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considerable time on the x-ray appearance of these conditions. Silicosis is considered as a progressive rather than a static condition in which some cases develop rapidly, others very slowly. The complication of cardiac involvement and the relationship between silicosis and carcinoma of the lungs are discussed. Dr. Gardner is unable to settle the question of relationship between asbestosis and tuberculosis where the evidence at hand seems to be somewhat contradictory. Some workers may disagree with Dr. Gardner in details but no one who has any contact with any of these diseases can afford to overlook his opinions.—*Thomas L. Shipman.*

CASUISTIC CONTRIBUTION TO THE STUDY OF PNEUMOCONIOSIS. *A. Bassi. Gaz. Osped. e Clin., pp. 78-81 (1940).*

The author describes pneumoconiosis, but unfortunately makes many mistakes such as that the most important pneumoconioses are anthracosis, silicosis and siderosis; that dust is collected in the apices of the lungs; that the first site of diminished resonance is above the apices; that in every respect, pneumoconiosis shows the picture of chronic cirrhotic tuberculosis. Three cases are described at length: a stonemason and a sandblaster who seem to have had silico-tuberculosis, and one sandblaster with a dense callosity over the left superior lobe but without signs of any dust effect.—*L. Teleky.*

INVESTIGATIONS ON PULMONARY FUNCTION IN ASBESTOSIS. *L. Roemheld, H. Kempf, and H. W. Wedler. Dtsch. Arch. f. klin. Med., vol. 186, pp. 63-70 (1940).*

By means of the large Knipping spirometer, the authors examined thoroughly 19 patients with asbestosis. Symptoms of cardiac decompensation were not encountered, but definite cyanosis of the lips, dyspnea and irritating cough were found even during rest. A tight thorax was the most constant symptom and 9 patients had a chest expansion of 2 cm. and less. The more serious the condition, the faster the respiratory rate, and the depth of respiration is often very small. Vital capacity is always limited, often maximal at 800 cc. The functional power is therefore limited as a consequence of the diminution of the respiratory reserve in accordance with the severity of the clinical picture. 7 of the patients had a very considerable O₂ deficit, even during rest, and in all a respiratory insufficiency could be demonstrated. The efficiency of these men is thus limited by diminution of the vital capacity, of the respiratory reserve and of the inability of the lungs to saturate the blood with O₂. Limitation of efficiency by defective circulation could not be found in all the patients although asbestosis is a load charged to the right heart, which is as a rule found hypertrophied at autopsy. Death from cardiac failure is not excluded, however.—*L. Teleky.*

DUST, SMOKE, FUMES AND VAPORS: THEIR DETERMINATION AND ELIMINATION

INDUSTRIAL AIR ANALYSES. *S. Moskowitz, J. Siegel and W. J. Burke. N. Y. State Dept. Labor, Ind. Bulletin, vol. 19, pp. 33-34 (Feb. 1940).*

This article describes in detail the gas-absorbing bottles used by the New York Division of Industrial Hygiene for industrial-air analysis. An all-glass sintered bubbler unit in two sizes and an Aloxite gas distributor unit are described and their uses given.

A method for the simultaneous estimation of H₂S and CS₂ in air, using the all-glass

unit, is given. This unit is also well adapted to collection of acid fumes and mists. The determination of formaldehyde in air using the Aloxite unit is given and the detection of methanol by the same unit is outlined briefly.—*L. Silverman.*

THE CHEMICAL PROPERTIES OF SILICEOUS INDUSTRIAL DUSTS. *H. V. A. Briscoe. J. Roy. Soc. Arts, vol. 88, pp. 104-122 (Dec. 15, 1939).*

Dusts from a tin mine produced by wet-drilling and blasting in granite were found

and the appearance of serial roentgenograms are discussed. The antemortem diagnosis is made chiefly by x-ray, since the clinical symptoms are not characteristic. The condition must be differentiated from cavity, cysts, and especially, spontaneous pneumothorax. At autopsy, the diagnosis of multiple giant bullae was corroborated; the lungs were densely anthracosilicotic in the gross, but no typical silicotic nodules were seen microscopically; except for right sided cardiac hypertrophy and dilatation, there were no other significant findings.—*Lucy Schnurer.*

PULMONARY ASBESTOSIS. A REPORT OF BRONCHIAL CARCINOMA AND EPITHELIAL METAPLASIA. K. M. Lynch and W. A. Smith. *Am. J. Cancer*, vol. 36, pp. 567-573 (August 1939).

The authors report a second case of asbestosis with pulmonary cancer and cite 6 others from the literature. This case concerns a white man, age 50, employed as a weaver in an asbestos mill for 12 to 13 years before death. A necropsy limited to the chest revealed: carcinoma of the lungs, pleura and mediastinum, mixed squamous-cell and glandular in form but squamous in the main, judged to be of bronchial origin; pulmonary asbestosis with fibrosis, bronchiectasis, purulent bronchitis and acute bronchopneumonia, and dilatation of the right heart. A case of squamous metaplasia of bronchial epithelium in an asbestotic is also summarized. The authors point out that it is this type of change which may give rise to squamous-cell carcinoma. In their series of 2308 necropsies the incidence rate of primary pulmonary carcinoma is 0.21%. Among 35 cases of asbestosis the incidence is approximately 6%. The significance of this comparison, however, is questionable since the series of asbestosis cases is small and the possible statistical error great. In the Saranac Laboratory we have observed considerable hyperplasia of epithelium lining the larger air passages in our cases of asbestosis. It is possible that particles of asbestos on inhalation have this specific effect since they act as mechanical irritants.

As such, advanced asbestosis may give rise to squamous-cell carcinoma. It should be remembered, however, that hyperplasia and metaplasia of epithelium is not sufficient evidence to incriminate asbestos as a carcinogenic agent for similar epithelial changes occur in other chronic inflammations of the lung, notably tuberculosis. Our observations show that the latter is not attended with an increased incidence of primary carcinoma of the lung. In regard to carcinoma in asbestotics it would be interesting to know their family history with particular reference to the occurrence of pulmonary cancer in members never in contact with asbestos.—*Arthur J. Vorwald.*

THE HEART IN ANTHRACOSILICOSIS. J. F. Giering and R. Charr. *J. A. M. A.*, vol. 113, pp. 574-576 (Aug. 12, 1939).

Twenty-five coal miners without evidence of cardiac decompensation were studied by a variety of methods to determine whether or not these individuals had evidences of myocardial damage. Sixteen of these miners had advanced anthracosilicosis alone and 9 had anthracosilicosis and pulmonary tuberculosis. The degree of pulmonary involvement by the silicosis ranged from moderate to far advanced. Most of the cases presented evidences of a mild polycythemia. Vital capacity was reduced from 20 to 70%. Circulation time was within normal limits. Roentgenologic examination of the chest revealed cardiac enlargement in 2 cases. The pulmonary conus was prominent in one instance. In all 25 cases there was evidence of from early to advanced arteriosclerosis. Right axis deviation in the electrocardiogram occurred in 3 instances, left axis deviation in 10 instances. The electrocardiograms of these 25 cases all presented variation in voltage, in slurring and notching of the various complexes. Exercise tests showed abnormal acceleration of the pulse rate. Such tests resulted in dyspnea in most instances.

The authors conclude that the electrocardiograms are of value in demonstrating early cardiovascular damage, secondary to anthracosilicosis when studied along with other data.—*Norbert Enzer.*

DUST, SMOKE, FUMES, AND VAPOR ELIMINATION

METHOD OF NEUTRALIZING THE CONDITION PRODUCING QUALITIES OF FINELY PULVERIZED SILICEOUS MATERIALS. J. J. Denny and W. D. Robson. *U. S. Patent*, 1,556,378 (May 2, 1939).

The authors claim that silicosis can be prevented by introducing into quartz laden air, as in mines, finely powdered aluminum dust. The aluminum can be dispersed by mixing it into the blasting charge. Also, they suggest that silicosis can be "neutralized" by allowing the miner to have acquired it to breathe aluminum dust by means of some inhalator device.—*Philip Drinker.*

REPORT OF DUST STUDY CONDUCTED IN GRANITE MONUMENT CUTTING PLANTS IN SOUTH CAROLINA. R. M. Brown. *Bulletin, So. Carolina State Board of Health Ind. Hyg. Div.* (1939).

A portion of the author's summary is as follows:

"A dust study was conducted in 12 of the 35 monument and tombstone cutting plants in South Carolina. Of a total of 280 men employed, 125 were covered by the study. A total of 121 dust determinations were made.

"Contrary to popular belief among the granite cutting trade, high concentrations of dust were found in every stone cutting operation. In fact, the average concentrations for the majority of the individual plants and for the industry as a whole were dangerously above the maximum allowable limit of 10 million particles per cu. ft. of air for granite dust."

THE INCIDENCE OF QUARTZ AND SERIC PARTICLES IN SILICEOUS RESIDUES IN SILICOTIC LUNGS. J. Dawson. *J. H. C.*, vol. 39, pp. 405-412 (July, 1939).

The evidence for and against the serial theory of silicosis is reviewed. Since the question seemed still in doubt the author made further petrological examination of sections from silicotic lungs. These came from 31 cases of unequivocal silicosis comprising chiefly stone-masons and dressers, and machine tool-grinders. There was only one miner.

DOCUMENTS OF THE MINISTRY OF REGARDING OCCUPATIONAL BEN- POISONING. *Med. du Travail*, vol. 38-94 (1940).

is reprinted here the decree of 16, 1939, on the prophylaxis of poisoning which prescribes med- pervision of benzene workers (quite ient), and also other regulations ed to cover the administration of ree.—L. Teleky.

G MYELOBLASTIC REACTION OF THE OD AND BONE MARROW IN A CASE OF IENE APLASTIC MYELOSIS. P. E. l and S. Perles. *Sang*, vol. 14, pp. 18 (1940); *Soc. franç. d'hématol.*, vol. no. 18 (1939).

al disease of a man who worked with ne for 12 years. The disease became us after he had a boil on the neck. al puncture showed total aplastic osis with a strong blastic reaction of reticulo-endothelial system.—L. Teleky.

ASE OF APLASTIC MYELOSIS FROM BEN- INE IN A WOMAN PLUME MAKER. P. E. eil, S. Perles and Seror. *Sang*, vol. 4, pp. 49-54 (1940); *Soc. franç. d'hématol.*, ol. 6, no. 18 (1939).

a case of chronic benzene poisoning wing a typical clinical and hematolog- l picture, in a woman plume maker. She s 55 yrs. old and had worked for 40 yrs. yrs. in the same shop. Two additional es from the same shop are added: one in 35 did not show an entirely typical blood icture; the other one, first published by he authors in 1932, showed the picture f a chronic myelogenous leucemia. None f these cases were fatal.—L. Teleky.

DIDACTICS IN THE TEACHING OF MODER TOXICOLOGY. H. Zangger. *Schweiz. med. Wchnschr.*, vol. 70, pp. 603-606 (1940).

The author learned by experience in his institute (Institute of Legal Medicine, Zürich) that 80-95% of all poisoning cases are now caused by inhalation, compared to only 5-10% in former times. Our knowl- edge of chemistry, physiology and biology has changed completely and we have ac- quired many new conceptions. Accord-

ingly fundamental ideas have been altered and there is a corresponding change in therapy which has to be adapted to the various phases of poisoning.—L. Teleky.

EXPERIMENTAL CONTRIBUTION TO THE PATH- OLOGY AND THERAPY OF SEQUELAE OF PULMONARY EDEMA CAUSED BY PHOSGENE. E. Rothlin. *Schweiz. med. Wchnschr.*, vol. 70, pp. 641-647 (1940).

The author experimented on rats and showed by physical, hematological and pathological examination that lung edema

caused by inhalation of phosgene produced secondary local and general effects—com- pensatory emphysema with the blood pic- ture of chronic infection. Treatment with calcium will cure both the local lung changes and the general symptoms in a short time. The earlier this treatment is begun, the more effective it is. In animals not treated, and killed 24-31 days after poisoning, the lung volume was 130% higher than in those given calcium subcutaneously from the first day after poisoning.—L. Teleky.

DUST HAZARDS AND THEIR EFFECTS

ANATOMY, PATHOLOGY AND PATHOGENESIS OF PULMONARY ASBESTOSIS. G. Mottura and E. Fugiano. *Rass. med. indust.*, vol. 11, pp. 233-284 (1940).

Case histories of 2 women, one of whom worked in an asbestos factory for 31 yrs.; the other worked 7 yrs. and died 30 yrs. later. There are given very careful and exact histopathological findings with 16 excellent illustrations. A discussion on asbestosis bodies concludes this interesting paper.—L. Teleky.

ANIMAL TISSUE REACTION TO PARTICULATE COPPER STEARATE. P. T. Knies. *J. Lab. & Clin. Med.*, vol. 25, pp. 726-734 (Apr. 1940).

This article reports a case of suspected pneumoconiosis from copper stearate dust. Animal experiments conducted failed to show tissue response subcutaneously, intra- peritoneally or by inhalation. The reac- tion was acute and ultimate absorption and removal without residual or progressive changes resulted. Hence there was no experimental proof that the pulmonary fibrosis noted was caused by copper stearate.—Lealie Silverman.

ACTION OF TALC DUST ON THE LUNGS. A. Policard. *Arch. des mal. prof.*, vol. 2, pp. 530-539 (1939-40).

The author reviews the literature and then reports on his own experiments. He caused white rats to inhale extremely high concentrations of talc dust (over 5 μ) for 12 days, 3 hrs. daily. Some animals died

of congestion of the lungs. Pathological and histological findings of the animals dying or killed during the period of exposure or after 12 to 20 days are given. The dust, which reached the alveoli, is caught by alveolar monocytes. Lung irritation dis- appeared 12 days after inhalation ceased and after 20 days there was no dust present in the lungs.—L. Teleky.

RESPIRATORY INSUFFICIENCY IN SILICOSIS. G. Castrovilli and U. Iberti. *Med. del Lavoro*, vol. 30, pp. 267-280, 289-306 (1939).

After referring to the literature the au- thors report on careful examinations of respiration in silicoetics of different degrees. There is a diminution in vital capacity only in the more advanced stage (2nd stage). Indexes of Amar (vital capacity: weight), of Spehl (vital capacity x weight + height), of Lambolez (same but divided by square of height) show decrease in some 2nd stage cases and in all 3rd stage ones.

In 2nd stage cases the index of Hirtz (dif- ference between circumference of thorax in expiration and inspiration) is often dimin- ished, and very markedly so in the 3rd stage. Oxygen content of arterial blood is lowered in the 3rd stage, especially in cases with emphysema. Venous pressure increases with advancing silicois. Dysp- nea is caused principally by fibrotic proc- esses.—L. Teleky.

CONFERENCE ON HEALTH AND WORKING CON- DITIONS IN THE TRI-STATE DISTRICT,

ECONOMY OF HEALTH. G. W. Cannon. *Safety Engin.*, vol. 79, pp. 37-40 (Feb. 1940).

The author, vice president of a foundry company, quotes from his records to show that well organized health and safety programs pay, whether one looks at the subject from the humanitarian viewpoint or from the standpoint of net savings in operating expense. A savings on liability insurance costs provided a sum large enough to pay for the entire health and safety program. Pre-employment and periodic physical examinations are given and by a system of classification, sub-standard groups can be given more medical supervision. Careful dust counts, control, correction and good housekeeping have resulted in better, healthier working conditions and decreased occupational disease coverage cost.—F. S. Mallette.

TWO FATAL CASES OF PULMONARY ASBESTOSIS. E. C. Vigliani. *Rass. med. indust.*, vol. 11, pp. 26-52 (1940).

Very detailed description of 2 cases of asbestosis. The first concerned a woman who worked for 30 yrs. in a factory using asbestos in the manufacture of cord. The second case is remarkable: the woman worked from the ages of 14-21 in an asbestos factory and then left to be married. Her susceptibility to colds increased while she was working and she suffered her whole life from bronchitis and asthma. She died at the age of 50, with symptoms of a lung disease, nearly 30 yrs. after having stopped work. The autopsy showed interstitial sclerosis of the lungs and asbestosis bodies.—L. Teleky.

DUST, SMOKE, FUMES AND VAPORS: THEIR DETERMINATION AND ELIMINATION

DETERMINATION OF CLOTH AREA FOR INDUSTRIAL AIR FILTERS. C. E. Williams, T. Hatch and L. Greenburg. *Heating, Piping and Air Conditioning*, vol. 12, pp. 259-263 (Apr. 1940).

Although cloth filters have been used for industrial dust collection for several years, very little fundamental work on their performance has been done. This preliminary paper covers the basic requirements of a good filter and describes the factors involved in filtration and their application to the industrial dust problem. Experimental data giving basic filter resistance coefficients for several kinds of dust of known particle size are included. The data suggest the following points as outlined by the authors:

1. The resistance coefficient increases many fold when the particle size varies from coarse to fine.
2. The resistance coefficient does not vary greatly among the several dusts studied when compared at equivalent sizes.
3. These data explain why certain materials like lampblack are hard to filter: this difficulty is due only to fine size of the particles.

Filtering velocity is shown to have little

importance as a criterion of filter operation. The writers recommend in its place the use of a maximum allowable resistance of 3 in. water gage. This figure is a compromise between initial cost, maintenance and power costs. It will provide safe operation for all but the very fine particle size dusts such as lampblack.

Although the data presented are based upon laboratory studies, they illustrate that the prime factor is particle size. This is a fundamental piece of work and more work along these lines will be of great value to dust control engineers who are interested in filter performance and power economy.—Leslie Silverman.

VENTILATION AND ATMOSPHERIC POLLUTION.

II. REPORT OF SUB-COMMITTEE ON CHEMICAL METHODS IN AIR ANALYSIS. SAMPLING AND SAMPLING DEVICES. F. H. Goldman, Chairman. *Am. Pub. Health Assoc., Year Book*, pp. 92-97 (1939-1940).

A very useful compilation in syllabus form. As each item is in itself a brief abstract, it is difficult to reabstract the whole.—P. Drinker.

DUST PREVENTION BY USE OF CALCIUM MINERALS. H. C. Dod and J. C. Mallette. *Chem. Eng. Min. Rev.*, vol. 18, pp. 1-10 (1939).

The use of dolomite or a mixture of dolomite and limestone as tampin: holes produces a cloud of basic particles after firing which neutralize the charge on the silica particles and produce flocculation, so that it is possible to effect complete removal of particles from the air 15 min. after firing.—F. S. Mallette.

TO SOLVE SILICOSIS. S. C. Mallette. *Chem. Age*, vol. 42, pp. 97-98 (1940).

There is first a general history of the problem of breathing apparatus in respirators with the increase in stoppage efficiency. The author then presents a new principle, "the Repulsor" which has a repelling action on dust particles. It is a heated wire diaphragm. It is the interests of economy which safety lamps are used, to explosions already offered, the unit thus forming a composition of new all-purpose lamp. The author states that the defeat of the attack on prevention has been due to the lack of respirators and will now be a method of breathing ease.—F. S. Mallette.

DETECTION OF MINUTE AMOUNTS OF CARBON MONOXIDE IN THE BLOOD. Dtsch. Ztschr. f. d. ges. Med., vol. 32, pp. 404-408 (1940).

The author describes a method for measuring gas in the blood. The diminution of volume of gas, brought about by absorption of CO after absorption is measured manometrically. This makes it possible to detect CO by volume. The author refigures of CO in the blood extracted elsewhere in the body.—Teleky.

HYDROGEN SULFIDE DETECTION. *Oil and Gas J.*, vol. 28, pp. 1-10 (1940).

A regenerative scrubbing

DUST HAZARDS AND THEIR EFFECTS

ital examination revealed a general affecting principally the liver but affecting the blood (anemia), the kidneys (albuminuria), the pancreas (glycosuria), the gastro-intestinal tract, and the urinary system. Liver examination and findings confirmed the diagnosis of the yellow atrophy of the liver. The author comments on the fact that many distillates have usually been considered non-toxic when of low volatility. He believes that the profession should be aware of the possibilities of these distillates as a health hazard.—*W. Irving Clark.*

Y OF COMPARATIVE EXAMINATION OF THE EFFECTS OF BENZENE AND OF RADIUM X ON LEUCOCYTIC REACTIONS. *Illbach. Sang, vol. 13, pp. 719-734.*

author reports the results of animal experiments and experiments in vitro, performed in various ways. He concludes that Radium X is undoubtedly capable of producing therapeutic leucopenia but that it progresses to a complete agranulocytosis, whereas the effect of benzene is limited.—*L. Teleky.*

POISONING. *F. D. Gindhart. Med., vol. 8, pp. 515-516 (Dec. 1939).*

ne poisoning may occur through contact through the skin, by inhalation, or by contact of nicotine to an open wound. The author instances a case of exposure with subsequent poisoning. The symptoms are severe prostration, weakness of the pulse, low blood pressure, and substernal pain. Collapse is followed by paleness, nausea and vomiting. The return of symptoms may occur after the patient smokes or chews tobacco. This is a distinct hazard of nicotine, especially for those who make insecticides. A high percentage of nicotine, and those whose occupation brings them in contact with such substances, gardeners, florists and chemists. Treatment of nicotine poisoning is by the use of caffeine and adrenaline, using both caffeine and adrenaline. Severe collapse strychnine gr. 1/100 in repeated doses.—*W. I. Clark.*

SILICOSIS IN GOLD MINERS OF GOLD MINES OF BELLIÈRE IN MAINE-ET LOIRE. *R. Amsler and J. Cady. Rev. de tuberc., vol. 5, pp. 580-591 (1939).*

Amsler and Cady studied the pulmonary aspects of workers in different mines, because in their region not only slate is mined but also ferrous and auriferous ores. Whereas the percentage of free silica in slate is comparatively low (from 6-7%), the compact white quartz which constitutes the auriferous veins contains from 60-80% of silica and this explains the variety of forms of silicosis that are encountered in the workers who extract and crush or otherwise manipulate the ore. The authors observed the successive pathologic phases of silicosis. Most of the workers who came under their observation on account of silicosis were of the age group between 25 and 40; generally they were robust and had always been in excellent health. The family histories were usually free from tuberculosis. Some had worked in the mines for many years, others only for about 5 yrs. Occasionally they came for examination because they had been aroused to the dangers of their occupation by the rapid deaths of some of their co-workers. A man aged 31 had worked in the gold mines for 5 yrs. and had no symptoms. The pulmonary auscultation and roentgenoscopy revealed nothing abnormal, but roentgenography revealed considerable changes. There was a dissemination of micronodular images in both lungs. The volume of these nodules is slightly greater than that of tuberculous granulations and their opacity is likewise greater. The general aspects of these miliary images give the impression of a snowstorm. The patient had no spontaneous expectoration. Induced expectoration never disclosed tubercle bacilli. The phase of silicosis presented by this patient is the initial one, which may be designated as latent or pre-clinical. It is demonstrable only by roentgenography. From personal observations the authors conclude that this typical aspect is observable at the end of about 5 yrs. Later the subject develops a dry cough or one that is accompanied by mucous expectoration. Sometimes this is associated by

emaciation and fatigue and by thoracic pains that are augmented by cough and respiratory effort. The examination with the stethoscope is frequently negative or reveals only signs of pulmonary emphysema and sclerosis. The disorder may remain in this phase for months and even for years with occasional exacerbations in the functional signs. If the patient stays away from the mine and rests for several months, the development of the silicosis ceases; it is arrested and then it regresses, but the spots in the lungs persist for a long time. In other miners, however, the symptomatology is constant and gradually dyspnea develops; the patient becomes emphysematous and develops cardiac decompensation; he becomes constantly weaker and is hardly able to walk, and the smallest effort is difficult and painful. The auscultation still reveals only emphysema and bronchitis, but roentgenography reveals new nodules, retractile sclerosis and irregular spots. Expectoration becomes more profuse and coughing is persistent. This status represents the pseudotumoral phase of silicosis. The authors describe a case of this type and then discuss the terminal stage with its complications, such as spontaneous pneumothorax, and again relate typical case histories. In the last part of their report they take up the concurrence of silicosis and tuberculosis, pointing out that in some miners they were able to observe the evolution of tuberculosis in silicotic lungs. The tuberculous lesions of gold, iron and slate miners present such characteristic modifications that it may be possible to identify these miners on the basis of the roentgenographic aspect of their thorax.—*J. A. M. A.*

CLINICAL STUDIES IN ASBESTOSIS. *M. J. Stone. Am. Rev. Tuberc., vol. 41, pp. 12-21 (Jan. 1940).*

The report is based upon examination of 180 persons formerly employed in the opening, carding, spinning and weaving departments of an asbestos brake lining plant. All were litigants claiming compensation and although able to pursue some gainful occupation, most were incapable of much physical exertion. Of the entire group 32

were diagnosed as having no asbestosis although they claimed disability; 148 were thought to have some degree of pulmonary involvement, grouped in 3 stages, on the following basis: Stage I, slightly increased lung markings with a chest expansion limited to less than 2 inches. Stage II, definite x-ray evidence of pulmonary fibrosis and definite symptoms. Stage III, marked pulmonary involvement by x-ray with well-marked symptoms.

Details regarding the relationship between duration of exposure and degree of roentgenographic change are given on 168 of these cases. The data were abstracted for presentation in the following table.

EXPOSURE PERIOD	TOTAL EXPOSED	X-RAY EVIDENCE OF ASBESTOSIS			
		0	Stage I	Stage II	Stage III
		%	%	%	%
Under 4 years	47	53.2	28.0	17.0	0
4-9 yr.	56	0	64.2	21.4	14.2
10-15 "	40	0	35.0	50.0	15.0
Over 15 "	25	0	36.0	56.0	8.0
Average Exposure.....			8 yrs.	10 yrs.	11 yrs.

Evidence of tuberculosis was found in 9 (5%) of the films of the total 180 cases; in only two of them was the infection active at the time of the initial examination. One case occurred in a stage II and the other in the stage III asbestosis. Measurements of the heart shadows were made in 150 cases. After eliminating all with any evidence of organic heart disease it was concluded that asbestosis was particularly prone to produce secondary changes in the heart and peri-

cardium and that "the dyspnea noted early in this disease is of cardiac or circulatory rather than pulmonary origin."

Thirteen of these patients were reexamined 2 or 3 years later and it was the impression that the changes in the advanced cases had become more marked. There seems to have been no progression in stage I and stage II cases. Blood studies seemed to rule out the possibility of associated infection in the advanced lesions. Since the first examination 18 patients had died: 3 of pulmonary tuberculosis, 5 of broncho-pneumonia, 2 of lobar pneumonia, 2 of heart disease and the rest of various causes. Seventeen were chronic invalids complaining of cough and marked dyspnea.—L. C. Gardner.

PNEUMOCONIOSIS AND PULMONARY SYPHILIS

I. Racouchot and A. Lugand. *Bull. Soc. franç. de Dermatol. et de Syphil.*, 46th meeting, at Lyon, pp. 611-613 (1939).

A man who was exposed to very large amounts of vegetable dust (in an insecticide factory) and who always wore a respirator showed nothing in the first roentgenogram but an intensified shadow of the hilus and increased fibrosis in the inferior lobes. It was "naturally" thought to be early pneumoconiosis, but pulmonary syphilis was later diagnosed.—L. Teleky.

INJURIOUS EFFECT OF INHALED ALUMINUM DUST. O. Ehrismann. *Ztschr. f. Hyg. u. Infectiousk.*, vol. 122, pp. 166-170 (1938).

The author was not able to find injury in the upper or lower respiratory tract in animal experiments he made years ago.—L. Teleky.

DUST, SMOKE, FUMES, AND VAPORS: THEIR DETERMINATION AND ELIMINATION

METHODS FOR THE DETECTION OF TOXIC GASES IN INDUSTRY. LEAFLET NO. 8. PHOSGENE. Dept. Sci. & Industr. Res., H. M. Stationery Office, London, 1939.

Atmospheres containing concentrations of phosgene only just detectable by smell or lachrymation may prove fatal. Exposure for only 2 mins. to a concentration of 1 part in 30,000 may cause serious lung injury, and for prolonged exposure the maximum permissible concentration is 1 p.p.m.

For the detection of phosgene in industry the standard method adopted consists of drawing a known volume of the air under test through a fixed area of test paper by means of a standard hand-pump. The test paper, which contains diphenylamine and *p*-dimethylaminobenzaldehyde, becomes stained yellow or orange and the concentration is determined by comparing the stains with the standard color chart supplied with the leaflet. By making not more than 85

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strokes of the pump concentrations as low as 1 p.p.m. can be estimated. The leaflet contains full instructions for preparing test papers and for carrying out the test.—T. Bedford.

METHODS FOR THE DETECTION OF TOXIC GASES IN INDUSTRY. LEAFLET NO. 9. ARSINE. Dept. Sci. & Industr. Res., H. M. Stationery Office, London, 1939.

The faint garlic smell of arsine (arsine hydride) may easily pass unnoticed and no reliance should be placed on the absence of odor as an indication that the tested atmosphere is safe. Arsine is extremely poisonous to breathe. Repeated exposures to very low concentrations result in severe poisoning. There does not appear to be any limiting concentration at which the gas can be regarded as safe for daily exposures, hence continuous exposure should never be permitted in an atmosphere in which the presence of arsine is detected by the test described.

Two simple tests for small concentrations of arsine are available: (i) silver nitrate papers, and (ii) mercuric chloride papers. The silver nitrate method is much more sensitive but it has disadvantages: the stains vary in color according to the temperature at which the papers are used; (ii) the stains rapidly darken and become discolored even in the dark; cannot be kept more than 24 hours. Mercuric chloride papers are used as a standard method of detection as used in industry. A concentration of 1 in 200,000 to 1 in 250,000 can be detected by making only 50 strokes of the pump and still lower concentrations can be detected by employing a correct greater number of strokes. The test is drawn through the test paper and the resulting stain compared with the color chart supplied with the leaflet. Instructions for preparing test papers for carrying out the test are given.—T. Bedford.

METHODS FOR THE DETECTION OF TOXIC GASES IN INDUSTRY. LEAFLET NO. 10. ANILINE VAPOR. Dept. Sci. & Industr. Res., H. M. Stationery Office, London, 1939.

and recommendations in the mercury.—*F. S. Mallette.*

ACUTE CHRONIC CADMIUM POISONING. *H. Wilson and F. DeEds. L. 90, p. 498 (Nov. 24, 1939).*

A preliminary report of experiments on cadmium poisoning. Mice were fed varying amounts of cadmium chloride and very striking toxic effects were observed. Bleaching of the skin was similar to that produced by the action of all dosage levels but was proportional to the dosage as was anemia. Cardiac hypertrophy was identical with the higher dosages. Death was not limited to the left ventricle. It is believed that the anemia and hypertension resulting from cadmium poisoning was the causative factor.—*e.*

ACUTE DISEASES OF THE PHARMACEUTICAL INDUSTRY. *R. Hayhurst. Merck Rept., 1939.*

Of occupational disease in the pharmaceutical industry, only 31 out of 8,803 workers reported for 6 years in Ohio were females, chiefly amputees. Of the 31 cases, 10 were for dermatitis, cleaning up for 9; various other diseases for 9; two of impetigo and epidermatitis, probably from handling chemicals from handling labels and per and one due to irritation from an apron.

Of constitutional poisoning, 10 cases in women from filling capsules with phenol. Tenosynovitis of the hand occurred in a labeler and in a preparator. Bursitis in a man from painting windows. Three cases of low-grade CO poisoning were reported in clerks checking stock in the back of a drug store. Most of these cases fall in the partly occupational group.—*F. S. Mallette.*

EFFECTS

40, pp. 34-50 (Aug. 1939). by *L. G. Irvine and others.*

Very interesting and well written

review which depicts in a series of simple graphs the progress of accident prevention and of silicosis control. Much of this material has already been reported by Irvine (THIS J., 19, 275 (1937)), but it improves in re-telling. Of particular interest is the chart showing that dust control brought dust concentrations from 3-7 mgs./cu.m. in 1915 to 0.5-1.0 mg. in 1925, with a gradual decrease thereafter. The effect of such dust control is given in another chart which shows that the average case of silicosis in 1917 took about 9 yrs. of work in the mines to develop, whereas in 1937 it took about 18 yrs. The curve is steadily rising and rising fairly steeply. Obviously this is very significant and gives encouragement to those concerned particularly with prevention.—*Philip Drinker.*

GRAPHITE. *Suppl. to Occupation and Health. 4 pp. I. L. O., (Oct. 1939).*

Graphite, the physical properties of which are given, is mined or quarried from natural deposits or is synthesized at high temperature from coke and coal. Studies have been made of the health of workers in four industries involving graphite, namely: extraction and preparation, manufacture of graphite crucibles, manufacture of lead pencils, and preparation and processing of artificial graphite.

Slight modification of the lung picture was found in a few cases, with only minor damage having been done. Tuberculosis was not a complicating factor. Among older workers, bronchitis and emphysema were the outstanding complaints.

While graphite itself is relatively harmless, its contamination by siliceous minerals and the production of CO during its manufacture must always be considered as concomitant hazards.—*B. D. Tebbens.*

GEOLOGICAL CONDITIONS AND THE INCIDENCE OF SILICOSIS IN SOUTH WALES. *A. H. Cox. Suppl. to Colliery Guardian, pp. 5-8 (Nov. 11, 1938).*

The author is of opinion that dusts other than those from pure silica rocks must be to blame for the silicosis which occurs amongst South Wales anthracite miners, and his experience leads him to the conclusion that silicosis cases are prevalent

where considerable amounts of shale overlying the coal are ripped to make height in the working places. He considers that the cause is the presence of free silica in the shales that accompany the coals, and in particular an increased content of secondary silica in the shales of those areas that have been subjected to the greatest geological compression.—*T. Bedford.*

ARREST OF THE TOXIC ACTION OF SILICA DUST ON THE CONJUNCTIVE TISSUE BY ALUMINUM. *A. Policard and J. Rollet. Compt. rend. Soc. de Biol., vol. 132, pp. 190-192 (1939).*

The authors studied the effect on the cornea of quartz dust alone and of quartz with aluminum. The quartz alone produces a serious reaction, with edema, cellular infiltration for some weeks and healing with opacities. The reaction of quartz plus aluminum is very slight.—*L. Teleky.*

BIOMICROSCOPIC STUDIES OF THE EFFECT OF COBALT DUSTS (SMALTITE AND COBALTITE) ON THE CORNEA. *A. Policard and J. Rollet. Compt. rend. Soc. de Biol., vol. 132, pp. 192-193 (1939).*

Smaltite, CoAs₂, creates serious reactions but slowly and considerable time after exposure. Sulfarsenide of cobalt (cobaltite) causes only a slight reaction.—*L. Teleky.*

AN X-RAY STUDY OF THE LUNGS OF WORKMEN IN THE ASBESTOS INDUSTRY, COVERING A PERIOD OF TEN YEARS. *A. W. George and R. D. Leonard. Radiol., vol. 33, pp. 196-202 (1939).*

In the past 10 yrs. the authors have studied the chests of more than 3000 workmen exposed to various organic and inorganic dusts. In the present paper they discuss exposure to asbestos in the manufacture of brake linings. In 1928 and 1929 12 workers with symptoms of asbestosis were retired on compensation and were followed for 7 yrs. In 1933, 800 employees from the same plant were x-rayed and 3 of them found to have advanced asbestosis. When the plant closed, 90 men sued for compensation and a discussion of the trial

of 30 cases follows. At the trial, the 12 men retired 8 or 9 yrs. earlier were produced. All but the women were performing laborious work, and no progress of the lung condition was apparent.

X-ray appearance of asbestosis and the action of the dust on the lung is described. The authors consider that "the fiber is innocent of producing any pathologic dis-

turbance except an impedance to the air in this region of the lung." Pleuritic changes are also seen—adhesions and obliteration of the costophrenic angles. Emphysema and changes in the heart contour are other signs. No cases complicated by tuberculosis were encountered. X-ray will show asbestos in the lungs when there is enough to cause symptoms.—Helen Lawson.

DUST, SMOKE, FUMES, AND VAPORS: THEIR DETERMINATION AND ELIMINATIONS

APPARATUS AND METHODS FOR TESTING THE TOXICITY OF VAPORS. D. D. Irish and E. M. Adams. *Indust. Hyg. Sect.*, vol. 1, pp. 1-5, in *Indust. Med.*, vol. 8 (Jan. 1940).

The authors describe their apparatus for maintaining a controlled concentration of vapor in air for the purpose of testing the toxicity of that vapor. It consists of a gas pump, the gas chamber and a metering and sampling device.

The design of the pump is such that very low concentrations can be generated. A loose plunger is lowered into a liquid reservoir by a constant speed motor. The liquid is displaced flowing into a side tube and thence to the base of a gas reservoir. The liquid displaces the gas which escapes through a low pressure mercury trap into the air which is being blown into the chamber.

The chambers used are of two types: a small box with glass walls set into a metal frame, and a larger chamber which is a wooden box lined with a thin sheet of corrosion-resistant metal.

Measuring and sampling of the air are done by the standard methods. The apparatus is shown in photographs and sketches.—G. M. Reece.

SOME APPLICATIONS OF THE RAYLEIGH INTERFEROMETER. E. C. Craven. *Indust. Chemist*, vol. 15, pp. 354-357 (1939).

This article describes some applications of the Rayleigh interferometer in industrial use. The applications described are determining CO₂, consumed O₂, explosive gas concentrations, determination of hydrocarbons in crude hydrogen, and the use of the liquid cell for the strength of acetic anhydride. The instrument used was a

home-made 50 cm. type which the author describes briefly. Instead of using a compensating optical method for aligning the bands, pressure is applied and the amount required read from a manometer. The manometer reading is then proportional to the gas concentration. This is the same method Rayleigh used in his original model.—Leslie Silverman.

IS GAS PRESENT. E. G. Meier. *National Safety News*, vol. 41, p. 24 (Jan. 1940).

An able review of modern methods for the control of industrial gas hazards. The writer discusses the flame safety lamp; the Hoolamite and ampoule-type carbon monoxide detectors, the carbon monoxide indicator, alarm, and recorder; the hydrogen sulfide and hydrocyanic gas detectors; the portable gas interferometer; the halide-refrigerant gas leak detector; and the various devices for the detection of combustible gases.—F. S. Mallette.

ROLE OF THE ENGINEER IN AIR SANITATION. TYPICAL PROBLEM IN INDUSTRIAL SANITATION. J. J. Bloomfield. *Proc. Am. Soc. Civil Eng.*, vol. 65, p. 1484 (Nov. 1939).

A discussion of the role of the engineer in industrial sanitation studies, indicating the trends in this field of public health. After the physician has recognized the existence of diseases associated with the working environment, it is the engineer's function to study the conditions that may be detrimental to health, and by precise quantitative measurements, to determine the extent of the hazard. Once the nature and degree of the hazard have been demonstrated, it is also an engineering problem to devise methods for minimizing or con-

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trolling the dangerous condition, and to estimate the effectiveness of measures.—F. S. Mallette.

A MICROMETHOD FOR THE NEPHOLO DETERMINATION OF HYDROGEN BY MEANS OF A PHOTOELEMENT. Prinin and P. G. Smolyanskaya. *i. Mikrokhim. Met. Anal. Vozd.*, pp. 88-107 (1939).

To analyze air containing hydrogen sulfide, it is passed through an ammonium solution of silver sulfate. Experiments showed that silver sulfide absorbs light more than the sulfides or mercury. The absorption increases with the temperature. The suspension of silver sulfide is examined in a photometric colorimetric galvanometer having been calibrated with solutions of known concentration. This method is highly specific because silver salts are soluble in ammonium. It air can be examined continuously automatically for hydrogen sulfide.—Chem. Abst.

A HYDROGEN SULFIDE RECORDER. Stackhouse. *Instruments*, pp. 1-2 (Oct. 1939).

Describes and illustrates an H₂S recorder for industrial gas work which is used for industrial hygiene and instrument measures photoelectrically the change in color of a cerium molybdate solution.—Leslie Silverman.

DETERMINATION OF MANGANESE AND IRON IN AIR OF ELECTROLYTIC SHOPS. M. V. Nifontova. *Izv. Vsesoyuzn. Nauch. Issled. Inst. Khim. Anal.*, no. 5, pp. 26-28 (1939).

Procedures are given for the determination of Mn as permanganate with persulfate or as titanium by the hydrogen peroxide and of Fe by the thiocyanate.—Chem. Abst.

A NEW MERCURY VAPOR DETECTOR. Woodson. *Penna. Dept. Labor Safe Practice Bull.* no. 9 (1939).

The apparatus was designed for mercury boiler plants to detect leaks is based on the scattering of light.

illuminating gas were determined satisfactorily by this method.—*Chem. Abst.*

AIR SAMPLING OF ASBESTOS DUST. COMPARISON OF IMPINGER AND ELECTROSTATIC PRECIPITATOR METHODS. *J. W. Fehnel. Indust. Hyg. Section, vol. 1, pp. 5-7, in Indust. Med., vol. 9 (Jan. 1940).*

This is a study of comparative methods of sampling asbestos dust. While the impinger and electrostatic methods of sampling agree in the determination of total dust concentration, the precipitator appears to trap more fibers. It was found that 50% of the dust was less than 2.5μ , while 97% was less than 10μ .—*G. M. Reece.*

"HUWOOD" DUST COLLECTOR. *Colliery Guardian, vol. 159, p. 547 (Oct. 1939).*

A description of a device which acts in a manner similar to a vacuum cleaner. From a special collar on the drill steel, a rubber hose leads to a cylindrical tank which is filled with a bag-like filter cloth. An injector worked by compressed air is provided and the tank cover is fitted with a system of baffle plates through which the injected air escapes.—*F. S. Mallette.*

DUST PRODUCED BY DRILLING WHEN WATER IS SPRAYED ON THE OUTSIDE OF THE DRILL STEEL. *J. A. Johnson and W. G. Agnew. U. S. Bur. Mines R. I. no. 3478 (1939).*

These are the results of tests made of the effectiveness of spraying water along the outside of drill steel as compared with standard wet-drilling practice. The equipment used in the tests was designed primarily for the control, in quarries, of dust from dry drilling with solid type drill steel. The results show conclusively that this method should not take the place of regular wet drilling underground. Even if a method is devised whereby it may be used on holes at an inclination above the horizontal, far too much dust is disseminated even to consider its use instead of wet drilling. However, if a method is developed by which the device may be used on holes of any inclination, it might prove to be a valuable accessory to regular wet drilling in collaring and drilling the first 2 feet of a hole, as tests have shown that the

greatest amount of dust is thrown into the air at that depth. The tests show that when the spray was used with a slow cutting machine, such as the quarry plug drill, the device kept the dust within limits that are considered good underground practice.—*F. S. Mallette.*

THE CHEMICAL PROPERTIES OF SILICEOUS INDUSTRIAL DUSTS. *H. V. A. Briscoe. J. Roy. Soc. Arts, vol. 88, pp. 104-122 (Dec. 15, 1939).*

In the author's opinion, there has been no clear proof that the causative agent of silicosis is silica. Since substances other than free silica, such as asbestos, or the silicates present in anthracite coal dust, can also produce disabling changes in the lung similar, according to the author, to those produced by free silica dust, he feels that both "free silica" and these silicates have some constituent in common which is the real cause of damage. As evidence that soluble silica is not to blame, the author quotes the examples of exposure to cement dust or coal dust containing siliceous ash, which produce no lung disease. In his opinion, the accepted methods of dust collection such as wetting, produce changes in the samples which lead to erroneous conclusions as to their chemical reactivity. His dissatisfaction led him to devise new methods of collection which he divides into three classes: (a) volatile crystal filters; (b) soluble crystal filters; and (c) the "labyrinth." Using dust collected by the latter means, it was found that dust of the magnitude of less than 1 micron was three times as soluble as dust of 2-3 microns. It is believed that there may be a selective solubility effect on the various mineral dusts so that methods of collection using water as a medium do not give a true picture of the dust as it is breathed. Little value, according to the author, can be placed on findings obtained by examining minerals in the lung at autopsy; these may have been considerably changed. He feels that further experiments need to be undertaken with artificially prepared dust using careful control of its characteristics so that any resulting effects could be absolutely attributed to it.—*F. S. Mallette.*

OCCUPATIONAL DISEASES

SKIN DISEASES OF LAUNDRESSES. CHROMIUM AND CHLORINE. *H. Rabeneau and Ukraine. Derm. et syphil., vol. 7, pp.*

A case with outstanding features led the authors to test several women, in most of whom there was hypersensitiveness to eau de Javel (containing potassium hypochlorite and sodium hypochlorite) and to chromate. The manufacturer of eau de Javel is questioning that the product contains a very small amount of potassium chromate (0.007%). Ordinarily without chromate seems to cause skin diseases much more rarely. The authors suggest that the threshold to the chlorites is lower than for the chromates. They consider it a "group" sensitizer. Sensitization seems to exist in many cases of this hypersensitivity and the use of eau de Javel is different in different countries in which it is widespread in France and in the United States. It is found in laundresses, hotel employees, etc. The authors suggest that adding chromate to Javel be forbidden. The authors present an interesting paper with descriptions of different kinds of skin lesions of the substance, and describe the test. They apply a drop of the solution to the fold of the upper arm. There is a difference in reactions.—*L. Teleky.*

OCCUPATIONAL AND INDUSTRIAL DISEASES. *G. Richl. Wochenschr., vol. 52, pp. 878-880.*

The author gives a summary of the subject, employing British and German notation.—*L. Teleky.*

HAZARDS OF COMBUSTION

PARKINSONIAN SYNDROME FOLLOWING ELECTRICAL INJURY. *Weinberg. J. Nerv. Ment. Dis., vol. 90, pp. 738-746 (Dec. 1939).*