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POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

FATAL POISONING PROBABLY DUE) ARSENIURETTED HYDROGEN. *Larde. Abstr. as follows from Soc. de éd. légale de Paris, Nov. 14, 1927, in nn. d'hyg., May, 1928, N. S. vol. pp. 500–501.*

Two workmen who had to clean out tank containing sulphuric acid and idge were apparently exposed to arniuretted hydrogen. The men had en working for only twenty minutes. ae said he felt ill; he went home, and ed of acute edema of the lungs in rty-eight hours. The second deloped bronchitis and gastro-intestil trouble. In searching for a cause poisoning, the sulphuric acid was und to contain 1 part of arsenic per ousand; this metal was recovered om the viscera of the deceased. As ither of the men had been taking any edicine containing arsenic, the auor holds that the sulphuric acid in e tank, acting on the sludge, genered arseniuretted hydrogen. Once is gets into the lungs it is transmed into arsenious acid which uses considerable blood destruction. E. L. C.

BENZOL POISONING AS A POSSIBLE AZARD IN CHEMICAL LABORATORIES. *J. Bloomfield. U. S. Pub. Health p., July 20, 1928, vol. 43, pp. 1895–97.*

Blood examinations of the workers posed to benzol vapor in the chemi- laboratories visited by the writer not show an abnormal white blood l count. However, the blood of ee of the men showed a departure in the relationship between the various types of white blood cells. Such a blood picture, coupled with a definite exposure to solvent vapors of a concentration considered toxic, according to present day standards, tends to indicate that the possibility of benzol poisoning in chemical laboratories must be considered.

Many industrial plants still use benzol, since the claim is made that the cost of suitable substitute solvents is prohibitive. Certain chemical laboratories use a sufficient amount of benzol to be considered as a potential hazard, but not enough of this solvent is utilized to justify its retention on the above claim. It is felt that in practically all chemical laboratories benzol could be replaced by some solvent known to be less toxic, such as toluol, xylol, or Hiflash naphtha. It is recommended at this time that in case the use of benzol in chemical laboratories is continued, it should be confined to the testing of materials only, and should not be employed as a cleansing agent. Also, in order to detect incipient benzol poisoning at a stage when its effects can be minimized, all laboratory workers exposed to benzol fumes should be given a thorough medical examination before employment, and should be reexamined, with systematic blood counts, once every month or two thereafter. Any worker whose blood picture, on reexamination, shows a marked departure from the normal (obtained from a previous examination) should be promptly excluded from benzol exposure.

CHRONIC CARBON MONOXIDE POISONING. *J. C. S. Battley. Canadian Med. Assn. Jour., Aug., 1928, vol. 19, p. 157.*

LEAD POISONING AS AN OCCUPATIONAL DISEASE. *Langelez. Bruxelles Méd., 1928, vol. 8, pp. 1579–1586.*

This article is issued by the Chief of the Industrial Medical Service in order to help doctors in carrying out their duties connected with the extension of the Compensation Acts in Belgium to certain industrial diseases, including lead poisoning. The usual accepted signs and symptoms of lead poisoning

DUST HAZARDS AND TI

ANTHRACOSIS AND PULMONARY TUBERCULOSIS. *T. Wedekind. Abstr. as follows from Klin. Wchnschr., May 6, 1928, vol. 7, p. 890, in Jour. Am. Med. Assn., July 21, 1928, vol. 91, p. 214.*

In a series of experiments on rabbits, Wedekind succeeded in producing healing of tuberculosis of fatal type by intravenous injection of a suspension of coal dust. His theory is that irritation of the cells of the vascular endothelium by the particles of coal gave rise to migration of large numbers of phagocytes into the lung tissue.—K. R. D.

THE IMMEDIATE DIAGNOSIS OF PULMONARY ASBESTOSIS AT NECROPSY. *M. J. Stewart. Brit. Med. Jour., Sept. 15, 1928, vol. 2, p. 509.*

Juice from lungs fibrosed by asbestos dust exhibits under the microscope myriads of the "brown bodies" characteristic of this disease. Subsequent histologic examination revealed them

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are reviewed, and fairly stated, with special attention directed toward the blood condition and the presence of basophil red corpuscles. The author considers these an effort of the hematopoietic system to replace poisoned red cells rather than as degenerated cells. Somewhat unfortunately he ascribes lead poisoning to absorption through the skin, then through the digestion, and only lastly by the lungs; in fact inhalation of lead dust is of course the chief cause, and the skin, in occupation, may be entirely neglected as a portal of entry.—E. L. C.

HAZARDS AND THEIR EFFECTS

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dering on fibrotic areas, and, in smaller numbers, within the fibrotic patches. These bodies have been described only in asbestosis. In this case the worker, a woman, aged 34, had made asbestos mattresses for sixteen years; but had not worked for two years before death. Both lungs were fibrosed and anthracotic.—E. L. C.

PULMONARY ASBESTOSIS. *W. E. Cooke. Brit. Med. Jour., Sept. 29, 1928, vol. 2, p. 585.*

The writer counters Stewart's suggestions (*vide supra*) that the "curious" bodies found in lungs exposed during life to asbestos dust are (*a*) diagnostic of asbestosis, (*b*) derivatives of asbestos, and (*c*) not vegetable in origin. These bodies do not exist in asbestos and cannot be produced by chemical means from asbestos. But organisms incubated with a colloidal solution of asbestos change in appearance and may, it is thought, be made to resemble the curious bodies. [illegible]

with lead oxides. The lead fume given off behaves like a gas, is absorbed into the finest bronchial tubes, and is today a common source of poisoning where the foregoing are practised. He describes the various combinations of gas flames used to produce a high temperature, laying stress on the fact that the higher the proportion of oxygen used the more lead is given off into the atmosphere as, *e.g.*, with the oxy-acetylene flame. He believes that the sole real protection of the person employed using this flame is the "fresh air respirator," *i.e.*, a facepiece with suitable tubing attached through which the wearer can breathe fresh air from a distance of, say, 30 feet. Provided the work is carried out in lofty, well-ventilated rooms, danger to other persons is not great as, owing to its weight, the amount of lead rapidly diminishes at 1 or 2 meters' distance from the burner. In Froboese's opinion no one should be allowed to do autogenous soldering who is not wearing a fresh air breathing apparatus, whether locally applied exhaust ventilation is present or not.

Thirteen experiments altogether are described, together with a minute account of the aspirating apparatus used and the method of determining the amount of lead found. Each experiment lasted for two hours and from 3 to 5 cu. m. of air were aspirated.

In one experiment (repair work by burning off the lead with a flame of hydrogen and oxygen in excess) 23.3 mg. in 10 cu. m. were found; in another (metallization) 17.3; in two others 5.3 and 5.2, respectively; and in the remainder from 0.2 to 4.5 mg. per 10 cu. m.—T. M. L.

THE OCCURRENCE OF LEAD IN THE EGG OF THE DOMESTIC HEN. PART III. *W. B. S. Bishop. Med. Jour. Australia, June 15, 1929, vol. 1, pp. 792–806.*

Articles reporting upon Parts I and II of this extended research appeared on April 21, 1928, and Jan. 26, 1929. (See THIS JOUR., 1928, vol. 10, Abstr. Section, pp. 216–217, and 1929, vol. 11, Abstr. Section, p. 158.) This considerable article concerns weights of eggs, the loss of weight during incubation, and the weight of embryos. Throughout, the methods used are carefully described, and the facts ascertained are stated in tabular form. The lead naturally present in the white-yolk was found to diminish during incubation from 0.08 mg. at 6 days to 0.005 at 20 days; meanwhile it increased in the embryo from 0.0008 mg. at 6 days to 0.08 at 20 days. The toxicity of lead compounds was tested by injecting them into the air lock of the egg; the fat-soluble compounds were found to be the least toxic, the order of decreasing toxicity being: the chloride, carbonate, colloidal lead, sulphide, phosphate, stearate, oleate, glyceride, and the lecithin compound. Lead was found to be present normally in egg yolk in two forms, as lead oleate and as lead lecithin compound.—E. L. C.

THE TOXICITY OF LEAD SULPHATE IN COMPARISON WITH THAT OF CARBONATE OF LEAD (WHITE LEAD). *L. Schwarz and F. Sieke. Abstr. as follows from Klin. Wchnschr., 1928, vol. 7, pp. 1836–1838, in Bull. Hyg., May, 1929, vol. 4, p. 424.*

The authors were asked to give a definite opinion as to the toxicity of lead sulphate and, therefore, carried out comparative experiments with rabbits and cats feeding them with the sulphate and carbonate. Analysis of the sulphate revealed 72.7 per cent. sulphate and 26.7 per cent. lead oxide, *i.e.*, 73.3 per cent. total lead. The sample of white lead contained total lead equal to 79.2 per cent.

The amount given in the food was 0.1 gm. per kilogram of weight daily for thirteen weeks; administration was then stopped as loss of weight, diminu-

DUST HAZARDS AN

DUST. *C. O. Sappington. Health Practices Pamphlet No. 4, Nat. Safety Council, 1929, pp. 7.*

A popular review of the conclusions of various investigators with regard to the industrial dust problem—in particular: the inhalation of free silica, the importance of particle size and of the toxicity of the material breathed, the mechanism of dust absorption by the lungs, the percentage retention of the dust inhaled, the prevention of dust formation and diffusion, the removal and collection of dusts and fumes, the advantages and limitations of masks and respirators, and the dust explosion hazard.

The procedure followed by the United States Public Health Service in their studies of the dusty trades is given.—T. H.

HISTOCHEMICAL STUDY OF ANTHRACOSED LUNG. *A. Policard and S. Doubrow. Presse méd., July 10, 1929, pp. 905–907.*

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The amount given in the food was 0.1 gm. per kilogram of weight daily for thirteen weeks; administration was then stopped as loss of weight, diminution in the hemoglobin content of the blood, and more or less considerable punctate basophilia occurred in the animals. In other experiments larger doses were given.

No significant differences were observed and the authors conclude that "sulphate of lead and carbonate of lead, when given with the food, or absorbed from deposits placed in the subcutaneous cellular tissue, have, for practical purposes, equal toxicity."—T. M. L.

DUST HAZARDS AND THEIR EFFECTS

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A popular review of the conclusions of various investigators with regard to the industrial dust problem—in particular: the inhalation of free silica, the importance of particle size and of the toxicity of the material breathed, the mechanism of dust absorption by the lungs, the percentage retention of the dust inhaled, the prevention of dust formation and diffusion, the removal and collection of dusts and fumes, the advantages and limitations of masks and respirators, and the dust explosion hazard.

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The authors report further on their method of micro-incineration. A lung section placed on a slide is incinerated in a small electric furnace after which only inorganic cinders, still in their original position, are left. Such a section is now compared with an unincinerated fellow, when the exact relation of inorganic matter to lung pigment can be determined. The conclusion is drawn that some lung pigment is derived from iron in the blood and is endogenous, but, especially in those exposed to occupational dusts, most pigment originates as inhaled dust and is exogenous. Hence, evidence is obtained that dust is inhaled directly into the lungs, and that tubercle bacilli may be taken in by the respiratory route. The article is illustrated.—E. L. C.

A CASE OF PULMONARY ASBESTOSIS. *W. B. Wood and D. S. Page. Tubercle, July, 1929, pp. 457–460.*

The clinical description and postmortem findings are given of a woman, aged 34, who worked from age 21 for

...tory air because of the con-...isly alternating inspiratory and ...tory movements and because of ...lectric charges of the particles; ...rm of the particles also must be ... into consideration: flat scale ...ell-like particles are more easily ... in suspension. The sedimenta- proceeds in direct ratio to the ...t of the particles and thus to the ...e of humectation of the particles to the slowing of the respiratory ...ements in the smaller bronchi. In large bronchi the mucosa is pro- ...ed by ciliary epithelium and a ... of mucus, and the particles ...sited on it are rapidly expec- ...ted, without having penetrated ... the pulmonary tissue; but in the ...ll bronchioles there is no mucous ...etion and the epithelium is thin ... easily traumatized by deposited ...ticles, which thus come in contact ...h the underlying connective tissue ... are carried away by the macro- ...ages or forced into various parts of ... lungs by a continuous pulling of ...nective tissue caused by the ex- ...nsion and the retraction of the lungs ...ring respiration. Thus the mecha- ...sm of penetration of the mineral par- ...les into the pulmonary tissue seems ... be of the same nature as the ...echanism of migration of a needle ...troduced under the skin.—K. R. D.

PULMONARY ASBESTOSIS. *W. B. Wood. Tubercle, May, 1929, pp. 353–363.*

Some description is given of the clinical condition of fifteen workers who came under observation after being exposed for varying periods of time to dust inhalation at an asbestos factory. Asbestos is a fibrous and crystalline mineral composed mainly of magnesium silicate. The author deals chiefly with radiographic appearances and gives twelve illustrations. He considers that pulmonary asbestosis is a definite condition characterized by progressive dyspnea which becomes extreme; it is accompanied by cyanosis giving a leaden hue to the appearance. Wasting is a notable feature, while cough is a variable symptom. Clubbing of the fingers may be present. Prognosis appears to be grave owing to intervention of such diseases as pneumonia or bronchitis, or even tuberculosis, although the evidence is not quite definite as to whether a patient with asbestosis is more liable than a normal person to contract tuberculous infection. Skiagrams present shadows suggesting a diffuse fibrosis affecting chiefly the lower two-thirds of the lungs. The striations form a fine network, like that of a cobweb, which lacks the coarse quality of silicosis.—E. L. C.

THE PRESENCE OF THE ASBESTOS FIBRE IN THE LESIONS OF ASBESTOS WORKERS. *S. R. Gloyne. Tubercle, June, 1929, pp. 404–407.*

The author first examined powdered asbestos fibers, and then looked for them in workers. He found them in asbestos corns or skin thickenings which are common among the workers, in nose swabs, in mouth washes, and in sputum. But in no case were the "curious bodies" seen found by others in lungs. He found them however in profusion in the lungs of one worker. Careful examination of these "curious bodies" with concentrated sulphuric acid showed that they were material—possibly blood pigment—deposited round an asbestos fiber. How the are formed is not, however, discussed but a further communication dealin with cellular reaction to asbestos i living tissues is promised.—E. L. C.

DEMONSTRATION OF THE PECULIA BODIES OF PULMONARY ASBESTOS ("ASBESTOSIS BODIES") IN MATERIA OBTAINED BY LUNG PUNCTURE AN IN THE SPUTUM. *M. J. Stewart an A. C. Haddow. Abstr. as follows fro Jour. Path. and Bact., 1929, vol. 32 p. 172, in Chem. Abstr., May 20, 192 vol. 23, p. 2482.*

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ASEPTIC NECROSIS BY AN ANILINI PENCIL. *P. Wilmoth. Presse méd. May 29, 1929, vol. 37, pp. 700–701.*

Iselin in 1927 reported in *La Press Médicale* certain injuries arising from aniline pencils. Now P. Wilmoth describes a further case which was due to a portion of an aniline penci penetrating the skin of the foot of young girl who was walking barefoo across the floor. At first there was no pain; but ten days later the ski swelled and was found to be staine a violet blue. Finally the skin broke discharging purple fluid and leaving an ulcer with a necrotic blue-stained base. The ulcer showed no sign o healing until all the stained tissue had been excised. Apparently bits o aniline under these circumstances pas into solution and continue to kill th tissues until they are removed. I the present case no general symptom were reported, although Iselin men-

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he peculiar characteristic golden low bodies were found in two cases of pulmonary disease in individual persons who had worked with asbestos for several years.—P. D.

THE ESTIMATION OF SILICA IN TISSUES. *E. J. King. Jour. Biol. Chem., Nov., 1928, vol. 80, pp. 25–31.*

"A micro method for the estimation of silica in animal tissues, which depends on the production of yellow silicomolybdic acid, has been described. Evidence is produced to show that the method gives accurate results.

"The silica content of some tissues has been estimated; values are listed in tabular form."

CUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

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GROSS AND MICROSCOPIC CHANGES IN THE SKIN PRODUCED BY X-RAYS AND BY LIPOID SOLVENTS. *L. H. Jorstad and C. W. Lane. Arch. Dermat. and Syph., June, 1929, vol. 19, pp. 954–967.*

The conclusions are given as follows:

Active precancerous lesions histologically have been produced in the skin of the white rat by repeated painting with a diluted tar preparation. The same type of lesion is produced by a single exposure of unfiltered x-rays, or by combining the two procedures. In observing the histologic changes produced by these procedures at different intervals throughout the period of experiment, further evidence was gained that coal tar, allied substances such as

Osvaldo. Abstr. as follows from Ann. ottal., Feb., 1928, vol. 56, p. 154, in m. Jour. Ophth., Nov., 1928, vol. 11, 938.

A man having the care of war pro-ctiles undertook by means of a lathe) cut off the point of a hand grenade hich was filled with phosgene gas, ausing it to explode. He received ie full effect of the contents in his ace and eyes and was immediately nveloped in a mist of gas. The face nd lids became red and swollen; the ornea opaque with necrosis of the pithelium such as commonly follows n acid burn. The opacity prevented view of the iris or pupil. In a few ays the injury was followed by a eep infiltration, corneal ulceration, nd hypopyon, with prolapse of the ndobulbar tissues and loss of the eye. t the end of the year there was ymblepharon and adhesion of the rbital tissues. The result was so much more serious than that usually following an injury from phosgene gas that the author concludes that the gas must have had in it some bromine and chlorine to produce so serious an effect.

SPLENOMEDULLARY LEUKAEMIA IN AN X RAY WORKER. *W. H. Evans and R. E. Roberts. Lancet, Oct. 13, 1928, vol. 2, pp. 748–751.*

A case is reported of typical myeloid leukemia of fourteen years' standing in an X-ray worker. Then all evidence previously published associating radiations with leukemia is critically reviewed; eleven cases were found, including two in radium and thorium workers. Finally the authors hold that the small number of cases makes it impossible to exclude coincidence, and pronounce the case against radiations as a cause of leukemia to be "not proven."—E. L. C.

DUST HAZARDS AND THEIR EFFECTS

EXPLOSIBILITY OF SULFIDE DUSTS N METAL MINES. *E. D. Gardner nd E. Stein. U. S. Bur. Mines Rep. Investigations, Serial No. 2863, 1928, pp. 11; abstr. as follows in Chem. Abstr., Nov. 20, 1928, vol. 22, p. 4320.*

Explosions have occurred in blasting n massive sulphide ores of greater magnitude than could be accounted for by the charge of explosive used in making the blast. During regular blasting in such ores sulphide dust is produced and scattered about the mine, while sulphur dioxide and hydrogen sulphide appear in the atmosphere. In these occasional heavy blasts the concentration of sulphur dioxide in the after-atmosphere is very high. Gallery tests show that sulphide dusts can be ignited by blasting and that the combustion may be violent enough to be considered an explosion but it was not shown if such explosions are self-propagating. To prevent these explosions, settled dust should not be allowed to accumulate. All working places should be thoroughly wetted by sprinkling before the bore holes are loaded. And bore holes should be steamed and tamped to the collar.

A CASE OF PNEUMOCONIOSIS. RESULT OF THE INHALATION OF ASBESTOS DUST. *H. E. Seiler. Brit. Med. Jour., Dec. 1, 1928, vol. 2, p. 982.*

A case is reported of extensive pulmonary fibrosis ascribed to inhaling asbestos dust. The fibrotic condition resembled that produced by silica dust, when seen by radiograph. The patient was a man aged 40 years, who for twenty-two years had been employed in the asbestos industry. He sought advice on account of chest symptoms associated with lassitude,

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INDUSTRIAL SKIN LESIONS FROM SALTS OF ANTIMONY IN THE TEXTILE INDUSTRY. *A. B. Selisky. Abstr. as follows from Dermat. Wchnschr., 1928, vol. 86, pp. 723–727, in Bull. Hyg., Feb., 1929, vol. 4, p. 170.*

The author describes occurrence of some 200 cases (including relapses) of industrial skin lesions due to the use as a mordant of solutions of salts of antimony in cloth dyeing. The form assumed was a pustular, necrotic dermatitis commencing usually as a folliculitis and ending in an atrophic scar. Usually the arms were affected. A perifollicular abscess formation was found histologically.

Etiologically the author believes that acid intermediate products, which are formed when antimony salts are used for mordanting, were responsible for the trouble. The condition was much the worst in the summer months and, in order to neutralize the excess of acid intermediate products, the author recommended addition of chalk. This step was followed by notable remission. After four months the chalk was given up on technical grounds, when the cases again became more numerous.

Use of indiarubber gloves and smear-

pulmonary fibrosis ascribed to inhaling asbestos dust. The fibrotic condition resembled that produced by silica dust, when seen by radiograph. The patient was a man aged 40 years, who for twenty-two years had been employed in the asbestos industry. He sought advice on account of chest symptoms associated with lassitude, loss of weight, and night sweating. No tubercle bacilli were found, and his clinical condition is ascribed to his occupational hazard.—E. L. C.

CLINICAL PICTURE OF PNEUMONOKONIOSIS. *G. Schellenberg. Beitr. z. Klin. d. Tuberk., June 29, 1928, vol. 69, p. 498.*

OCCUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

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Use of indiarubber gloves and smearing the skin with vaseline is naturally of value.—T. M. L.

LESIONS DUE TO COPYING-PENCILS. *G. Marsiglia. Abstr. as follows from Riforma med., 1928, vol. 44, pp. 1308, 1311–1313, in Bull. Hyg., Feb., 1929, vol. 4, p. 179.*

Erdheim, a surgeon of Vienna, was the first to call attention to the deleterious effects of aniline dyes on living tissues, in 1914 and 1920. By experiment on guinea-pigs, rats, and rabbits, he showed that when small fragments of sterilized copying-pencils were introduced beneath the skin of the abdomen, a cyst formed round the foreign body and the color was diffused into the surrounding tissues and produced a wide necrosis. Fragments of green pencils produced the least injury, the violet were the most severe, gentian violet much less than methyl violet. A fragment of 2 sq. mm. of the last caused a zone of necrosis 3 cm. in diameter. Cicatrization did not take place until the whole of the necrotized tissue had been eliminated. In addition to the local lesions signs of intoxication might also occur, if the dose was a large one, leading to a fatal issue, and, postmortem, lesions of