneumoconiosis in Coal Miners. G. Worth.
Deut. med. Wochschr. 85, 221-226 (Feb. 5, 1960). German.

In this paper with its numerous references, there is an account of the findings of investigations of pulmonary function of miners before and after a work shift, after experimental exposure to aluminum dust, and also of those miners who had been working for many years. There is also an extended description of clinical observations in miners. The discussion emphasizes the difficulties of assessing the effects on health of exposure to a dusty atmosphere. These effects are of complex nature for contributory factors may be climate and atmospheric pressure, weather, cramped working conditions and increased susceptibility to colds. Impairment of pulmonary function in men working in dusty atmospheres can not always be equated with silicosis. -- Bull. Hyg.

470 Mechanics of Breathing in Persons with Silicosis. A. Buhlmann and M. Schuppli.
Deut. med. Wochschr. 85, 1745-1750 (Sept. 30, 1960). German.

Up to now, according to the authors, no reports of systematic investigations into the mechanics of breathing in lung fibrosis of the various forms of silicosis have appeared in journals using the German language. The present report covers only silicosis cases, 35 in number. Two of these were of the "subacute" type, a rapidly progressing form of fibrosis leading to death in 3 or 4 years from the start of exposure to sandblasting. The remainder were "ordinary" cases which either progress slowly, or remain stationary over years. These were drawn from miners, dressers of castings, stonemasons and pottery workers. Twenty-three of them were of a severe type judged by the radiograph, and 10 were of a milder type. The tests applied included spirometry, 1-second Tiffeneau test, and assessment of blood gases at rest and exercise, esophageal pressures, and pneumotachograms. In the 2 subacute cases there was a reduction in the lung volume along with a diffusion defect for oxygen; carbon dioxide tension was about normal, showing that the ventilation was quantitatively adequate. The lung expansion was reduced and the elastic resistance raised. The viscous resistance was about normal. These changes correspond to those found in diffuse fibrosis such as asbestosis, the Hamman-Rich syndrome, etc. In the ordinary type, the lung volume was on the average, normal, and where it was altered there was no correlation with the severity of the silicosis as shown by the radiograph. The elastic resistance was not raised except in one case of severe silicosis, where parts of the lung were overdistended. Viscous resistance was raised in 14 out of the 35 cases because of flow resistance in the air passages due to bronchial obstruction.
-- Cond. from Bull. Hyg.

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471 The Effect of Triton, a Surface Active Polyoxethylene Ether, on Experimental Infective Pneumoconiosis. P. D. Byers, E. J. King and C. V. Harrison. Brit. J. Exptl. Pathol. 41, 477 (Oct. 1960). (British Journal of Experimental Pathology, H. K. Lewis and Company, 136 Gower St., London WC 1, England*).

The authors have already shown that Triton has no effect on quartz induced sili in animals. In view of the work of Rees on the prevention of tuberculosis in mice by Tri it was thought worthwhile to determine whether it had any effect on the highly modified fo of tuberculosis induced in animals by a mixture of dust with a relatively small number of bercle bacilli—infective pneumoconiosis. Infective pneumoconiosis has already been pro by the vole bacillus (mycobacterium tuberculosis var. muris) and coal dust. In animals i jected with coal dust and vole bacilli there were lesions in both the untreated and those tr with Triton. In untreated animals necrosis was present in the lesions as were also vole b with kaolin and vole bacilli, the lesions were on the whole less in the animals treated with ton. Necrosis and vole bacilli were present in the untreated and not in the Triton-treated mals. It was found that weights of the trachea-bronchial lymph nodes reflect in a quantita way the changes in the lungs. These were investigated and the results analyzed statistical. The effect of the Triton on the animals injected with coal and vole bacillus was not signifi but in the animals injected with kaolin and vole bacillus, the treated animals showed a me weight of only half of that of the untreated animals. The inference is that the effect of Tri may depend on the active pneumoconiosis produced by the particular dust.

-- Cond. from Bull. Hyg.

472 Radiographic Images with Direct Enlargement in the Diagnosis of Pneumoconiosis. H. Bastenier, et al. Bruxelles-med. 40, 893-903 (June 19, 1960). French. (Bruxelles medical; revue belge des sciences medico-chirurgicales, 141 rue Belliard, Brussels 4, B

The x-ray technique with direct enlargement of lung pictures has two advantage the small opacities appear larger without enlargement of pneumbra, and shadows produce superpositionings are dissociated. The direct enlargement of lung pictures may be usefu the diagnosis of the earliest stages of pneumoconiosis but details of method and interpreta of results are to be carefully established. The authors discussed these conditions for the co-legal diagnosis of pneumoconiosis.

-- APCA Abs

473 Pulmonary Function in Asbestosis of the Lung. An Alveolar-Capillary Block Syndrome. M. E. Bader, R. A. Bader and I. J. Selikoff. Am. J. Med. 30, 235-242 (Feb. 1961). (American Journal of Medicine, 11 East 36th St., New York 16, N. Y.*).

Seventeen workers exposed to asbestos dust were studied clinically and by pulmo ary function tests. Vital capacity was well preserved in half of the patients and moderate reduced in the remainder. Residual volume was not significantly altered except for a slig increase in 6 patients. The RV/TC ratio was normal in all but 2 patients. Maximum bre ing capacity was well preserved in all cases. Analysis of ventilation-perfusion relationsh revealed normal intrapulmonary mixing of gases in all but 3 subjects, in whom it was red Hyperventilation was present at rest and exercise in the majority of patients. Arterial ox saturation was slightly reduced in 6 patients at rest, and lower than 92% on exercise in 1 tients. While dead space ventilation (expressed as per cent of tidal volume) exceeded the limit in 12 patients, alveolar ventilation was increased in absolute terms and in no case w decreased. The diffusing capacity of the lung for oxygen was measured in 5 patients at re In 4 of these it was reduced. In addition, in 4 of these 5 subjects, venous admixture was creased. These abnormalities in pulmonary function correlated poorly with intimacy and ation of exposure. A better correlation was found when compared with roentgenographic normalities. The physiologic findings noted are characteristic of the alveolar-capillary b syndrome. The pathologic changes produced in asbestosis of the lung are reviewed in rel to this physiological syndrome.

-- Authors' summa

* Address not in current List of Periodicals.

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994 Counting of Atmospheric Dusts using Millipore Filters. N. Zurlo. Med. lavoro 51, 866-871 (Nov. 1960).

Difficulties in dust measurement with millipore filters include the poor visibi of small particles which is due to the refractive index of the liquid used to render the fi transparent being near to that of the dust, the gradual relapsing of the filter to opacity, the penetration of particles deeply into the filter if too much suction is employed. A pro dure is described which avoids errors due to such causes and gives results agreeing wit those given by the thermal precipitator. The membranes were steeped in a mixture of m cellosolve and butyl alcohol for microscope counting which enabled particles of transpar minerals as small as 0.5 micron to be dealt with; transparency was retained for over 50 A special reversible mercury-displacement aspirator is described for use with the filter which sucks 100 cc. of air in a minute or two, depending on the grade of millipore, at a constant flow rate. After the mercury has run from the upper into the lower reservoir, apparatus is inverted and is ready for use again. Rubber diaphragm valves automatical apply suction and release air displaced from the lower reservoir. -- Bull. Hy

995 Studies of Experimental Silicosis in Dogs. M. Mosinger, et al. Arch. maladies profess. 22, 5-39 (Jan.-Feb. 1961). French.

Experimental studies of silicosis in the laboratory have largely been carried o in small animals such as rats, guinea pigs, hamsters and mice. While for certain obse tions, pathological and epidemiological, these animals have advantages, their size consi ably restricts the range of investigations. The author and his colleagues decided to use for their experiments. Under intravenous anesthesia, suspensions of powdered quartz (u under 3 microns) in isotonic serum were injected into the lungs or selected lobes of thes through a bronchoscope. Thirty-four dogs (breeds not indicated) were given single or m doses at intervals. The survivors were observed over periods from 9 to 32 months. Th vestigations comprised clinical, radiological (including tomography and bronchography) r bolic, biochemical, morbid anatomical and surgical excision. Results are described ver fully under these headings and illustrated by photographs of specimens and photomicrogr It emerges that the features of the disease in the dog approximate closely to those observ man. The onset of emphysema, it is remarked, is precocious. The authors submit that findings prove that silicosis affects not merely the lungs and hilum glands but also other and that the accompanying biochemical changes signify systemic changes. Finally, the m of the dog for experimental work in pneumoconiosis are emphasized. -- Bull. Hy

996 Bronchitis, Bronchiolitis and Silicosis. F. Nager, F. Zenger and J. R. Rüttner. Schweiz. med. Wochschr. 90, 1357-1364 (Nov. 26, 1960). German.

The various views on the relationship between bronchitis and silicosis are disc in the first part of this paper under the headings of statistical investigation, investigation bronchoscopy, experimental research and pathological investigation. The authors' contr tion falls in the last category. They investigated histologically 100 lungs from 36 subject with classical silicosis, 17 from subjects exposed to mixed dust and 47 from subjects wit silicotuberculosis. These were compared with 30 lungs of patients dying of primarily no pulmonary conditions, where the patients had been bedfast with stasis of the lungs. Twe lungs from subjects with bronchitis and emphysema were also used as controls. The res of the investigation was that there was considerably inflammatory change in the bronchi a bronchioles in all stages of silicosis. These changes were not found or were not so defin in the controls. In the bronchi of the silicotic lungs there was a lymphoplasmacellular in tration, there were signs of hypersecretion, atrophy of the elastic tissue and later of the lar tissue, sometimes bronchostenosis and bronchiectasis. The cilia were intact. In the chioles, the conditions were more marked. The silicotuberculosis cases showed the sam changes in areas away from tuberculous foci. The changes were found in all stages. Th chiolitis and bronchiolectasis were essentially dependent on dust. With increasing sever the silicosis the bronchial and bronchiolar changes were more definite. The fact that ma severe cases of silicosis present no clinical evidence of bronchitis is to be explained by t fact that the bronchitis is "hidden" by the silicotic masses. -- Cond. from Bull.

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997 Asbestosis in a Worker Engaged in Automobile Undercoating. H. [illegible] Brugsch and H. [illegible] New Engl. J. Med. 265, 379-381 (Aug. 24, 1961).

The material that the patient used contained asbestos of various fiber sizes in asphalt base and was held in a mastic form by a solvent of the petroleum-distillate type. biopsy revealed the presence of asbestos bodies of characteristic appearance. The unus finding in this case was the presence of numerous amorphous iron-staining deposits fa widely dispersed throughout the specimen and surrounded by inflammatory and connectiv tissue reaction. The x-ray appearance of finely granular infiltration throughout both low lobes and the possibility that the sputum also contained asbestos bodies ("yeastlike bodie indicate that the lung process in this man was of a chronic nature consistent with pneumc coniosis and the direct local action of foreign material such as asphalt and asbestosis. is also suggested by some of the air tests obtained in the survey. The cross-sectional s here reported indicates that under prevailing methods of operation, the use of an asbestc base undercoating, when limited to short exposures, has not resulted in an occupational However, if this operation is performed continuously without adequate ventilation and pr respiratory equipment it may expose the worker to the potential danger of pneumoconiosi a protective measure, it is recommended that workers using asbestos-base undercoating terial over a period of 10 hours weekly or more for periods longer than one year should the following rules: pre-employment and periodic x-ray studies of the chest, with the us large-sized films (14 x 17 inches) should be made. When possible the workers should be tated. Approved respiratory devices, with additional protection for the eyes, should be Mechanical ventilation should be provided in the immediate vicinity of the work area.

998 Studies on the Chemical Properties of Chrysotile in Relation to Asbestosis. S. G. Clark P. F. Holt. Ann. Occ. Hyg. (London) 3, 22-29 (Jan. 1961).

There are two rival hypotheses, mechanical and chemical, of the pathogenesis asbestosis. According to the chemical hypothesis the fibrosis of the lungs is due to the a of silicic acid derived from the decomposition of asbestos in the lungs. The present repc describes studies made at the University of Reading, England. The experiments were m in vitro and the aim was to discover the rate of dissolution of South African chrysotile as at temperatures between 25° and 90°C in neutral, acid and alkaline media. The media u were respectively water, 0.1 N hydrochloric acid and 0.1 N sodium hydroxide. The anal of the extracts at various intervals of time are tabulated. It was observed that the dissol resulted in the removal of magnesium and "the release of minute, two-dimensional flakes the silica lattice". From this it is deduced that a reaction similar to that normally evok fine silica particles would follow. Dissolution, it was observed, occurred more readily alternating acid and alkaline conditions than under the influence of acid or alkali alone. an alteration of acid and alkaline states occurs in inflammatory diseases including pneum and bronchitis. The authors conclude that if the breakdown of chrysotile follows the sam course in vivo as it does in vitro, a pneumoconiosis having a general resemblance to sili would be expected. -- Cond. from Bull.

999 The Changes in the Bronchial Tree in Asbestosis. G. Jacob and H. Bohlig. Arch. Gewerbepathol. Gewerbehyg. 18, 247-257 (1960). German.

This bronchographic study of various stages of asbestosis has been facilitated b use of a new contrast medium—propyliodon. In asbestosis with thickening of the pleura t small bronchi towards the base are bunched together with their ends turned back. This w described by Jacob as the "broom phenomenon" and is associated with displacement of the basal segments of the lung. This is not pathognomonic for asbestosis since it occurs in c conditions causing pleural thickening. In all cases the conditions grouped under the term "bronchitis deformans" are to be found. The distension of the bronchi expected from the character of the disease is evident but bronchiectasis is not so striking as in silicosis eve in advanced asbestosis and it is cylindrical in type. In contrast to silicosis, there is no s osis of the large bronchi. In asbestosis as a rule the lower and middle lobes, and in the lung the lingula are affected, and in silicosis the upper lobe. In these lobes the bronchi a

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bunched while in the other lobes they are spread out. In asbestosis the normal appearance of the bronchus next to the hilus can be seen but this is not so in silicosis where there is an increase of the lung roots and obliteration of the lymph apparatus. The swelling of the roots may be so massive that many authors believe that silicotic patients with carcinoma of the lung have a greater expectation of life because of the closure of the way for metastasis. This very questionable assurance is not granted to the asbestosis patient. -- Cond. from Bull. Hyg.

000 Influence of Cement Kiln Dust on Plants and Animals. H. Pajenkamp. Zement-Kalk-Gips 50, 88-95 (Mar. 1961). German. (Zement-Kalk-Gips, Bauverlag G.m.b.H., Kleine Wilhelmstr. *, Wiesbaden, Germany *).

The so-called cement dust in the vicinity of cement works is not cement but consists essentially of very finely ground limestone powder and is, as such, a constituent of an intermediate product in the cement manufacturing process. It is therefore, more correctly called cement kiln dust. Since it is continually alleged by agriculturalists that this cement kiln dust is harmful to plants and animals, in recent years numerous scientific investigations on the effects of dust have been carried out with a view to testing the validity of these allegations. Among the studies noted is one at the Pathological Institute of the Veterinary Medical School at Hanover. High doses of dust (2.5 to 11 g./day/animal during a 60-day period in 1957) administered on the fodder of food, did not show any clinically ascertainable injury to, or harmful effects to the general condition of, a group of experimental animals (2 cows, 17 sheep, and 16 dogs). Field tests conducted during the growing seasons of 1958 and 1959 at the Agricultural Chemical Institute in Göttingen, indicated that even considerable quantities of dust brought about no harmful effects and no other lasting effects on growth or crop yield of several different plants. Those studied were oats, rye, grass, red clover, and turnips. The dust had a content of about 29.3% limestone (analyzed as CaO), and 3.1% K_2O. It was applied at levels of 0.75 g./m.^{2}/day; 1.5g./m.^{2}/day; 1.5 g. for 10 days with a pause of 10 days and then reapplied; 2.25 g. for 10 days with a pause of 20 days. -- APCA Abstr.

.001 Experimental Study of the Toxic Action of Dust in the Production of Sinter-(Hard)-Metals. Z. S. Kaplun and N. W. Mezencewa. J. Hyg. Epidemiol. Microbiol. Immunol. (Prague) 4, 390-399 (1960). German.

Hard metals or sinter metals are made from a mixture of tungsten and titanium carbides amalgamated with cobalt. In the process of manufacturing these metals the most dusty processes are the mixing of the metallic tungsten with carbon, the heating and sieving of cobalt oxide, and the sieving, granulating and grinding of the mixture of metals. From the periodical examinations of 283 workers in these dusty places it was found that those who came into contact only with tungsten and its combinations showed slight changes in the respiratory organs. Workers exposed to mixtures of tungsten and cobalt complained of poor appetite, cough, and loss of the sense of smell. This paper gives the results of several series of experiments on white rats to ascertain the effects of the individual constituents of the dust. First tungsten carbide, metallic tungsten, tungsten oxide and titanium carbide were used. Animals were exposed to these dusts either in a dust chamber or by intratracheal injection. All the dusts produced in the lungs a proliferation of lymphoid-histocytic elements about the bronchi and larger vessels. Tungsten oxide give the most distinct changes. A separate experiment was made with metallic cobalt. Very definite changes were found in the blood vessels and the walls of the bronchi showed inflammatory changes. Experiments with cobalt oxide showed that it had no distinct general action but it could produce more pronounced changes in the lungs than metallic cobalt. -- Cond. from Bull. Hyg.

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retention, the experiments should be repeated using a non-hygroscopic carrier. The results of glycerol-water aerosols indicate that the maximum occurs for particles which have an equivalent diameter of 1.5 microns. By assuming that the particles grow until they contain 85% water, the diameter for the maximum would increase only to 2.3 microns. -- APCA Abs.

1092 Surgical Treatment of Pulmonary Tuberculosis Associated with Anthracosis and Silicosis in Coal Miners. P. Razemon and M. Ribet. J. Thoracic & Cardiovasc. Surg. 41, 281 (1961). (Journal of Thoracic and Cardiovascular Surgery, C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Missouri*).

The authors emphasize that lung resection as a treatment of anthracotuberculosis and silicotuberculosis gives good results under certain conditions. The patients must be prepared by an intensive medical regimen which should not be pursued indefinitely. The tuberculous lesion must be well limited in order to be susceptible to a well-planned resection. The patient must be closely followed up for 2 years after the operation. Failure to cure is more frequent than in ordinary tuberculosis, but a calculated risk should be taken in these cases, keeping in mind the insufficiency of antibiotic therapy and the usually grave evolution of the disease. Very few postoperative anthracotic or silicotic extensions were observed. Postoperative cardiorespiratory insufficiency never occurred. The authors feel that surgical treatment for these conditions will be subject to improvement and changes, and they express the hope that a larger experience in this field will result in standardization of such surgical procedures.
-- Can. Med. Assn. J. Abstr.

1093 Roentgenologic Aspects of Asbestosis. M. Hurwitz.
Am. J. Roentgenol. Radium Therapy Nuclear Med. 85, 256-262 (Feb. 1961).

The roentgenographic features of asbestosis as seen among asbestos workers in South Africa are described and discussed. Emphasis is placed on the pleural changes, which are found more frequently than is classic diffuse pulmonary fibrosis. Pleural involvement also occurs frequently in association with lung fibrosis. A characteristic pattern of sclerotic pleurisy presenting in the form of calcific pleural plaques is described. Although this pattern may be seen in a number of pneumoconioses resulting from exposure to certain silicate dusts, its incidence in asbestosis has received scant attention in previous publications. The diffuse type of fibrosis found in asbestosis should be differentiated etiologically from pulmonary collagenosis. Less frequently, there are lung changes alone, presenting the classic pattern of simple uncomplicated diffuse pulmonary fibrosis. This may vary in degree. A well-marked nodular lung pattern presumably due to associated silica exposure is occasionally encountered in asbestos workers. The complications of asbestosis are briefly referred to, including pleural mesothelioma, which appears to be relatively common among asbestos workers in the northern Cape Province of South Africa. -- Cond. from Am. Rev. Resp. Dis. Abstr.

PHYSICAL ASPECTS OF THE ENVIRONMENT

1094 Bone Necrosis in the Shoulder Joint in Divers. R. Tillmann. Z. ges Hyg. u. ihre Grenzgebiete 7, 89-98 (Feb. 1961). German. (Zeitschrift fur die gesamte Hygiene und ihre Grenzgebiete, Clara-Zetkin-Strasse 96, Berlin, W8, Germany*)

Short references to some of the literature on bony changes in caisson workers and divers introduce this account of 2 cases of aseptic necrosis of bone in 2 divers. There is a description of the work of these men at diving depths which in one of the men was at an average

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