is probably related to the large turnover mentioned above, the interrupted service, and the relatively low total years of service. In 1947, there were 58 cases (0-64 per 1,000) and 4 deaths (0-05 per 1,000). The pneumonia rate was 33-72 per 1,000, tuberculosis 2-39 per 1,000, and influenza 33-08 per 1,000. There were 12 cases of enteric fever, 22 of scurvy, and 2 of pellagra. There were 6 cases of heat stroke with 3 deaths.

K. M. A. Perry.


This volume deals with occupational safety and hygiene. It refers to legislation as early as 1900, from which date it would appear that the Spanish Government began to investigate and control industrial conditions more thoroughly than before. The book is in sections devoted to industrial accidents, including those occurring in agriculture or at sea. The insurance measures concerning these are also described, and the regulations designed to limit their incidence. Certain diseases are recognized as of occupational origin and are the reason for special precautionary and compensation legislation. The Ministry of Labour has a statistical department and also controls or suggests scientific investigation of accidents and occupational diseases. It has a staff of medical and lay factory inspectors, and appears to take particular care of women and children in industry. Their employment is completely prohibited in many occupations, and much restricted in others. There is special legislation to deal with women in the period before and after childbirth. This volume is not a complete description of all legislation, but rather a supplement describing recent additions or modifications thereof. The illustrated "safety first" posters are particularly well designed and worded. The worker's attention is drawn to the existence of a safety committee at his place of employment, and he is exhorted to keep in touch with it for mutual advantage.

G. C. Fether.

ABSTRACTS

(This section of the JOURNAL is published in collaboration with the two abstracting Journals, Abstracts of World Medicine, and Abstracts of World Surgery, Obstetrics, and Gynaecology, published by the British Medical Association. The abstracts are divided into the following sections: toxicology; industrial physiology; industrial lung disease; industrial dermatitis; accidents and orthopaedic surgery; industrial ophthalmology; environment; general. Not all sections will necessarily be represented in any one issue)

TOXICOLOGY


A survey was made of 32 persons exposed more or less continuously for 9 months to DDT in oil. Sprayers who used 3 to 4% DDT in kerosene as a residual spray were liable to absorb the drug through the skin and by inhalation. Workers who used 2-5% DDT in a 75% gas-oil and 25% fuel-oil mixture for the control of mosquito larvae were also liable to absorb the drug through the skin, as were the workers employed in mixing the two solutions. A comparison of the exposed group with a control group of 36 men in similar social circumstances and of similar nutrition (although of higher average age) revealed no difference in the average weight and blood pressure after the 9-month exposure. Vescication was observed in the sprayers where the straps of the spraying machine had chafed; but this was thought to be due to the kerosene. No significant signs or symptoms were noted in the exposed group, the recording of tremor of the hands in 9 men being regarded as doubtful. The urine of the exposed group was examined for organically bound chlorine but none was found, and it is suggested that this is not a reliable method for estimating absorption of DDT. It is concluded that the continued use of 3-1% DDT in kerosene, without protective clothing, is not likely to give rise to toxic effects. A plea is put forward for the use of a less noxious solvent than kerosene, or the increased use of emulsions of DDT.

Rachel MacHallet.


The high toxicity of the y-isomer ("gammexane") of hexachlorocyclohexane and the expected widespread use of it as an insecticide present possible poisoning hazards. Suitable treatment is suggested by the authors' findings that the marked hypertension and central stimulatory effects of gammexane do not occur in dogs given pentobarbital, and that gammexane action is antagonized by other isomers of hexachlorocyclohexane. In addition, the structurally related i-inositol (hexanoxyhexane), which is a growth factor for certain yeast strains, is known selectively to antagonize the toxic effect of gammexane on certain yeast strains. Massive dose of i-inositol administered prophylactically to rabbits over prolonged periods before the administration of lethal doses of gammexane (6 mg. per kg.) failed, however, to lower the mortality significantly.

The prophylactic intravenous administration to rabbits of 20 mg. per kg. of pentobarbital markedly reduced the toxicity of gammexane given intravenously, and afforded protection against 10 times the lethal dose. [Phenobarbitone is also stated by the authors in their comment and conclusions to be effective against the intravenous toxicity of gammexane.] The antitodal value of the α, β, and δ isomers of gammexane is much inferior to that of pentobarbital.

Gammexane administered orally to rabbits in the form of a 10% solution in peanut oil produced in 30 minutes to 4 hours symptoms qualitatively similar to
those after intravenous administration. A dose of 200 mg per kg was uniformly lethal, and this dose was used throughout the experiments. Under these conditions the therapeutic barbiturate (pentobarbital or phenobarbitone) was administered whenever convulsions occurred. [Route and dosage not stated.] Treatment with pentobarbital over 5 hours failed to protect any of 5 rabbits, but therapy over 32 hours protected 10 out of 11 rabbits treated with pentobarbital and 13 out of 15 rabbits treated with phenobarbitone. After treatment ceased, 8 additional rabbits in the pentobarbital group and 5 in the phenobarbitone group died. Pentobarbital had a rapid effect of short duration, and phenobarbitone gave lasting protection in doses causing less depression than pentobarbital.

The oral administration of gammexane to dogs produced a toxic syndrome similar to that in rabbits, and a lethal dose of 200 mg per kg. was given to 8 dogs, which were treated symptomatically, usually by the intravenous route. Four out of 6 dogs treated with initial total doses of 30 to 65 mg of pentobarbital per kg. and later doses of 10 to 15 mg per kg., over a period of 4 to 5 days, became normal. A massive dose (125 mg per kg.) failed to produce a permanent effect even though one of 2 dogs died in convulsions daily with pentobarbitone. The second dog received 75 mg. of the drug per kg. and became normal in 3 days.

A suitable therapeutic regime suggested by these experiments is the administration of a small dose of phenobarbitone with subsequent symptomatic doses of a short-acting barbiturate to control violent convulsions. Artificial respiration and cardiac massage are also recommended. The persistence of toxic effects for several days after oral administration of gammexane, compared with the short duration of the effects after intravenous injection, suggests the possibility of hepatic storage and emphasizes the need for continued treatment with an appropriate depressant. No permanent functional injury was observed in animals which recovered as a result of therapeutic treatment.

J. Williamon.


In the synthesis of sulphathiazole, 2-aminoanthrazone is used as an intermediate compound ; the potential risks of contact with this compound and of its inhalation suggested the need for toxicological investigation. Tests were made on albino rabbits and on guinea-pigs, rats, and cats. The compound, suspended in milk or olive oil, was introduced into the stomach of rabbits and cats by means of a syringe and a rubber catheter. For a single dose the LD 50 ranged from 0-12 g. per kg. in guinea-pigs and cats to 0-48 g. per kg. in rats, with an intermediate figure for rabbits. An increased rate of respiration was observed, with bodily weakness, diminished blood pressure, and mild convulsions. Animals usually died after 8 to 18 hours. There was an irritative action on the mucous membranes of the stomach and upper jejunum, and parenchymal lesions appeared in heart, liver, and kidneys. In the investigations on cumulative action, each of 5 rabbits was given 30 oral doses of 0-15 g. per kg., spread over a period of 56 days. The urea-nitrogen level in the blood rose slowly, and the ratio of organic to total sulphates in the urine increased. The application of the dry compound to the skin of rabbits and guinea-pigs for 2 hours each of 30 days induced no signs of irritation of the skin. However, post-mortem examination disclosed the presence of microscopic lesions, proving the absorption of the powder.

When 2 rabbits and 6 rats were subjected to the inhalation of air containing 0-2 mg. of the compound per litre for 7 hours a day on 43 days, they suffered no apparent ill effects. Of a group of 5 guinea-pigs exposed to air containing 0-025 mg. of the compound per litre for 7 hours a day on 42 days, 2 died (after 4 and 41 days respectively), but the others survived without apparent illness. These tests suggest that harm to industrial workers can be avoided if care is taken to limit the dust content of the air.

H. M. Vernon.


The authors investigated the effects of lead poisoning on porphyria in rabbits, and certain blood conditions in dogs. Animals were fed on a diet low in iron-porphyrin-containing constituents, to which lead acetate was added. One of the 4 dogs under observation was used as a control. The urine was collected over periods of 9 or 10 days and kept under toluene. Porphyrins were extracted by Dobriner's modification of Hans Fischer's extraction procedure and were determined quantitatively with an Evelyn colorimeter. No stippling of the erythrocytes was observed. It was found that urinary coproporphyrin excretion increased considerably in a puppy after 40 days' exposure to lead, and remained high for 3 weeks. In two adult dogs the haemoglobin level remained constant for 140 days, and then fell by 50% or more. Increased lead values in the blood (from 58 to 63 µg. per 100 ml in one dog and from 41 to 99 µg. in the other) were observed after 2 months of lead ingestion. The excretion of porphyrins in these dogs fluctuated considerably for the first 70 days, and then, in one dog, the coproporphyrin excretion gradually rose to 1,080 µg. In the other the value did not increase for 150 days, and then rose abruptly to 1,100 µg. in the last 10-day period before death. It appears that, in dogs, porphyria is a late rather than an early sign of lead exposure.

H. M. Vernon.
rats survived intermittent inhalation of the compound in the form of dust (0.26 mg. per litre of air) or of vapour in the concentration of 0.077 mg. per litre. When given orally the compound caused superficial corrosion of the gastric mucosa and irritation of the upper portion of the jejunum in rabbits, guinea-pigs, and rats. While the liver and spleen were severely damaged. When a single lethal oral dose of the pyrimidine compound was administered to rabbits and rats, varying degrees of gastro-intestinal injury, and acute changes in the heart and liver, developed. There was also pulmonary congestion, due to direct vascular injury, and pneumonia frequently supervened. The proportion of organic to total sulphates in the urine of rabbits increased after administration of a single oral dose. A similar result was obtained with the 2-aminodiazine. In the manufacture and handling of the two substances mentioned there does not seem to be an undue industrial risk.

H. M. Vernon.


The effects of natural cryolite and synthetic cryolite were compared and the rate of elimination of natural cryolite determined. Aqueous suspensions of cryolite were introduced into the stomach of rats through a blunt metal tube, and into the stomach of rabbits through a rubber catheter. Rats were found to survive exceedingly large doses (up to 80 g. per kg.) of natural and of synthetic cryolite. This must have been due to the rapid elimination of the cryolite from the digestive tract. On the other hand, rabbits were killed by the administration of 9 to 12 g. per kilo of cryolite: this seems to have been due to partial retention of the cryolite for a much longer period within the gastro-intestinal tract. The concentrations of fluoride in the blood of rats to which 16 g. per kg. of cryolite had been administered were much lower than those found in the blood of rabbits given either cryolite or sodium fluoride. Observations suggested that synthetic cryolite may be slightly more toxic than the natural mineral.

H. M. Vernon.


Hydrazoic acid (azomide), HN₃, is a weak acid. It is highly explosive, and is stated to be a severe protoplasmic poison. The authors carried out a clinical investigation on 10 workmen who had been exposed to hydrazoic acid fume for 1 to 15 years at a lead azide plant. Tests made in the area of maximum exposure showed the concentration of the hydrazoic acid to range from 0.3 to 3.9 parts per million. The men sometimes experienced headache, palpitations, and weakness, but quickly recovered on cessation of exposure. Exposure to hydrazoic acid in the concentrations encountered caused a rapid and severe fall of systolic and diastolic blood pressures which might persist throughout the shift. Previous investigators found that hydrazoic acid is extremely toxic to lower animals. The authors made tests on mice, rats, guinea-pigs, and rabbits, and found that lethal doses, when administered by injection or inhalation, caused irritation of the mucous membranes and excessive salivation, stimulation of the central nervous system, and a profound fall of blood pressure. Sublethal doses caused marked stimulation of respiration, with generalized convulsions. In white mice the LD₅₀ was found to be 21 mg. per kilo for hydrazoic acid, and 18 mg. per kilo for sodium azide.

H. M. Vernon.


According to the Overton-Meyer theory, the narcotic activity of a substance runs parallel with its ability to dissolve in fats. Since it is not practicable to measure directly the partition coefficient between the lipoids and watery fluids of an animal, a substitute oil-water system such as olive oil-water is generally employed. In the present investigation about 15 ml. of oil were placed in a 100-ml. flask, together with the organic compound and about 35 ml. of water, all three components being weighed in. The flask was placed in a constant temperature bath and rotated on its vertical axis at a speed of 1.000 r.p.m. for 6 to 60 hours. A sample of the water layer was withdrawn by pipette and run into the cell of a Zeiss "water" interferometer, where the concentration was determined. In all cases the measurements were made over a range of concentrations, and these are recorded in a table in detail, along with the mean partition coefficient and the extreme coefficients observed. The numerical data obtained in a representative experiment are also recorded.

H. M. Vernon.


Lead disturbs the formation of hæmoglobin by interfering with the linking up of iron to the porphyrin ring. In experimental lead poisoning in the rabbit anæmia is associated with raised serum iron values and an increased excretion of porphyrin. Similar disturbances of porphyrin metabolism, and the failure of hæmoglobin formation from iron in both iron-deficiency and infective anæmias, led to the supposition that inadequate hæmoglobin formation is also the result of deficient linking-up of iron in the formed porphyrin molecule. Cytochrome-C synthesis takes place in all living aerobic cells, independently of hæm formation in the bone marrow, and is not interfered with in lead poisoning. On the contrary, increase in cytochrom values in the tissues suggests a general increase in respiratory enzymes. This is not a feature peculiar to lead poisoning but is a general tissue reaction to inadequate oxygen supply. It is present in most anæmias as a compensatory mechanism for the partial deficiency in hæmoglobin.

Harold Jarvis.


Two cases of damage to skeletal muscle after carbon monoxide persistant poisoning are reported. A 21-year-old waiter was admitted to hospital unconscious and exhibiting a diffuse swelling of her right forearm with erythema and vesicle formation, resembling a first-stage burn. The swelling was strictly confined to an area which had been exposed to pressure by a bracelet. Traces of albumin were found in the urine on the first day only. During the following days sensibility of the right hand was impaired, but these changes as well as the condition of the skin improved gradually. One month
ABSTRACTS


The brains of two persons dying from carbon monoxide poisoning were examined. One had died after 26 days, and the other after 1 day. The latter was a child of 3 who, with its mother, had been poisoned by coal gas. At necropsy sections were taken from various parts of the brain and morbid changes were observed in the cortex and the bulb. Hyaline thrombi were seen in the capillaries and small veins; there was no perivascular extravasation but the brain was edematous. The oligodendrocytes were swollen and rounded; the cytoplasm was transparent and the nucleus displaced towards the periphery, its processes being shortened or absent. These changes were easily recognized by the silver staining process of Schultzer-Orlandi. There were no appreciable changes in the neuroglia or in the nerve cells. The pathological changes in the vessels in the first case were similar, but the nerve cells had suffered considerably. The author did not observe the fatty degeneration of the endothelium or of the parietal layers described elsewhere. Nevertheless, in his first case the nerve cells had changed in shape from pyramidal to ovoidal, the outlines were blurred, the cytoplasm was reduced, and the Nissl bodies had disappeared or were at the extremity of the cells. The nucleus was vacuolated and had no nucleolus, with scanty chromatoid substance and often a peripheral location. The neurofibrils were granular and the cylinder axes varicose and fragmented. The neurogia was increased in quantity. The author considers that the vascular injury occurs first, and that the subsequent changes are due to this.

G. C. Pether.


For experimental purposes 6 rabbits of equal weight were used. Two received nasal instillations twice daily of a 4% solution of silver nitrate, the first being killed a day after such treatment, the second after 3 months. The second pair received nasal instillations of a 6% solution of "argyrol." The first was killed after 24 months' treatment, the second after 4 months. The third pair received nasal instillations of a 6% solution of "protargol." Both animals were killed 4 months after the treatment had started. One was exposed to sunshine for about 8 hours per day during the month of August. On histological examination mainly quantitative differences were found. However, the metallic granules in the first pair were mostly extracellular, while in the second and third pairs they were mostly taken up by the cells of the reticulo-endothelial system. Exposure to sunlight had no effect.

The authors observed a woman, 79 years of age, who had received silver-nitrate eye drops for some unknown disease 40 years before she was admitted to the hospital. After she had been using these for 6 months she became pigmented in the face, neck, arms, and higher parts of the abdomen. She was admitted to the hospital for bronchopneumonia, from which she died. At the post-mortem examination her organs were found to be affected by argyrosis. The histological examination of kidneys, liver, spleen, lung, and parts of the abdomen showed metallic granules inside and outside the parenchymal cells. Chemical examination confirmed the fact that these granules consisted of metallic silver.

According to the authors, absorption of silver is mainly through the blood, less through the lymphatic system. This would explain the finding of considerable quantities of silver in the renal vessels and its deposition in the perivascular tissue. There is a large amount of silver in the skin, mostly in places exposed to friction. The role of the reticulo-endothelial system in the genesis of argyrosis is still doubtful. The authors believe that the silver is taken up at the site of administration by the reticulo-endothelial system; only if this system is less active than usual can general argyrosis result. Further, the development of generalized or localized argyrosis depends on the behaviour of the reticulo-endothelial system. The reticulo-endothelial system may be constitutionally weak, or may be damaged through the toxicity of the silver compound. Thus occupational argyrosis from silver nitrate often becomes generalized because of the toxicity of this compound. The toxicity could be demonstrated in the experiments with rabbits treated with silver nitrate; in contrast to the others these animals lost weight.

E. Forrai.
INDUSTRIAL PHYSIOLOGY


Two groups of men working in Brussels, who in 1945 were receiving inadequate food were given a supplement mainly of milk, cheese, butter, and eggs. After a control period Group A received the supplement for 10 days, Group B acting as controls; after 3 weeks the groups were reversed and the supplement was altered slightly. Body weight, strength of grip, myotatic irritability, and urinary nitrogen excretion were determined. During supplementation there was a significant increase in body weight, strength of grip, and urinary nitrogen excretion, and a significant decrease in myotatic irritability. There was no significant relation between the individual measurements of different factors or between the measurements and the intake of any particular nutrient. There was early an inverse correlation between strength of grip and myotatic irritability. It is pointed out that the increase in strength of grip may have been caused by the psychological factor, since the workers knew whether they were receiving the food supplement or not. [For assessing the results on myotatic irritability it would have been helpful to have had measurements of the thickness of skin and subcutaneous tissue, since an increase of subcutaneous fat will decrease the stimulus actually applied to the muscle. It is interesting that in the underfed workers in Group B after 10 days of supplementation myotatic irritability was less than in average "healthy R.A.F. subjects."]

The urinary nitrogen excretion is discussed in detail. During the period of supplementation the excretion of nitrogen by those given the supplement and by control subjects is stated to have increased significantly; the mean excretion in the two groups was [surprisingly] the same. [On the figures published, the increase in the control group is not significant; the mean before feeding is 9-5±1-3 (s.e.) and after feeding is 10-8±0-03, and the difference between the means is only 1-05 times the s.e. of the difference; the mean for the group just before the experimental period is 10-7 and at the end of the experimental period 10-57. It is difficult to put much reliance upon the figures for nitrogen excretion, since the results obtained in 3 of 18 subjects were omitted because "the 24-hour specimens of urine presented by them were obviously false"; other samples may have been false but not obviously so. There is, for instance, a significant difference in the scatter of the values for mean nitrogen excretion of the control group before and during the experimental period, although there was no alteration in their type of diet during the experimental period.]

H. M. Sinclair.


The ability of man to tolerate low temperatures is influenced by the provision of convenient ventilation of the garments, so that the effects of excessive sweating during work can be avoided. Tests were made on 10 soldiers to determine the adequacy of the garments in preventing the accumulation of sweat during work, and the thermal exchanges through the garments when the subjects were at rest. At a temperature of -23 °C the men walked on a motor-driven treadmill at a 3% gradient at a speed of 3-3 miles (5-3 km.) per hour. In different tests the men (a) wore their clothes completely closed at all times; (b) opened up the clothing as much as possible without discarding garments; and (c) removed garments as necessary to prevent themselves from becoming overheated. In many tests the subjects wore 2 windproof garments, 1 outside and 1 inside the pile garments. The average weight loss (corrected for evaporation of water from the lungs and for carbon as carbon dioxide) was 333 g. per hour when the clothing was tightly closed, and 173 g. when it was discarded at will. When ventilation was permitted by opening garments, the results obtained were variable, the average loss being 240 g. Men who had accumulated moisture as a consequence of work could sit quietly for brief periods immediately afterwards, but were more susceptible to cold exposure if the clothing was worn on a succeeding day without being dried. Numerical details of the weight changes in separate items of the clothing worn are given.

H. M. Vernon.


Three acclimatized men were subjected to seven different environmental conditions comprising temperatures ranging from 90° to 120° F. The partitional calorimetric approach was used; this method allowed a quantitative description of the thermal exchanges in these hot environments. The responses in relation to clothing, work, and air movement were noted. At each of the temperatures studied, wind velocities of the order of 30, 75, 150, 300, and 600 feet per minute (approximately) were developed and the following physiological responses noted—rectal temperature, skin temperature, surface temperature, sweating and pulse rate. It was concluded that (1) metabolic heat production for a given amount of work remains unchanged irrespective of change in environmental conditions, (2) in the resting state a fully-clothed man gains less heat and consequently there is a smaller evaporative-heat loss, (3) convective- and radiant-heat gain and the compensatory evaporative-heat loss show a progressive increase with increasing air movement.

A. I. SUCHETTE-KAYE.


In health a level body temperature is maintained by a delicate mechanism whereby excessive biochemical heat production or exposure to inordinate heat is counterbalanced by appropriate physical heat loss, mostly in the form of sweating. Three forms of heat stroke may be recognized—simple exhaustion or prostration, painful cramps, and spasms of the skeletal muscles and a severe condition marked by hyperpyrexia, coma, convulsions, bounding pulse, and hot, dry skin, the patient passing into a state of vascular collapse, tissue anoxia, and pulmonary edema. This third manifestation is best described as "heat pyrexia" or heat stroke proper. The outstanding danger to a person exposed to excessive heat is any impediment to sweating or any cessation of that process. The essential and cardinal requirement for a patient overcome by heat pyrexia is a rapid reduction in temperature, and this can be attained by wrapping the patient in wet sheets and playing cool streams of air on them with electric fans. The authors of the present
ABSTRACTS


The effects on aerosols made with series of 1 to 3 rabbits exposed for 5 hours in a cage of 280-litre capacity. The air in the cage was mixed with aerosol (0.1% aqueous solution of “aerosol O.T.”), which was dispersed by a generator producing per c.mm., 500,000 liquid particles averaging 0.3 μ in diameter. A control test was made at the same time without aerosol, the source of the dust in each case being willemite, a zinc silicate. This substance fluoresces a brilliant green in ultra-violet light so that particles of even less than 1 μ can be detected in tissue sections after the organic matter has been destroyed by micro-incineration. The dust generator produced particles averaging 0.9 μ, the dust concentration averaging 0.01 to 0.04 mg per litre of air in a continuous flow of 60 litres per minute.

The rabbits breathed irregularly and were cyanosed after 2 hours’ exposure to dust without aerosol, but these signs were absent in those exposed to dust together with aerosol. The lungs of some of the rabbits were removed after death and fixed in formalin, and the paraffin sections were ashed to 450° C. for 4 hours. They were examined under reflected ultra-violet light of 2537 A.; the sections from rabbits exposed to dust and aerosol contained much less dust than those exposed to dust only, especially in the alveolar ducts and alveoli. The dust in the parenchyma also appeared to be much less. The aerosol appears to coat the particles of dust, agglutinate many of them, and thereby increase the diameter of the inhaled particles. Their pulmonary penetration is therefore impeded. H. M. Vernon.


In order to test the effects of aqueous aerosols on minute dust particles suspended in the air, finely-ground quartz or willemite particles were generated from distilled water or an aqueous solution of eosin Y, by an air current of 50 litres per minute. Samples of the particles of aerosol, dry untreated dust, and aerosol-treated dust were collected, by sedimentation in a chamber, on microscope slides coated with vaseline. They were measured by means of an oil immersion objective magnifying 1,125 times. The size of most of the aerosol particles was 0.8 to 0.4 μ, and of the quartz particles, 1.0 to 0.5 μ. In one test, when the dust-laden air stream was mixed with aerosol, all the particles collected by sedimentation were found to be coated with water, their mean diameter being increased from 0.95 to 1.41 μ. The cumulative size was still greater in some other tests. In an experiment with willemite dust (fluorescent zinc silicate) the aerosols were produced from 5% eosin, and the size of the exposed particles was increased from 1 μ to 2.7 μ. In an experiment in which a more elaborate apparatus was used, the aerosol-treated dust had a diameter of 1.3 μ compared with one of 0.62 μ for the dry dust. When quartz was used in place of willemite the mean diameter was increased from 0.7 to 2.3 μ. In these tests there were many aggregates of dust particles of larger diameter, usually exceeding 3 μ, and occasionally even 20 μ.

ABSTRACTS


In this investigation a compact cellulose pleated filter was used. It was 3 inches in diameter, had a pleat height of 1 inch, and it gave a surface of 84 square inches. It is available commercially. It was contained in a high-volume sampler, having a sampling cone, spider web, and filter-retaining ring; also a manometer, which showed a pressure drop of 15 in. of water at 60 c.f.m. The housing of the apparatus contained an Electrolux blower (355 watt motor). The relative efficiency of the filter was determined by using two filters in series, and absolute efficiencies were obtained by using an electrostatic precipitator as a standard. Tests were made with dried silica dust less than 325 mesh, air-borne dust collected in cotton textile plants, and lead fume. The efficiency was always over 99% for these dusts, but with tobacco smoke it was only 59 to 68%.

The filters weighed from 8 to 10 g., but direct weighings gave irregular results owing to moisture absorption and adsorption. To eliminate most of the moisture gain, weighing should be done at a temperature above 100° C., in accordance with the method described. H. M. Vernon.


The author suggests that the inhalation of any dust causes trouble only when other factors—climatic, dietary, and environmental—combine to injure the patient. Only on this assumption is it possible to understand why some individuals appear to be immune to the effect of dust inhalation. Despite arguments against his views the author claims to have incontrovertible evidence that aluminium dust may cause rapid and progressive morbid changes in the lungs. He has chosen the term “aluminium lung” to define most clearly the entity described.

He considers that the apparent recent increase in lung diseases due to aluminium dusts is attributable to a change in the process of manufacture. The aluminium powder sold under the name of “bronze powder” contained stearin, which had been added during the stamping process. But when aluminium was needed as a powder for military purposes the addition of stearin was no longer desirable. This explains the more frequent and serious cases of dust disease reported just before and during the war. Jäger believes that the aluminium particles protected by stearin do not penetrate the lung tissue as a solution but are taken up by phagocytes; without this protection serious results rarely occur. The aluminium ion precipitates proteins and in this way attacks lung tissue, causing rapid destruction, distortion, and fibrosis. It is said that these changes may be distinguished from those due to coal, iron, stone, and asbestos dusts.

The author, however, cites experimental and clinical evidence purporting to show that reduction of hyperpyrexia is most satisfactorily and safely attained by immersion of the patient in ice-cold water.

G. F. Walker.

INDUSTRIAL LUNG DISEASE


The cumulative diameter was increased from 0.7 to 2.3 μ. In these tests there were many aggregates of dust particles of larger diameter, usually exceeding 3 μ, and occasionally even 20 μ.

These experimental results suggest that aerosols may be found useful in supplementing current methods for the control of dust hazards in occupations where large amounts of fine dust are dispersed.

H. M. Vernon.


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G. F. Walker.
Estimation of the respiratory capacity, especially during work under a load, gave valuable information about the amount of damage caused by the dust. But even at rest the diminished respiratory reserve is often noted long before there are any radiological changes. The morbid changes do not occur in any clearly defined order, but there is rapid spread of diffuse hyaline degeneration with particular injury to the elastic tissue. It is difficult to distinguish in the radiograph the aluminium lung from one which is tuberculous, but spontaneous pneumothorax is common and the loss of elastic tissue produces characteristic distortions of the pulmonary and cardiac outlines. The macroscopic changes recorded are readily explained from examination of microscopic sections.

G. C. Pether.


Pneumonoconiosis resulting from talc (asbestine and tremolite) has been fairly extensively reported as occurring in miners and millers. This, however, is only the second case reported as developing in a man working on the manufacture of talcum powder. He was aged 55, and had for 24 years been employed in the talcum-powder mixing room of two cosmetic factories. He complained of pain in the chest and weakness. He was slim and underweight but had no abnormal physical signs. X-ray examination of the chest revealed nodular densities ranging from 1 to 3 mm. scattered throughout both lung fields and in both hilar regions, and a thickened pleura between the upper and middle lobes of the right lung. Dust counts showed 16,000,000 particles per cubic foot (0.028 cubic metre) of air in the general room atmosphere, 236,000,000 when the mixing machine was being filled, 133,000,000 while the pulverizer was operating. The powder contained less than 0.5% of free silica. The talc had added to it zinc stearate, osmokaoln, chalk, and colouring.

K. M. A. Perry.


A workman, aged 45, had for 15 years been bagging tin oxide dust obtained by treating tin cans with a caustic. The inhalation of the dust produced pseudo-nodulation in the lung fields similar to that seen in arc welders, and the authors named the condition benign pneumoconiosis. There was little fibrosis and never any true nodulation. The tin oxide dust contained 96.5% of tin oxide, but no silica. When an artery of a freshly excised dog’s lung was injected with a saline suspension of tin oxide, or the suspension was instilled into the bronchi, even small amounts of it produced appreciable densities in the lung.

H. M. Vernon.


The coal mined in New South Wales is soft and has a silica content varying from 0.4% to 4.0%; no anthracite is found in Australia. The average number of employees in New South Wales collieries between 1941 and 1946 was 17,600. The incidence of incapacitating pulmonary fibrosis due to dust was 4.90 per 1,000 employees per year (2.75 partly and 2.15 totally incapacitated). The earliest identifiable changes are of nodular fibrosis rather than reticulosis. Enlargement of the hilar and mediastinal lymph nodes is unusual in N.S.W., and it is unusual to find any evidence of tuberculosis. Linear fibrosis is common but is not by any means confined to coal-workers and cannot be taken as evidence of damage by dust. If much linear fibrosis is detected in the radiograph of a coal-miner, there is usually little or no sign of nodular fibrosis. From this the author concludes that the presence of chronic bronchitis is protective against the action of inhaled dusts, and suggests that the increased [inflammatory] secretions in the bronchi trap the dust particles, which are later expectorated. This is an interesting observation, but it is doubtful whether workers elsewhere will agree that chronic bronchitis has a protective influence.

H. E. Harding.


The author examined 4,000 chest radiographs; in 1,062 silicotic changes were observed. He divides the latter series into 600 with fibrous reticulation, 110 with fibrosis and early nodular changes, 240 with nodules, and 76 with massive silicosis. He considers that in nearly all cases with reticulation there is some visible silicotic change in the hila. The changes did not vary much with the source of risk. Marked involvement of the lower parahilar lymph nodes was noted in workers who gradually developed pathological changes due to persistent slight inhalation of dust. In most of the 1,000 cases there were some hilar changes. The common hilar changes characteristic of silicosis include symmetrical variations from the normal with enlargement, a more marked demarcation of the lower parisi, and a "fluffy" border to the shadows. Hilar changes often precede the more widespread reticulation but, when the latter is marked and nodular areas appear together with patches of emphysema, the contrasting density of the hila is less obvious. In the differential diagnosis from tuberculosis it should be observed that the glandular changes in the latter are rarely symmetrical but are more clear-cut.

G. C. Pether.


The authors first drew attention to welders’ siderosis in 1936 (Lancet, 1, 771). In the present paper they describe their findings with the x-rays of the cases which were the subject of the earlier work.

Two had left their employment as welders; x-ray changes had been observed in both in 1936, but in 1945 the radiograph in 1 case was normal and in the other the shadows had become less intense. Four men whose earlier radiographs had been abnormal were unchanged; they had continued work as welders, but remained clinically well. The radiographs of 2 men were normal in 1936, but were classed as "suspicious" in 1945; 2 others who had been suspect in 1936 now showed massive reticulation. In the remaining 5 cases there were no abnormal x-ray changes in 1936 or 1945. None of the men had any clinical disability.

The sputum has been shown to give the Prussian-blue reaction for 18 months after exposure to dust ceases, and it is concluded that much of the dust is removed from the lungs in the sputum. Several workers agree that the condition does not cause disability and should be classified as a benign pneumoconiosis.

L. W. Hole.

An interior decorator, aged 67, fell ill after working for 5 weeks with an artificial material described as glass wool. A left-sided lobar pneumonia was diagnosed. At necropsy the principal findings were: (1) lobar pneumonia of the left upper lobe with many small abscesses; (2) encapsulated empyema; (3) purulent bronchitis; (4) bronchopneumonia of the right lower lobe; (5) fibrinous pericarditis. Pseudomonas pyocyanea was cultured from one of the abscess cavities. Microscopically, the right lobe showed the typical picture of acute bronchopneumonia, but the alveoli of the left upper lobe contained but few polymorphonuclear cells and were filled with fibrin and numerous histiocytes, which frequently incorporated small, clear, unstable transparent bodies. The silica content of the lungs was not greatly increased (15% SiO₂ in the ashed tissues). This, according to the author, is not surprising, as the total quantity of inhaled glass dust must have been small. The diameter of over half of the inclusion bodies proved to be 10 μ (none was larger); this was also the diameter of the thread of the glass wool. The ashed lung and the glass wool both contained about 0.08 mg. (per cent.) of lead. These findings suggest that pneumonia was due to inhaled glass dust. R. Salm.


Cobalt, either as oxide or as metal, is an aeral contaminant at all stages of cemented tungsten carbide manufacture. The dust content of air in powder-processes averaged 3-5 mg. per cubic metre, of which 41% was cobalt. The authors examined 1,802 workers, the median ages being 33-8 years for men and 24-4 years for women. Of the total, 28% had worked for more than 6 years in tungsten carbide, and 57% between 2 and 5 years. In these workers there was an excessive incidence of disease of the upper respiratory tract and bronchopulmonary disease and also of abnormal findings on physical examination of the conjunctiva. On x-ray examination 45 workers were found to have reinfection tuberculosis, a prevalence of tuberculosis of 2.5%. In 36 workers there were granular or conglomerate markings, but 64% of these had previously been employed in mining or in metal fabricating industries. Hematology, tests for syphilis, and tests for albuminuria and glycosuria revealed no remarkable changes. The incidence of arteriosclerotic-hypertensive heart disease compared favourably with that in other industries. K. M. A. Perry.


The handling of beryllium compounds is attended by risk of dermatitis and of respiratory disease. This is probably the first recorded case of beryllium pneumonia in Great Britain but further cases may be expected. Prognosis is poor, treatment ineffective, and disability serious and permanent.

ABSTRACTS

INDUSTRIAL DERMATITIS


During the recent war a considerable proportion of the use of mosquito-repellent ointments containing pyrethrum extracts became sensitized to these preparations. After the war "some of the people thus sensitized were used as test subjects" for a cream containing "40% colourless concentrate of pyrethrum (commercial preparation)"; 6 of 62 men and 7 of 27 women who were tested became sensitive to the use of the cream. Further tests showed that the dermatis-producing factor was in the pyrethrum extract, and experiments designed to produce a pyrethrum extract which would be free from nur undesirable ingredient are described. It was known that preparations of high pyrethrum content could be obtained from petroleum extracts of pyrethrum flowers by chromatographic adsorption with columns of fuller's earth, and preliminary experiments suggested that the dermatitis-producing factor was more strongly adsorbed by the fuller's earth than was the pyrethrum. In view of these promising results, various modifications of the method of extraction were tried, and the resulting extracts were tested on persons previously sensitized to the commercial extract. The authors say, "From these results it can be inferred that petroleum ether and ethylene dichloride wash the pyrethrins from a column of fuller's earth which retains the dermatitis-producing factor, but that ethylene dichloride does not seem to be a promising solvent as petroleum ether for the operation. The removal of the colouring matters from petroleum ether extracts by activated charcoal does not appear to influence the removal of the dermatitis-producing factor from the solution of fuller's earth." R. M. Gordon.


The authors conclude that the causal factors in the production of nylon-stocking dermatitis are the various azo dyes. The relation between nylon-stocking dermatitis and the dermatitis due to para-phenylene-diamine, and the common chemical basis for the hypersensitivity are discussed and explained by the mechanism described by Mayer.

G. B. Mitchell-Heggs.


In this interesting paper the authors show that in several of the common dermatoses there is interference with sweat secretion. This disturbance is most commonly seen in prickly heat, but similar plugging of the sweat glands occurs in a variety of conditions, such as toxic dermatitis (disseminated neurodermatitis), mild forms of ichthyosis or ichthyosiform erythroderma, and dry forms of seborrhoeic dermatitis. When a sufficient number of sweat glands is firmly plugged, the affected patients have the following symptoms: Rapid elevations of environmental temperature accompanied by high humidity bring on attacks of pruritus. Systemic malaise may accompany the attack. Almost immediately after the rise in temperature, various types of skin lesions appear and may include papules, papulo-vesicles, and vesicles. The secretion of sweat is reduced or absent.
in large or small areas. Sensible perspiration tends to occur on repeated stimulation in certain fixed regions. Reduction of surface sweat is due to the plugging of the orifice of the sweat duct. More or less prompt subjective relief and objective improvement follow consistent reduction of environmental temperature and humidity. Improvement also follows local procedures which cause shedding of the plugs, and measures which reduce the tendency to sweat.

Cases illustrating these points are described, and the authors also give in detail 2 cases of post-mepacrine lichenoid dermatitis in which symptoms similar to the above appeared but in which the causative mechanism was probably attrition and destruction of the ducts. This is only a preliminary paper; the mechanism and significance of the "sweat retention syndrome" constitute a field for research.

H. R. Vickers.

INDUSTRIAL OPHTHALMOLOGY


Selenium and its compounds are used in the manufacture of ruby glass and stainless steel and in a wide range of industrial processes. They have been the cause of many cutaneous burns as well as of acute and chronic types of general intoxication; but no case in a human being of selenium burn of the eye has hitherto been published. Most of the selenium compounds are vesicants, producing lesions comparable to severe and intractable acid burns. The patient, a chemist aged 36, was accidentally sprayed with selenium dioxide, sustaining burns of both eyes. When examined an hour after the accident, he had severe burning pain, lacrimation, and extreme blepharospasm. Palpebral and bulbar conjunctiva were intensely injected. There were first-degree burns of the face and eyelids. Six hours later there was marbling of the lower half of the bulbar conjunctiva with fluorescein staining of this and the lower part of the cornea. Sixteen hours later signs and symptoms were more pronounced and vision was blurred. A mucous membrane graft was applied to the lower half of the right eye. This eye recovered more promptly than the left, but the graft led to postoperative ectropion and partial symblepharon. Complete recovery from the acute symptoms occurred in 10 days.

A. J. Ballantyne.


Experiments were made to determine the aerial content of streptococci and the variations occurring with increase and decrease of living space per person, the season of the year, and other factors. When each person occupied 2.5 to 3.6 sq. metres 468 colonies were counted on a medium, whereas when living space increased to from 10 to 18 sq. metres the number of culture colonies fell to 86. Two seasonal rises were observed, one in about April and the other in about October. These would coincide in Russia with a fairly rapid change in temperature and living conditions. When accommodation had improved, so that each person had his own room, there was a fairly sudden fall in the colony counts. It is thought that the figures obtained justify further work.
on the value of aerosols, particularly since the bacterial counts rose considerably when any illness of the nose and throat or respiratory tract affected the persons under observation.

**G. C. Pether.**


The heat balance was maintained during light work with an external temperature of 25° C., but for heavy work 10° C. was ideal, and for extremely heavy work the "freezing" point. A "climate" undergoes variations under many headings, and that physical output decreases with rising temperature, at least above a certain point. Corresponding with the rise in temperature is an increase in pulse rate and greater fatigue with less efficiency of the heart. [The article is a review of factors already well known.]

**G. C. Pether.**


This investigation was to ascertain: (a) whether standards accepted for large, evenly-heated rooms apply to small "domestic" rooms, and, if not, what new standards were necessary; (b) the optimum contributions, as regards warmth comfort, of air heating and radiation to total warmth; (c) the physical conditions responsible for sensations of freshness and stuffiness.

Thirteen subjects entered a room heated only by convection to an "equivalent temperature" of 62°±1° F. with an outside temperature of 45° to 50° F.; they recorded their sensations as "comfortable" (9), "comfortably cool" (3), and "slightly too cool" (1). In rooms heated by fires to the same equivalent temperatures in their centres, the same 13 subjects complained of cold backs, and, if allowed to choose the most comfortable position in the room, sat near the fire. It was evident that the (commonly accepted) standard of 60° to 65° F. was inadequate for rooms heated by unilateral radiation, or that the instruments used were unsuitable for such rooms, or both.

Panels of 28 to 33 subjects, one at a time, entered a large room equipped with adjustable controlled air heating and a gas fire at one end. Even when the air temperature was high enough (above 65° F.) to ensure adequate warmth without extra radiation the subject still appears to desire radiant heat. "When the temperature conditions operating on the back are too low for comfort, the subject attempts to compensate... by overheating the front of his body." Observations suggested that "where a large proportion of heat radiation is unidirectional the sides of the subject facing towards and away from the source of heat must be treated separately, and that the cooler side must be exposed to an equivalent temperature not more than 65° F." The desirability of measuring separately, in domestic rooms, the conditions to which the sides of the body proximal to and remote from the fire are exposed led to the design of double eutrophosopes and double thermometers. From tests with 18 subjects in their own homes with double globe thermometers it is concluded that the presence of unilateral radiation does not reduce the need to heat the side of the body away from the fire, a need which is best catered for by "radiators" or air-conditioning plants maintaining consistently an equivalent temperature of 60 to 65° F. Over and above this essential need, the average subject appears to desire radiation to the extent of about 70

British thermal units per sq. ft. per hour. Experiments suggested that the compensation of a warm front surface for a cold back is psychological rather than physiological.

To ascertain the relation of freshness to warmth a large room was equipped with a gas fire at each end and with separate means of air heating controlled by a thermostat. An electric fan was used to modify the rate of air movement. Subjects were asked to choose the most comfortable position as regards warmth and then to record their sensation of freshness or stuffiness as "extremely fresh," "very fresh, fresh, neutral, slightly stuffy, stuffy, very stuffy. Measurements were also made of the rate of air movement. A clear relation existed between air temperature and freshness when subjects were suitably warmed. Neutral freshness was perceived at about 61-5° F. An increase of 5° F. was sufficient to make conditions slightly stuffy.

The effects of radiation on freshness and stuffiness were studied by asking subjects to take up what they considered to be the most comfortable position in front of a fire specially made up and connected to thermo-couples so that its surface temperature could be measured continuously and kept constant. At the position chosen the air temperature was measured, and the subject was asked to record his sensation of stuffiness or freshness on the scale already given. It was possible to plot a curve showing the effect of air temperature on freshness, and from this curve to determine an air temperature which would have raised or lowered the subject's sensation of stuffiness to the neutral position. For any particular surface temperature of the fire the mean of these "neutral" temperatures was plotted against the peak wave-length of the radiation. In this graph an air temperature of 61° F. indicated that the wave-length has a neutral effect as regards freshness. An air temperature higher than this indicates that the wave-length concerned has a specific "freshening" effect, because the air temperature could be permitted to rise to 64° F. in the presence of this radiation without pushing the sensation of stuffiness beyond the neutral point. Temperatures below 61° F. indicated that the wave-length concerned causes stuffiness. The graph also shows that certain wave-lengths (2, 3-5, and 4-5 μ) known not to be absorbed by the skin, induce sensations of freshness whereas others (3, 4-1, and 4-7 μ) cause stuffiness. Peaks 3, 4-1 and 4-7 μ should therefore be avoided in the design of gas and electric fires.

**J. Greenwood Wilson.**

**GENERAL.**


The effects of living conditions and occupation on pregnancy were investigated between 1933 and 1945 in Novara. There was a decrease in toxic manifestations during the war. The percentage was slightly lower for multivariate than for primiparum. The decrease was more noticeable among women living in the country and
among land workers. It is the author's opinion that the nutritional factor is important in this decline in incidence of toxæmia. Carbohydrates, vegetables, and fruit figured prominently in the diet of pregnant women in the province of Novara, while animal protein and lipids were less than in peace-time.

The number of cases without sympathetic disturbances increased progressively between 1933 and 1945, with a minimum of 16.2% in 1934 and a maximum of 46.5% in 1945, and the number in which sympathetic disturbances were very accentuated decreased progressively during the same period, with a maximum of 30% in 1935 and a minimum of 5.1% in 1945. For primipare without sympathetic disturbances the figures were 29.7% before the war and 35.4% in wartime; for multipare they were 23.7% and 36.2%. The decrease in incidence of pronounced sympathetic disturbances was greater in multipare. There were no great differences in this respect between urban and rural dwellers. The decrease in incidence of accentuated sympathetic disturbances was most evident in housewives (from 25.7% before the war to 7.1% during the war). Many authors have suggested that the cause of sympathetic disturbances in pregnancy is hyperexcitability of the nervous system. If this were the case the war should have brought about an increase in such phenomena. Endocrine and ovarian factors are also unrelated to the observed fall in incidence of sympathetic disturbances. It is thought that diet played an important part.

The incidence of abortion and premature delivery was studied at the Obstetric School of Novara between 1933 and 1945. Before the war the incidence of abortion in 4,523 pregnant women was 12.2%; during the war it was 15.4% in 4,113 cases. The figures for primipare were 6.7% and 9%; for multipare they were 16.5% and 20.6% respectively. For women living in towns the incidence was 10.8% in peace-time and 12.8% in wartime; for those living in the country the figures were 13.7% and 17.6%. The incidence in housewives was 11.7% in peacetime and 14.5% in wartime; in factory workers 12.1% and 14.2%; in land workers 14.4% and 21.4%. During the war there was a general slight increase in the incidence of abortion in both primipare and multipare. The increase was more pronounced in land workers. The incidence of premature delivery was 13.8% in peacetime and 21.4% in wartime. This increase was more accentuated in women living in towns and in factory workers.

The author does not consider that abnormal condition of the genital organs or of the ovum, or dysfunction of the endocrine gland caused the increase in abortion and premature delivery. The incidence of acute infectious diseases did not increase during the war, but syphilis was more prevalent. According to Roberto, emotional shock is not a cause of abortion or premature delivery. The author believes that the deficiency of fat-soluble vitamins in the diet during the war was a cause of increased interruption of pregnancy.

Rina Saunders.


This article stresses the clinical, social, and economic after-effects of acute thrombosis of the deep veins of the leg. These chronic changes to a large extent develop after the acute stage has passed off; active treatment in the acute stage is a means of preventing them. An analysis was made of 680 cases treated by conservative methods from 6 to 14 years previously. The average age at the time of follow-up study was 30. No case that had been treated actively by heparin or dicumarol was included, nor any case of direct injury to the leg. Clinically only 48 or 6% of the patients had completely normal legs, and symptoms or signs varying from pain and heaviness to oedema and eczema were found in 90% of the cases. Ulcration was persistent or recurrent in 136 cases. Socially and economically it is difficult to assess the disability accurately, but an indication of this is given by comparing the lengths of stay in hospital with and without active treatment and by a series of estimations of financial loss to the patient resulting from lengthy disability. As a direct sequel of thrombosis 34 patients were unfit for further work, 81 had to change their work, and 127 had to have permanent extra help in the house.

J. W. S. Lindahl.


More than 1,000 of these compounds have been produced. The School of Public Health of the University of Michigan is investigating their action, including: (1) relative efficiency; (2) effect of organic matter, temperatures, hydrogen-ion concentration, and character of water; (3) relative resistance of different organisms; and (4) chemical methods of testing cationic concentration. Certain of these compounds have marked disinfecting properties but there is wide variation in their effective actions. Their efficiency is affected by temperature, hydrogen-ion concentration, organic matter, and the presence of calcium and magnesium in the water. Their bactericidal action was tested against such human pathogens and non-pathogens as Salmonella typhi, Shigella dysenteri, Salmonella schottmulleri, Staphylococcus aureus, and type of Bacillus subtilis. In general all these organisms showed the same susceptibility, while such organisms as Pseudomonas pyocyanea and Serratia marcescens (Bacillus prodigiosus) were relatively much more resistant. Chemical methods are available for measuring the actual concentration of any of the substances, but this type of estimation is of limited value, as it does not assess the bactericidal value of a particular solution. The data so far accumulated indicate that these quaternary compounds are of value for disinfecting food utensils and dishes, but they must be employed in an intelligent manner and with knowledge of the limitations and range of action. They do not afford such positive protection as the hypochlorites, and they are inferior to hot water or steam. It is urged that the U.S. Public Health Service should continue its study of these products. Each package should state the chemical composition of the material, otherwise there would be no guarantee of the efficiency and suitability of the substance.


"Experiments to test the possibility of area-control of Phlebotomus with residual DDT were carried out in Peru, 1945 to 1947. The results furnish additional sup-
port for the effectiveness of house spraying in protecting persons indoors. Treatment of the walls (the principal outdoor shelters and breeding places) produced marked reduction of sandflies. Treatment of stone walls combined with house spraying reduced sandflies to an extremely low level. This effect still persisted after 12 to 19 months. The results were sharply localized within the sprayed areas, sandflies occurring in normal abundance in houses or caves 75 to 200 yards (68-6 to 183 m.) distant. Practical control programmes in camps of two large construction projects gave an extremely high degree of sandfly control, followed by virtual cessation of new cases of cutaneous leishmaniasis or bartonellosis. Analysis of the results in terms of the habits and life-history of Phlebotomus supports the possibility of achieving practical control by methods applicable to many of the Phlebotomus regions of the world. Their flight habits make sandflies vulnerable to residual DDT throughout their adult life. The long life-cycle delays the recovery of a depleted sandfly population.


The author recounts the history of four eradication campaigns. Two, one in Brazil and the other in Upper Egypt, were directed against a single species of malaria vector, *Anopheles gambiense*, which does not normally inhabit these regions. Both campaigns have now been brought to a successful conclusion, and it is believed that the vector can be prevented from re-entering the region by the efforts of a small sanitary guard, which could be maintained at a relatively trivial cost.

### Statistics of Anopheline Eradication Projects

<table>
<thead>
<tr>
<th>Zone</th>
<th>Species</th>
<th>Area Involved</th>
<th>Men Employed</th>
<th>Total Time</th>
<th>Cost* (£1,000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>gambiense</td>
<td>4,100 sq. km.</td>
<td>2,000</td>
<td>31 yrs.</td>
<td>530</td>
</tr>
<tr>
<td>Egypt</td>
<td>gambiense</td>
<td>1,500 sq. mls.</td>
<td>4,000</td>
<td>2 yrs.</td>
<td>800</td>
</tr>
<tr>
<td>Cyprus</td>
<td>super. p.</td>
<td>9,300 sq. km.</td>
<td>100</td>
<td>3 yrs.</td>
<td>15 (7 months)</td>
</tr>
<tr>
<td>Sardinia</td>
<td>suacharoi</td>
<td>23,000 sq. mls.</td>
<td>6,000+</td>
<td>more than 50 yrs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>labranchii</td>
<td>9,000 sq. mls.</td>
<td></td>
<td></td>
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</tbody>
</table>

* On the basis £1 = 4 dollars = 2,000 lire.

The remaining two campaigns, one in Cyprus and the other in Sardinia, are directed against mosquitoes indigenous in these centres and are not yet complete. They are progressing well, but they demand “all the faith and energy, as well as the technical and administrative skill, which are being devoted to them.”

R. M. Gordon.


“Tests made by releasing *Anopheles quadrimaculatus* mosquitoes in rooms in which varying amounts of surface were treated with a residue of DDT at 200 mg. per square foot indicated that (1) satisfactory control of this mosquito cannot be expected from a spot treatment in which only the predictable resting places in a room are sprayed; (2) coverage of the predictable resting places plus the walls and ceilings of a room is a more effective method of application than that in which only the walls and ceilings are sprayed; (3) the amount of total area covered with DDT not only affects the initial knock-down efficiency of the treatment of the room, but the residual quality as well; (4) based on the criterion of a 4-hour knock-down, complete treatment is experimentally more effective than the regular treatment; (5) efficient application is necessary for the greatest residual effect of DDT spray.”

[This paper contains valuable information which does not lend itself to condensation, and it should be consulted in the original.]

R. M. Gordon.


The author in a previous paper showed that, out of 15 chemicals tested, a mixture of phenylethanol and butylacetanilide was most promising as a protection against *Amblyomma americanum* and *Dermacentor andersoni*. The present paper describes the results of tests of these drugs carried out with human volunteers at a military camp in an area densely infested with the lone star tick, *A. americanum*. Men wearing treated and untreated uniforms were exposed to tick infection for about 4 hours a day, the ticks being removed and counted hourly. The results obtained showed that under the conditions of employment butylacetanilide was an excellent repellant of nymphs and adults (larvae were not present in sufficient numbers to be significant) of *A. americanum* for 10 days, and was superior to all other drugs tested. Incidental observation suggests that clothing impregnated with butylacetanilide gives complete protection against *Trombicula*. “No data are available on its toxicity, but related compounds have been pronounced safe, and in tests described here on 29 persons no objectionable reactions were found.”

R. M. Gordon.


Animals exposed to an acetone solution of the pure γ isomer of hexachlorocyclohexane and mixtures of hexachlorocyclohexanes containing 83% of γ isomer, or fitted with suits of herringbone twill impregnated with an acetone solution of hexachlorocyclohexane (83% γ isomer) of such strength as to yield a concentration of 2 g. of γ isomer per square foot of cloth, developed symptoms of hexachlorocyclohexane intoxication and a number died within a week of exposure. Rabbits and rats were more sensitive than guinea-pigs. Care was taken to eliminate ingestion and inhalation of the compound. Movement appeared to increase the hazard. Previous tests at Orlando, Florida, had shown that this concentration for impregnation of twill was highly effective against mites. The authors conclude that such a concentration is sufficiently hazardous to some mammals to warrant the utmost caution in the use of γ isomer in a concentration of 2 g. as a miticide for impregnating human clothing.

G. R. Cameron.


After reviewing the types of exposure in 78 welders mainly on naval work, the author concludes from a general clinical study that there is no specific occupational syndrome.

John Hambling.

DDT in concentrations of 0.01 to 1% acts more quickly at high temperatures against ticks (Ornithodoros moubata) and moths (Phyllodromia germanaca). An increase of 15° (from 18° to 35° C.) increases its insecticidal action two- to threefold. γ-Hexachlorocylohexane in a concentration of 0.01% had a similar effect, and its insecticidal action was greater than that of DDT. Ticks (nymphs) and moths (larvae and adults) could be exposed without any harm to the normal vapour pressure of DDT for 3 weeks, thus revealing some resistance. γ-Hexachlorocylohexane is effective against Pediculus capitis, and was found to be very effective against head lice at a concentration of 1% when used on patients. About 8 g. of the powder is rubbed thoroughly into the hair and skin, and the head is covered with a cap which is left overnight. After 10 hours the hair is combed and washed: even after 3 hours the irritation disappears.

R. Wien.

Mist Control with Addition Agents in Chrome Plating.


In addition to exhaust ventilation, several methods have been proposed for the reduction of plating-bath mist and spray. A new commercial agent, named "no-cro-mist," for controlling chromium plating has been investigated by the authors. Measurements with a standard acid plating solution showed that the agent lowered its surface tension from 64 to 26 dynes per cm. Performance tests were made with a model plating-bath consisting of a glass jar of 3½ litres capacity. Lead electrodes (0.1 sq. ft.: 0.009 sq. m. in area) were placed in the bath, with current densities of 150 to 200 amperes per sq. ft. of plating surface. Ventilation was provided by a canopy hood reaching within 5 cm. of the bath edges. Exhaust ventilation gave an annular velocity between bath and canopy of 250 feet per minute. The apparatus was tested for 45 minutes without the addition of the agent, followed by a 5-hour period with it. The agent at first prevented almost all the evolution of mist, the concentration of mist in the exhaust duct being reduced from 0.6 mg. per 10 cu. m. to 0.0043 mg. At the end of the 5 hours it was still less than half the control value.

H. M. Vernon.


Since Rickettsia burnetii was demonstrated as the cause of an outbreak of Q fever and recovered from ticks in Texas, the authors have carried out an examination for complement-fixing antibodies to R. burnetii on samples of serum, sent for routine syphilis tests, from employees of meat-packing plants. There was no clear evidence associating positive reactors with any particular form of employment, while positive tests for syphilis were obtained in 39 (2.7%) of all the samples, and in 4 (3.5%) of the 114 sera containing demonstrable rickettsial antibodies; this would indicate no significant relation between the two antibodies. Existing evidence suggests that the complement-fixation test with yolk-sac antigens of R. burnetii is specific for Q fever. A rise in titre has been found in proven cases, and no cross-reactions with other rickettsial diseases have been found. Control tests on a number of positive anti-rickettsial sera showed that non-specific fixation by an antigen prepared from uninoculated normal yolk-sacs did not occur. The significance of the results obtained is discussed. They are believed to indicate the existence of unrecognized exposure to R. burneti.

G. T. L. Archer.