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THE MEDICAL INSPECTION OF LABOUR

Report of the Meeting of Medical Inspectors of Labour
held in Düsseldorf, 15-16 September 1926

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PREFACE

In connection with the meeting of the Correspondence Committee on Industrial Hygiene of the International Labour Office, which was held at Düsseldorf in September 1926, the German Association of Medical Inspectors of Labour decided last spring to hold in the same place an International Conference of Medical Inspectors of Labour. Invitations were sent by Dr. Teleky, Prussian Medical Inspector of Labour, to all officials engaged in medical inspection of labour in Europe, America, South Africa, and Australia. The officials of distant countries being unable to attend, only the European countries were represented, most of them by the Directors of the Services concerned and some of their assistants.

The results of this Conference went far beyond the hopes of its organisers. Besides resulting in the collection of a very full and well-documented series of reports and communications on the present organisation and activities of industrial medical services, it also gave those who attended an opportunity of discussing their experiences and at the same time forming personal ties which will not fail to bear fruit in their future work.

It will be remembered that the International Labour Office was invited by the Washington Conference of 1919 in one of its Recommendations to keep in touch with the Government services of all countries charged with the duty of safeguarding the health of the workers. It was therefore naturally interested in the happy initiative of the German Association of Medical Inspectors of Labour, and was represented at the Conference by several officials of its Industrial Health Service. As an effective contribution to the work undertaken, it has also decided to publish in its series of Studies and Reports French and English translations of the report compiled by Dr. Teleky of the proceedings of the Düsseldorf Conference.
This report is not a stenographic record of the proceedings, but a fairly complete summary of the communications made at the Conference; the summaries have been supplied by the speakers themselves. It seems unnecessary to emphasise the special interest of these papers due to their having been prepared by the responsible chiefs of the industrial medical services in the various countries.
MINUTES OF THE MEETINGS

Opening Addresses

The Conference opened on 15 September 1926 at 9.30 a.m. Dr. Beintker, presiding, pronounced the following address of welcome.

I

ADDRESS OF DR. BEINTKER
President of the German Association of Medical Inspectors of Labour

Both on my own account and as representative of the German Association of Medical Inspectors of Labour I greet the medical inspectors of the various countries represented here — Austria, Belgium, Great Britain, Italy, the Netherlands, Russia, as well as my German colleagues, the President of the Government Division of Düsseldorf, the representative of the Prussian Ministry of Welfare, the representative of the Austrian Public Health Office, and the representative of the German Federal Health Office.

Our tasks are the same in all countries: to conserve and develop the only possession of those who earn their bread by the labour of their hands, I mean strength to work. The maintenance of this strength has a very special interest for nations, because on it their welfare depends, and the same preoccupation with this subject exists in all civilised States, just as the conditions of labour are everywhere much the same. It follows that each nation should appoint for this special task special officials, and that medical inspection of the health of the workers should be regulated by the State.

We have thus a common field of activity, the delineation of which is the object of our meeting this year, and I hope that our Conference will be of value in the realisation of the ideals before us.
Speech by Mr. Bergemann
President of the Government Division of Düsseldorf

The size of the Government division of Düsseldorf, which contains a population of nearly four millions, and the great age and importance of the industries situated in the district have naturally resulted in great attention being devoted to factory inspection; and the first Prussian factory inspectors appointed included one for the Düsseldorf district. The existence of rich coal deposits and important mines in the district, on the by-products of which the modern chemical industry has in a great measure been established, has resulted in the creation of a number of important chemical undertakings, and their existence has in turn proved the necessity for medical factory inspection.

Factory inspection at first was predominantly technical in character; but it has been found increasingly necessary to devote more and more attention to the individual worker, regarding him as the central factor in all endeavours connected with observation and inspection, and this implies a corresponding development in the medical side of factory inspection.

You can always count upon my support in your endeavours to strengthen the position of the medical factory inspector; you must not, however, be surprised if the introduction of the medical element into factory inspection encounters a certain opposition, and if the traditions of the service are to some extent contrary to it. You will not find it easy to overcome all these difficulties, and the way will probably be a long one. I trust, however, that we shall be able to work together, both in the interests of the workers and those of the health of the community.

You have come here from all parts of the world animated by the conviction that the existence of international regulations contribute in a great degree to the success of the efforts to ensure better conditions for workers. Great progress has recently been made towards regular co-operation between the nations for this common purpose in many fields. We may venture to hope that your presence here will contribute to this result, and will assist in the development and progress of labour legislation in all countries. I am very happy to have had this opportunity of welcoming you, and I hope that your deliberations may be crowned with success.
The co-operation of physicians in factory inspection varies in different countries, both as to the date of its institution and the manner of its organisation, as a result of historical differences not only in the development of factory inspection but also in that of government as a whole.

In Great Britain physicians have from the beginning played an important part in factory inspection; the earliest and best-known English factory inspectors, Hoover and Blacker, were physicians, and quite recently a physician was Chief Inspector of Factories. In other countries, on the contrary, factory inspection has been a purely technical matter and so it has remained in many of them, as may be seen by reference to the existing organisations. Germany, Austria, Belgium, Great Britain, Italy, the Netherlands, and Russia are the only countries which have medical factory inspection, while other countries, some of them highly industrialised, such as France, Switzerland, and Czechoslovakia, have none.

In Germany, Prussia and Saxony appointed medical factory inspectors immediately after the Revolution. In Austria also, no medical inspector was appointed until after the war. It must not be forgotten that in most countries the physicians of the public health service assume certain duties in connection with industrial hygiene, and that in others physicians are employed for medical examination at the time of engagement or for periodical examination of workers. But medical inspection as such, the appointment of specialised physicians as official factory inspectors, which is above all the object of our present meeting, has not developed very rapidly until recent years. The important truth that factory inspection, at least in some of its aims, requires medical knowledge, is gaining ground; but we must realise that the spread of this truth is hindered by obstacles, and that many of the existing officials are unwilling to recognise us as their equals in authority. In this connection it is well to recall that the International Labour Conference of Geneva in 1923, in stating the general principles of organisation of factory inspection, speaks only of "experts" in medical matters, who "should be employed by the State for dealing with such problems". That conception was not without effect on the German Bill for the protection of labour: Apart from these considerations, the organisation of medical factory inspection and its position in
the general organisation of factory inspection are very different, not only in different nations but also in certain nations, such as the German Reich, in the different States. For all these reasons, it appeared desirable to call this meeting in order to throw some light on the question of the most suitable form of organisation — not from the standpoint of that which assures the physician the most satisfactory or the most pleasant position, but from the standpoint of that which will have the most fruitful results for the community, in the protection of workers and general well-being.

Closely related to the organisation of the factory inspection service is another problem. The question is by what means and by the aid of what State regulations research in connection with industrial hygiene may be carried on with the greatest success, and how the related problems may best be solved. Here also we find in different countries all sorts of methods in use from the most primitive type, consisting in consultations between two or more inspectors on their experiences and personal observations, to the most profound conclusions resulting from extended investigation and detailed research carried on by experts of every description with all the resources of modern science. A discussion of the methods in use in different countries will doubtless make it possible for us to provide representatives of States where industry is still relatively undeveloped, with important directions and valuable data.

We think that the present meeting may have a favourable effect on the development of medical factory inspection and especially on research in industrial hygiene. Each one of us hopes to arrive at this result through the exchange of experience and observations permitted by the last item on the agenda, and also through the possibility of forming personal ties, for which an opportunity will be given both within the meetings and outside them.
The Organisation and Working of Medical
Factory Inspection in Belgium

By Dr. Glibert
Inspector-General, Chief of the Medical Factory Inspection Service, Belgium

Objects

Before attempting to form an opinion of the efficiency of the present system on which medical factory inspection is organised in Belgium, a brief account of its origin may be of interest.

Medical factory inspection was originally simply a branch of factory inspection as a whole, which was organised by the Royal Order of 22 October 1895 as a section of the Office of Labour, established when the Ministry of Industry and Labour was created in 1895.

At that period a doctor of medicine was specially attached in that capacity to the Central Administrative Services of the Ministry; and was employed on missions connected with his professional knowledge.

Factory inspection at that time was carried out both by doctors and by engineers, and their attributions, which consisted in the application of social and economic regulations, were similar (Act respecting women’s and children’s work, workshop regulations, payment of wages, accident prevention, etc.).

Both engineers and doctors were responsible for enforcing the sanitary and hygienic provisions contained in the Belgian Labour Code.

The advantage of distinguishing between the functions of engineers and doctors, while keeping a common object in view, soon became apparent. Engineer inspectors were thus enabled to devote their attention more particularly to sanitary and safety questions, the prevention of accidents, etc.; while medical inspectors, in view of their special physiological and pathological knowledge, could devote themselves to health problems and to investigating the morbid effects of certain occupations on the human organism.
The advantages of this form of specialisation were obvious and have been confirmed by practical experience. The doctor enjoyed greater freedom in performing his own special work, while collaborating with the engineer; and the two scientific elements in factory inspection were thus rendered complementary.

The powers and duties of all factory inspectors in possession of a medical certificate were subsequently modified by the Royal Order of 31 January 1898, and their duties confined exclusively to applying industrial health regulations and to carrying out special investigations connected with industrial hygiene.

The country was divided into four inspection districts: one medical officer was appointed for each of these districts, under the direction of a doctor attached to the Central Administrative Services, responsible to the Chief Factory Inspector.

The position was again modified by the Royal Order of 25 June 1919, by which the medical services were rendered completely independent of the factory inspection services.

This measure was adopted in order to give medical factory inspectors (médecins du travail) the right of entry into those industrial undertakings under the control of the Department of Mines and not therefore subject to ordinary factory inspection.

The Existing Organisation

The medical factory inspection services now include:

(a) Central Services.
(b) Provincial Services.

Central Services. — The Provincial Services are subject to the general direction and supervision of the Central Services, which are administered by an Inspector-General with the rank of Director-General. The Inspector-General is assisted by four inspectors, including three medical inspectors and one inspector, doctor of chemical science. There is a laboratory for current research, both medical and biological, attached to the Central Services.

The Provincial Services. — These include nine inspection districts, which generally correspond to a province, each under the direction of a medical inspector. In some cases a medical inspector belonging to the Central Administrative Services is in charge of a district.
Powers and Duties

The officials of the medical service are assimilated by Royal Order to factory inspectors; and their powers, as regards the classification of industrial establishments and applications from classified undertakings, are determined by this Order, which also specifies the various regulations for the application of which they are responsible.

The duties of medical factory inspectors include:

1. Organising the protection of female workers before and after childbirth.
2. Enforcing the hygienic and sanitary regulations applicable to apprentices between 14 and 18, and assisting in their vocational guidance.
3. Making a study of all the physiological and pathological aspects of industrial work.
4. Placing their special knowledge at the disposal of social welfare institutions.
5. Imparting a knowledge of the most useful and essential prophylactic measures, and disseminating a general knowledge of industrial hygiene.
6. The application and enforcement of medical and hygienic regulations.

His powers and duties thus defined, the medical factory inspector is in a position faithfully to carry out his medical duties connected with the application of the various regulations affecting the hygiene and safety of workers.

These regulations include those respecting:

1. Personal cleanliness; the conditions under which heating apparatus shall be utilised; first-aid to victims of industrial accidents.
2. The vaccination of workers employed in warehouses for the storage of rags, etc.
3. The sale, transport, and use of white lead, whether in the form of powder, pieces, or cakes.
4. The use of white lead in the painting of buildings.
5. The manufacture of white lead and other lead compounds.
6. Industrial hair cutting (hats).
7. Work in compressed air caissons.

Medical factory inspectors are also responsible for enforcing the application of certain provisions of the general regulations;
their colleagues, the official factory inspectors in possession of an 
engineer's certificate, are responsible for the application of other 
parts of these regulations. The regulations with which the medical 
factory inspectors are concerned are as follows: the sanitary pro­
visions contained in the general regulations of 30 March 1905; in 
the regulations concerning the loading and unloading, the repair, 
and the upkeep of vessels; the Order respecting buildings tempo­
orarily occupied by bricklayers; and the special health regulations 
applicable to zinc factories.

Supervising the application and administration of industrial 
and occupational hygiene legislation and proposing amendments 
and improvements thereto. These may be said to constitute the 
principal duty of the medical factory inspection services.

The Powers of Medical Factory Inspectors

(a) Right of entry both by day and night to all undertakings 
subject to inspection.

(b) Taking note of all contraventions and making a written re­
port thereon constituting prima facie evidence in a court of law.

(c) The right to propose to local authorities that a factory shall 
be closed in view of the unhealthy and insanitary conditions pre­
vailing.

The Selection and Appointment of Medical Factory Inspectors

No regular examinations are at present held for the selection of 
candidates to the post of medical factory inspector, who are nomi­
nated after an examination of their qualifications; and the Minister, 
after the Chief of Service has given his advice, remains at liberty 
to select the candidate who appears the most suitable.

Medical factory inspectors are at present in a more favourable 
position than other inspectors, as their commencing salary is higher 
than that of the technical inspectors. Women inspectors who have 
obtained a diploma of Doctor in Medicine are, if equal in adminis­
trative rank, treated on exactly the same footing as medical factory 
inspectors.

The Working of the System

The organisation of the Medical Factory Inspection Service has 
been described; its working is as follows:
As medical factory inspectors are not responsible either to the Department of Mines or to the Factory Inspection Service, they enjoy a position of great independence, very favourable to the efficient performance of their duties. They are responsible for their official action to the Chief of Service, who is a doctor; but they can also appeal directly to the supreme head of the Department, who is the Minister.

There are no direct official relations between the medical factory inspectors, on the one hand, and the engineers of the Department of Mines and the ordinary factory inspectors, on the other. Correspondence between them relating to all important questions and questions of principle requiring a decision is carried on through the chiefs of the various services. This system has been found to work well, and has contributed in many cases to preventing friction.

While engaged on provincial duty and in all current work, medical factory inspectors enjoy great liberty, except in cases of special urgency or when engaged in special investigations under instructions from the Central Services. Medical factory inspectors can arrange their visits of inspection to suit their own convenience; a report (called note d'observation) must, however, be made after each inspection, and transmitted to the Central Administrative Department twice a month. A similar procedure is followed in the case of special reports concerning unhealthy industries subject to special regulations; in such cases, the reports must be forwarded within the time-limit prescribed by law. Experience has shown that it is not desirable to have workers who are exposed to the danger of poisoning examined exclusively by outside doctors; and these examinations are at present carried out in white lead factories, industrial hair cutting establishments, and china and earthenware manufactories by the medical factory inspectors themselves. It would be impossible to apply this system for enforcing the health regulations applicable to apprentices without multiplying the number of medical factory inspectors by 10 or even 20; the latter are therefore compelled to content themselves with impressing on employers the advantages of employing a regular medical man for this purpose; and in the case of the managers of important undertakings they are generally successful in this respect. Practising doctors, whose names are suggested by heads of undertakings and recommended for approval to the Minister by the medical factory inspectors, are known as médecins agréés. They are responsible for organising, under the supervision of the medical factory
inspector, the medical examination of apprentices in the factories for which they have been appointed. In factories where no official of this kind exists, the medical factory inspector undertakes the examination himself. In both cases a detailed report on the working of the sanitary supervision of apprentices in his district is addressed to the Chief of Service twice a year by the medical inspector.

A woman inspector who holds a medical diploma has until now been chiefly useful for carrying out the medical examination of girl employees, and her work is at present exclusively confined to this duty.
Industrial Medical Service in Belgium: Note on the Organisation of Scientific Research

By Dr. Glibert

Inspector-General, Chief of the Medical Factory Inspection Service, Belgium

The organisation of scientific research in the sphere of labour hygiene is necessarily conditioned by the peculiar exigencies of the working of the administrative services in the particular country under consideration.

It would none the less seem evident, a priori, that researches involving a long period of time and a complicated experimental apparatus should be exclusively reserved for university laboratories; but it must also be admitted that in most countries education in the higher branches of industrial hygiene is still in its infancy and that few men of science are devoting themselves primarily to this valuable and interesting field of scientific medical research. It is only sporadically and almost incidentally that some individual man of science lays bare some particular fact or other in connection with labour pathology.

It must also be pointed out that professors in our universities and leading schools of medicine are not in a position thoroughly to understand modern technical methods, although this knowledge is indispensable for anyone who wishes to obtain results in the field in question.

Similarly, the practising doctors whom the various associations of employers, workers, or others employ to attend the workers when they fall ill are so taken up with their purely clinical work that they are unable to undertake the additional work involved in detailed theoretical enquiries. Moreover, in very many cases it is materially impossible for them to obtain ocular demonstration of the technical information which they collect from their patients.

Account should also be taken of the fact that industrial doctors are in the first place officials entrusted with executive work. Their time is mainly taken up either in supervising sanitary regulations,
or in drawing up regulations which they consider essential for the
improvement of hygienic conditions in labour.

It is their business to keep *au courant* with any improvements in
technical methods, with improvements introduced into the various
methods of industrial hygiene, and with discoveries in industrial
toxicology and pathology. They are necessarily so taken up
with their administrative duties that as a general rule they have
but little leisure for detailed theoretical research work, quite apart
from the fact that, as individuals, they have not, as a rule, the scientific laboratories of a university at their disposal.

In these circumstances, it would seem that the ideal method
would be continuous and systematic collaboration between the
three factors which have just been considered. The doctors of the
great workers' associations should inform the industrial doctors of
any outstanding phenomena which come to their notice. The latter
would, in their turn, inform the men of science in the laboratories
of the particular research work which it would be most valuable
and most urgent to undertake. Collaboration between these three
elements would, in our view, give fruitful and valuable results and
conduce to the prosperity and advancement of labour hygiene in
general.

Since such an organisation is not at its disposal, the Belgian
Industrial Medical Service is doing its utmost to be self-sufficing in
the matter. Apart from their control work properly so called, the
medical inspectors carry out all indispensable research work and
undertake the necessary enquiries and clinical examinations. They
also inform the Service's laboratory of the research work and
analyses which it would be desirable to undertake.

From this point of view the Industrial Medical Service may be
divided into: (a) special research work and (b) current work.

Current work of the laboratory is as follows:

Chemical and bacteriological analysis of drinking water; analysis
of residual water in factories; supervision of matches
exported to the United States (search for white phosphorus);
the admixture of lime in fuel used in brick-making;
supervision of match-head compounds, etc.

Special enquiry work is of two kinds: (1) Special medical
research work and (2) special chemical research work.

The former work is carried out by the medical inspectors and
the latter by the laboratory on information supplied by the
inspectors.
(1) Special medical research work concerning the hygiene and health of workers in given cases includes generally a thorough clinical examination, the result of which is noted in special schedules. Such are examinations concerning lead poisoning, mercury poisoning, anthrax, ankylostomiasis, and in general all unhealthy work where the worker is liable to poisoning of any kind.

As and where necessary, these examinations are completed by biological research work.

(2) Special chemical research work. Up to the present the following research work has been undertaken by the laboratory of the Industrial Medical Service:

(a) Qualitative analysis of mercuric salts present in, but not combined with, hides and skins in skin-cutting factories.
(b) Analysis of mercuric salts organically combined with hides and skins in skin-cutting factories;
(c) Research work into the possibility of mercuric vapours emanating from skins impregnated with acid nitrate of mercury, or from the dust in skin-cutting factories.
(d) Admixture of arsenic in rosin used for the manufacture of coal briquettes.
(e) Admixture of carbon monoxide in the atmosphere of zinc factories;
(f) Research work into the admixture of lead in the atmosphere of zinc factories.
(g) Research work into plumbiferous emanations freed at ordinary temperatures by fresh white lead painting.
(h) Admixture of sulphur dioxide in the smoke from factory chimneys, causing damage to vegetation.
(i) Admixture of hydrochloric acid in smoke from factory chimneys, causing damage to vegetation.

It should be added that in Belgium, as in most other countries, temporary committees are appointed to advise on important questions which are under consideration by the Departments concerned.

In other countries, as in Belgium, the industrial medical services are endeavouring to be self-sufficient, or only occasionally ask for the help of specialists of their own nationality.

In our view, the system would be greatly improved if the problems concerned could be considered from an international standpoint. Such an advance is perfectly possible, thanks to the existence
of the Hygiene Service of the International Labour Office. This Department could obtain information from the various Governments on those scientific questions where research work is most urgently needed in the sphere of industrial hygiene. It could then request the most competent men of science of various nationalities to deal with the problems. Co-ordinated in this way, success should rapidly attend the efforts of the Department, and the practical solutions discovered could easily be revised and perfected by the committee of experts in industrial hygiene of the International Labour Office.

The proposal would be perfectly feasible if, in addition to the work of the International Labour Office, it were possible to count upon the help of those rich modern institutions such as the Rockefeller Foundation, which, from their inexhaustible resources, encourage all modern scientific and hygienic research work.
Medical Inspection of Factories in Great Britain

By Sir Thomas Legge
Medical Senior Inspector of Factories, Great Britain

Medical inspection of factories is included in the Factory Department of the Home Office, in which the medical inspectors form an integral part of the general factory inspectorate, consisting of a Chief Inspector, 3 Deputy Chief Inspectors, a Senior Medical Inspector and 4 other Medical Inspectors (of whom one is a woman), 5 Engineering Inspectors, 5 Electrical Inspectors, and 186 Factory Inspectors (of whom 31 are women) who are distributed throughout Great Britain (England, Scotland, and Wales) in 10 Divisions and 83 Districts. The number of registered factories is 144,361, and workshops 128,793. The Factory Department of the Home Office has no powers of entry in mines, apart from surface working.

Appointments for medical inspectors are first advertised and then a selection is made, after scrutiny of medical qualifications and previous experience, of a certain number of candidates for interview and final selection. The ages at which those now serving were appointed were, in the case of the men, 35, 38, 39, and 40, and, in the case of the woman medical inspector, 29. The salaries in the case of the men and woman medical inspectors are the same.

The services of the medical inspectors are, as far as the small number will allow, assigned divisionally. Dr. J. C. Bridge (stationed in London) covers the South Eastern, Western, Midland, and Eastern Divisions; Dr. Henry (stationed in Manchester), North Western, East Lancashire, North Eastern, and North Midland; Dr. E. L. Middleton (stationed in Glasgow), Scotland Division and Newcastle and Gateshead districts; Miss S. G. Overton (stationed in London), Southern Division. While thus assigned to divisions, if one has special knowledge of a particular branch of industrial hygiene (e.g., silicosis and pneumonoconioses) he is commissioned to visit the other divisions as occasion arises.
The medical inspectors' duties and powers are in general identical with those of other inspectors of factories. They include particularly:

1) Supervision of the work of certifying factory surgeons and appointed surgeons, as to whose duties mention is made later.

2) Special enquiries into dangerous and unhealthy industries.

3) Inspection of works under Regulations made by the Home Office under the Factory Act, particularly those enforcing periodic medical examination, and Welfare Orders made under the Police, Factories, etc. (Miscellaneous Provisions) Act, 1916.

4) All questions concerning injury to health of workers.

5) Supervision of first aid in factories.

6) Drafting of new Regulations required after enquiry dealing with dangerous and unhealthy industries.

The medical inspectors are expected to keep in touch with medical officers of health, and to make themselves acquainted with the authorities of universities, colleges, laboratories, hospitals, and other institutions engaged in the treatment or study of industrial diseases or engaged in work of research or investigation into medical questions bearing on matters within the province of the Department.

The Senior Medical Inspector considers all reports made by the other medical inspectors, with a view to publication or Departmental action before submitting them to the Chief Inspector of Factories. He takes an active part in general medical inspection, and keeps in touch, as far as possible, with foreign developments. He supervises the action to be taken following notification of industrial poisoning and disease under section 73 of the Factory and Workshop Act, 1901, and always prepares statistical tables of the cases notified, which are published monthly in the Labour Gazette. He also advises the Home Office on all medical difficulties arising out of the administration of section 8 (Industrial Diseases section) of the Workmen's Compensation Act, 1906.

Other medical men linked up with the Factory Department of the Home Office are: (a) certifying factory surgeons and (b) appointed surgeons.

The certifying factory surgeons number some 1,800, as the country is divided into districts, and a certifying factory surgeon must
be appointed for each district, just as there must be a medical officer of health for each district. They came into existence some 90 years ago, and their duties — with the exception of the power to attach conditions as to the nature of the work on which a young person is to be employed (1901 Act) — have not been altered at all since the Factory Act of 1844. Their duties are:

(a) To examine young persons of 14-16 years of age within seven days of their employment in the factory, and to be able to state in the register that they are satisfied “by the production of a certificate of birth, or other sufficient evidence that the person named in the certificate is the age therein specified, and has been personally examined by him and is not incapacitated by disease or bodily infirmity from working for the full time allowed by law”. They have the power of attaching conditions as to the nature of the work upon which the young person may be employed.

(b) To make periodic medical examination of the workers in certain dangerous and unhealthy industries, required under Regulations of the Home Office.

(c) To report on all cases of industrial poisoning notified under section 73 of the 1901 Act.

(d) To grant certificates entitling to compensation in the case of industrial disease scheduled under the Workmen’s Compensation Act — which is usually the first claim a workman has to obtain compensation.

Certifying factory surgeons are appointed by the Chief Inspector by selection after open advertisement in the medical papers. Where there is more than one applicant the Senior Medical Inspector is always asked for his opinion.

Had it not been for the existence of these clinical observers, distributed throughout the country, the number of medical inspectors would naturally have had to be greatly increased. Their services in the protection of child labour and the investigation of notifiable industrial diseases have been of enormous value, but, like all old institutions, their powers should now be overhauled to make them still more useful by extension. I would insist that it is preventive medicine on the clinical side that is wanted in the factory, and not the administrative officer.

Of the 1,800 certifying factory surgeons, only about 150 to 200, i.e. those in important industrial districts, require to give up much time to the work.
Appointed surgeons. — The number of appointed surgeons is very limited. Their duties are to examine periodically persons employed in certain dangerous and unhealthy industries under Regulations, taking the place of the certifying factory surgeon. While it would be better always to employ the certifying factory surgeon for this purpose, such a step cannot be absolutely insisted on. Appointed surgeons are selected by occupiers, their appointment requiring approval by the Chief Inspector of Factories.

Further medical services are rendered by:

(a) A special bacteriologist, for the purpose of examining samples of wool and hair for the presence of anthrax.
(b) A specialist chemist for the purpose of research work.
(c) The Government Laboratory, in assisting in chemical analyses.
(d) Independent medical officers of health, appointed by county councils, and all local authorities carrying out subsidiary duties as to sanitation of workshops, the administration of the Factory Act in respect of sanitation in them being delegated to the local authority by the Factory and Workshop Act.

The tendency in Great Britain is to make medical officers of health give up their whole time to their work, as salaried officers of the municipality, having as their assistants full-time school medical officers. They are therefore administrative officers, and, as I have said above, it is the clinician and not the administrative officer who is wanted in the factory. It would be all to the good, however, were factory inspectors and certifying factory surgeons linked closely with the different departments administered by the medical officer of health, such as the school medical officer and the tuberculosis officer.

Associations concerned with welfare work in factories, but acting independently of the Factory Department are:

The Industrial Welfare Society, 51, Palace Street, Westminster, London, a private organisation for the advancement of welfare work in industry. It has a council consisting of many well-known large employers of labour on the one hand, and on the other of trade union representatives. The Society forms and organises welfare work, arranges meetings of welfare workers at which matters relating to their work are
discussed, and trains and selects welfare workers for firms when asked to do so. Its activities are recorded in its journal, which has a wide circulation and is published monthly.

The Welfare Workers’ Institute, Leplay House, 65, Belgrave Road, Victoria, London, S.W., a private organisation of welfare workers, primarily formed to protect their interests and to establish and maintain a standard of efficiency of welfare workers. It also undertakes analogous work to that of the Industrial Welfare Society, and publishes a monthly journal.

Voluntary welfare work in factories owes its impetus and success mainly to these organisations. They are not officially recognised by the State, and the members do not hold any position recognised by the factory inspectorate. Naturally, the presence of welfare supervisors in factories is of the greatest assistance, both to the factory inspector and the certifying factory surgeon.

The medical inspectors have power under the Factory and Workshop Act, 1901, to take proceedings, but in practice, the factory inspector in charge of the district takes proceedings before the magistrate, the medical inspector giving such evidence as may be required for the purpose of the proceedings.

Compulsory examination is required — and is carried out by the certifying factory surgeon — of all young persons of 14 to 16 years of age within seven days after commencing employment in a factory, of female workers employed on the wedging of clay in the pottery industry, and of the vision of glaze and colour blowers in the pottery industry. The scope of the examination and other particulars, including co-operation with school medical service, etc., are given in a pamphlet headed “Certificates of Fitness”. No power is given for re-examination after the granting of certificates of fitness, and no statutory provision for the treatment of defects found.

The industries in which periodic medical examination is required and the intervals at which periodic medical examination is made by the certifying factory surgeon or appointed surgeon are:
(1) Pottery:
Lead processes: monthly by the certifying factory surgeon.
Scouring of biscuit ware fired in powdered flint: yearly by the certifying factory surgeon.
Emptying of biscuit ware fired in powdered flint: yearly by the certifying factory surgeon.

(2) Manufacture of certain compounds of lead:
Weekly by the certifying surgeon or appointed surgeon.

(3) Lead smelting:
Monthly, by the certifying factory surgeon or appointed surgeon.

(4) Vitreous enamelling:
Quarterly, by the certifying factory surgeon or appointed surgeon.

(5) Tinning of metals:
Quarterly, by the certifying factory surgeon or appointed surgeon.

(6) Electric accumulator manufacture:
Monthly, by the certifying factory surgeon or appointed surgeon.

(7) Paints and colours:
Monthly, by the certifying factory surgeon or appointed surgeon.

(8) Heading of yarn:
Quarterly, by the certifying factory surgeon or appointed surgeon.

(9) Nitro and amido derivatives of benzene:
Monthly, by the certifying factory surgeon or appointed surgeon.

(10) Manufacture of chromate and bichromate of potassium or sodium:
Monthly by the certifying factory surgeon or appointed surgeon.

(11) Manufacture of India-rubber:
(a) Lead processes;
(b) Fume processes (carbon bisulphide, chloride of sulphur, benzene, carbon tetrachloride, trichlorethylene, any carbon chlorine compound): Monthly, by the certifying factory surgeon or appointed surgeon.

The power of the certifying factory surgeon or appointed surgeon to suspend persons from work and to forbid their employment is absolute. No provision is made for treating defects found, except in the case of the bichromate regulations, but it may be voluntarily arranged for by individual firms.

Diseases and forms of poisoning which every medical practitioner must notify to the Chief Inspector of Factories are:
Poisoning by lead, phosphorus, arsenic, mercury, carbon bisulphide; chronic benzene poisoning and anilin poisoning; anthrax, toxic jaundice, chrome and epitheliomatous ulceration.

The Chief Inspector of Factories is notified by the medical practitioner (Form 303), and the inspector and certifying factory surgeon for the district are notified by the occupier (Form 40), under section 73 of the Factory and Workshop Act, 1901.
The Senior Medical Inspector deals with the notifications as received at headquarters, and sees to their following up by the certifying factory surgeon and district inspector on the form provided (Form 190). After investigation by the certifying factory surgeon and district inspector, they again pass through the hands of the Senior Medical Inspector who makes up from them the published statistics, and therefore knows all parts of the country where poisoning is occurring. Details of all cases are carefully recorded in registers, which date back now for more than 25 years.

Apart from the strictly notifiable diseases referred to, the medical inspectors have access to and tabulate the reports received on cases of gassing and fume poisoning reported to the district inspectors as accidents.

In the case of diseases scheduled under the Workmen's Compensation Acts, the worker applies to the certifying factory surgeon for the district in which he is employed for a certificate of disablement, for which he pays the sum of 5s. This certificate is prima facie evidence that the disease is a disease under the Workmen's Compensation Act. Employers can dispute such certificate and have the case referred to a medical referee. Medical referees are medical men of high standing appointed by the Secretary of State. In the case of death, the case may come before the Judge of the County Court.

Investigation of accidents is made by the factory inspector. Accidents in which septic infection supervenes are referred to the certifying factory surgeon for investigation, at the discretion of the factory inspector. The certifying factory surgeon has the same powers as the factory inspector for the purpose of investigating such accidents. The usual inquest by a Coroner, sitting with or without a jury, follows in fatal cases, and also in cases of industrial disease.

No special training for medical inspectors or certifying surgeons is provided at the universities or elsewhere. Classes are held at London and Manchester Universities during one session on Factory Hygiene, as part of the course for the Diploma of Public Health, and are open to all fully-qualified medical practitioners. These classes have been conducted by myself.

The Department, when confronted with difficult questions connected with, e.g. lighting in factories, ventilation of factories, the prevalence of specially difficult maladies such as miner's nystagmus, tar cancer, silicosis, and anthrax, can have them inves-
tigated fully by means of committees. These committees are com-
posed usually of an independent chairman, one or two representa-
tives of the employers and workers, and experts with laboratory
facilities. For instance, in the case of epitheliomatous ulceration
among mule spinners, a committee investigated last year the ques-
tion and made practical recommendations, such as the Home Office
seek to enforce generally in Regulations.

Considerable assistance is rendered, rather more to industry
itself than to questions affecting the Factory Department, by a
permanent committee — the Scientific and Industrial Research
Committee of the Privy Council. Five years ago the Government
placed a fund of a million pounds sterling at the disposal of this
research department to enable it to encourage industries to under-
take research. The Advisory Council for Scientific and Industrial
Research give liberal contributions — usually £1 per £1 subscribed
— to be expended on a co-operative basis to voluntary associations
of manufacturers established for the purpose of research. This
Committee, in their annual report for 1925, show research organi-
sations in connection with 19 subjects. They do not concern them-
selves with health matters, as these are matters for the Medical
Research Council, which has undertaken the investigation, e.g.
of miner's nystagmus and industrial fatigue, etc., but incidentally
the British Leather Manufacturers' Research Association, in con-
junction with the Department of Scientific and Industrial Research,
has agreed to probe the subject of possible disinfection of hides
and skins infected with anthrax.

Further, the Factory Department is in close touch with the
Industrial Fatigue Research Board, as the secretary of the Board
— Mr. D. R. Wilson, M.A., D.Sc. — is still an inspector of fac-
tories. The Board is a branch of the Medical Research Council,
and its terms of reference are as follows:

To suggest problems for investigation, and to advise upon or carry out schemes
of research referred to them from time to time by the Medical Research Council,
undertaken to promote better knowledge of the relations of hours of labour and
of other conditions of employment, including methods of work, to functions of
the human body, having regard both to the preservation of health among the
workers and to industrial efficiency; and to take steps to secure the co-operation
of industries in the fullest practical application of the results of this work to the
needs of industry.
While the Board has seven full-time investigators, the work is largely organised in Committees, of which the following are in active work at the present time:

A. Scientific Committees:
   1. Statistical.
   2. Physiology of muscular work.
   3. Industrial psychology.

B. Special Committees:
   1. Post Office work.
   2. Accident causation.
   3. Optimum length of spell.
   4. Physiology of ventilation.
   5. Design of machinery.
   7. Sickness in cotton weaving.

In the report of the secretary, Mr. D. R. Wilson, M.A., D.Sc., for 1925, an account is given of the actual work in hand in regard to:

(a) Particular problems of wide industrial importance, such as:
   1. Hours of labour.
   2. Accident causation.
   3. Design of machinery.
   4. Physiology of ventilation.
   5. Rate of improvement in industrial occupations.
   6. Vocational guidance.
   7. Relation of school-leaving age to well being and proficiency.

(b) Specific problems submitted by Government Departments or industrial associations, such as:
   1. Sickness in cotton-weaving sheds, that is, a comparison of the relative sickness among weavers in sheds that are artificially humidified and in sheds that are not.
   2. Sickness in the printing industry.
   3. Weight carrying and lifting (under the direction of Professor E. P. Cathcart, Professor of Physiology, University of Glasgow).
   4. Telegraphists' cramp.
   5. Vision and lighting.
   6. Atmospheric conditions in mines.
   7. Atmospheric conditions in cotton-weaving sheds.
   8. Vocational guidance.
   10. Efficiency in typewriting.

(c) Laboratory researches, such as:
   1. The principles governing muscular exercise.
   2. Tests for physical fitness.
   3. Industrial work involving muscular effort.

Further laboratory research on these lines is being made into repetitive work, muscular skill, etc.

The report is particularly valuable, because the second part, covering 100 pages, is devoted to analysis of the works published by the Board since its formation in July 1918.
The Medical Research Council itself, in addition to the Industrial Fatigue Research Board, has standing committees investigating miner's nystagmus, industrial health statistics, the physiology of muscular work, industrial psychology, legibility of type, radiology, etc.

In order to make this report complete, I give below a brief statement of the changes in the duties of the certifying factory surgeons, adumbrated in the Factories (No. 2) Bill, which will be considered by Parliament in 1927. In the Bill the name "certifying surgeon" is changed to "appointed doctor" and the section dealing with certificates of fitness is as follows:

1. — Subject to the provisions of this section, a young person under the age of sixteen years taken into any employment in a factory shall not remain in that employment after the prescribed period unless within that period he has been examined by the appointed doctor and certified by him to be fit for that employment.

2. — The certificate by the appointed doctor may be given:

(a) in respect of employment:
   (i) in a particular factory;
   (ii) in any group, class or description of factories;
   (iii) in a particular process or class or description of work; and
(b) upon condition that the person concerned shall not be employed in the employment unless and until any physical defects specified in the certificate have been remedied, or that he shall be re-examined after an interval specified in the certificate, or on both those conditions.

3. — Where a certificate under this section in respect of any young person is granted by the appointed doctor upon any such condition as aforesaid, the young person shall not be employed except in accordance with the condition.

4. — The Secretary of State may, after consultation with the Minister of Health, by Order transfer to the county council the duty of arranging for the medical examination and certification of young persons under the age of sixteen years under this section.

5. — The Secretary of State may make rules for prescribing:

(a) the manner in which and the place at which examinations under this section shall be conducted;
(b) the form of certificates under this section;
(c) the facilities to be afforded by occupiers of factories for the purpose of examinations under this section;
(d) any other matter which the Secretary of State may consider desirable for the purpose of giving effect to this section.

6. — It shall be the duty of every local education authority under the Education Act, 1921, to arrange for the production to an appointed doctor for his confidential information of so much of the school medical record of a young person under the age of sixteen years as may be necessary to enable him to carry out effectively the examination under this section, and the Minister of Health may, after consultation with the Secretary of State, make rules for the purpose of securing the observance of the provisions of this subsection or may arrange that the Board of Education, after such consultation as aforesaid, may make such rules on his behalf.

7. — The Secretary of State may by Order exempt from the operation of this section any factory or class or description of factories in which mechanical power is not used.
For the treatment of matters relating to the workers, the General Director for Labour is assisted by a Chief Medical Adviser and five subordinate medical officers in the Central Labour Inspectorate, which is under the Minister for Labour, Trade, and Industry. For purposes of factory inspection the country is divided into eleven districts, in each of which there is an independent district chief, with other subordinate officials (men and women inspectors, controllers, and technicians). There are three additional districts for inspection in ports.

In addition to the six medical officers assisting the General Director there are an electrotechnical adviser, a chemical adviser, and other officials. They carry out the specific duties assigned to them by the General Director, are entitled, like the other inspectors, to visit independently all the workplaces within their competence, and have also the right to notify contraventions for the purposes of prosecution. It is also their duty to supervise the industries which are subject to legal regulations. The removal of unsatisfactory conditions is effected by the district chiefs, who alone are entitled to issue instructions. The medical officers in the Labour Inspectorate are required to work in close cooperation with the other factory inspectors in all matters relating to health, with a view to advising and supporting them in carrying out regulations for the protection of labour. It is the right and duty of the five medical officers to keep in direct touch with the Chief Medical Adviser, also when dealing with questions not reserved for the district chief.
The Chief Medical Adviser acts as the medical expert for the Ministry of Labour, the General Director, and the district chiefs. On request he attends the meetings of the district chief with the General Director (at least four times a year).

Although the five medical officers belong to the Central Labour Inspectorate, they are stationed in different localities. As regards their functions, they may be best described as investigators into the causes of risks to health, morality, or life. They enjoy great freedom of movement, and are entitled to visit the factories independently and collect information wherever they consider necessary, that is to say, both from the management and from the district factory inspector. It is very important for the medical officers of the Labour Inspectorate that, under section 10 of the 1915 Safety Act, they may, if there is reason to believe that certain risks are present in a factory, question and examine any of the workers in private. If in a particular department of a factory the risks to health are found to be unduly great, they have unrestricted powers, under section 246 of the Safety Decree, to reduce the time spent in such workrooms.

These medical officers also act as examining doctors. In particular they are consulted as "qualified doctors" owing to their special knowledge of occupational conditions in any given trade or industry. In this connection there is an essential difference from the English system, where the "certifying surgeons" initiate and carry out examinations on engagement in the factories.

In accordance with section 35 of the Labour Decree of 1920, annual examinations — on engagement and periodically thereafter — are made of young persons in the cotton, wool and jute spinning industry, of women and young men in the hand flax industry, and of young persons and women in the lead industry and printing industry. Under the Stonemasons Act of 1921 young persons of 14 to 18 years of age are examined annually, and men every three years. Under section 36 of the same Decree, young persons in cigar factories are examined in consultation with and at the request of the district authority. According to section 10 of the 1915 Safety Act, the men employed in white lead factories, briquette factories, and various other undertakings are examined periodically. Various examinations are entrusted to particular medical practitioners, who are given powers for the purpose on the instructions of the Minister or the district chief, such as examinations on engagement of young persons and women in the printing industry, periodical
examinations of young persons and women in the pottery industry, of men under the Compressed Air Workers’ Act, of young stonemasons once a year, etc.

The health certificate for young persons remains valid for not more than two years, according to the provisions of section 35, subsection 5, of the Labour Decree of 1920. Thus, between the ages of 14 and 18 years, every young person is medically examined at least twice.

Section 35 of the 1920 Labour Decree gives the district chiefs the power to impose conditions to be observed in respect of the performance of specified kinds of work, or of work under specified conditions, subject to the penalty of prohibition of the work.

Sick persons are referred to the family doctor, or, through him, to the welfare institutions set up under the Disablement Insurance Act. In agreement with the management, weakly young persons are temporarily given special light work. Young persons who are not competent to carry out specified kinds of work can apply within a fortnight to the Ministry of Labour for another medical examination, which must be carried out by the medical officers of the factory inspectorate.

The medical inspectors collect information in various ways relative to the occurrence of occupational diseases, and examine them from the point of view of their connection with occupation. Since 1911 the doctor in charge of the case is bound, under the Labour Act, to notify certain diseases which are specified in the instructions issued to all medical practitioners. Failure to notify is punishable by a fine. Occasionally, presumed occupational diseases, not included in the list, are notified. The medical officers of the factory inspectorate themselves make enquiries into occupational diseases when they visit the factories. The information given in the technical and trade journals and the reports of technical and trade societies also afford suggestions for industrial investigations.

Considerable importance is attached to first-aid in the case of accidents in factories. Under section 236 of the 1916 Safety Decree, there must be at least one person certified as competent to render first-aid in dangerous undertakings employing not less than 25 persons if motive power is used, and in all undertakings employing more than 50 persons. In order that instructions in first-aid may be given on uniform lines, annual courses of lectures are organised through the State Commission for First-Aid in the event of industrial accidents in towns and villages (appointed in 1910). These
elementary and advanced courses are financed by the State. The lecturers are selected by the Chief Medical Adviser, mainly from among the younger doctors, and he holds periodical conferences with them for the detailed discussion of uniform instruction on definite principles. At the request of the district chiefs the managements of factories select suitable persons to attend the courses, which, for the purposes of supervision, are occasionally attended by the medical officers of the factory inspectorate. In addition, since 1 November 1921, the Chief Medical Adviser and the five medical officers of the factory inspectorate have given special courses on first-aid in electrical accidents (warning, rescue, treatment) for electrical fitters and their assistants in accordance with a single curriculum (five lectures of two hours each).

Under section 232 of the 1916 Safety Decree, an Order of the district chiefs has been in force since 1925 to the effect that every gas works must have a Henderson and Haggard carbonic acid-oxygen apparatus available for use. As soon as the Chief Medical Adviser learns that there is an efficient apparatus in the factory, one of the medical officers of the factory inspectorate sees to it that the first-aid worker is properly instructed in its use, and is acquainted with the requisite methods of artificial respiration, with simultaneous administration of the required amount of oxygen in cases of suspended animation. This instruction, also, is organised by the medical officers of the factory inspectorate.

II

Industrial hygiene research is carried out regularly in the Netherlands:

(1) By law. Every three years stonemasons of over 18 years of age are subjected, under the Stonemasons’ Act, to a clinical X-ray examination, conducted on uniform principles, with a view to determining the presence of pneumonoconiosis. For this purpose they are summoned by the district chief and examined, if possible in a consultation room, for tuberculosis by a medical officer of the Labour Inspectorate, together with a tuberculosis specialist, or else by two medical officers of the inspectorate. In 1923-1924, 963 stonemasons in all were examined, and 274 X-ray photographs taken.
(2) In accordance with Government instructions of various kinds issued by the Labour Minister, or indirectly by other Ministries.

(3) On the instructions of the General Director for Labour.

(4) On the initiative of the Chief Medical Adviser, taken as a result of his own observations in industry, or on the basis of scientific technical or trade literature, or the daily or trade union press.

In so far as technological information requires to be furnished to the medical advisers of the Labour Inspectorate for the purpose of industrial health investigations, it is supplied by the technical labour inspectors or by the engineers in large undertakings.

In the chemical laboratory of the Labour Inspectorate in The Hague no animal experiments are made, but toxicological and chemical investigations are carried out in close co-operation with the Chemical Adviser of the inspectorate. Under the Labour Act the district chiefs are entitled to collect material in the factories for subsequent chemical investigations. It is both obvious and necessary that the medical advisers of the Labour Inspectorate should possess a similar right as is in fact accorded to them in order to accelerate the course of an investigation and permit of the speedy determination of any risk which may occur. Animal experiments are carried out elsewhere (the university) with the scientific co-operation of other research workers.
Medical Factory Inspection in Italy

By PROFESSOR GIOVANNI LORIGA
Chief of the Medical Factory Inspection Department, Rome

The system of medical factory inspection in Italy was set up by the Act of 22 December 1912, No. 1361, which created the Technical Inspection Department. The Act in question was amended by the Legislative Decree of 30 December 1923, No. 3245. But no fundamental change was introduced into the work of the inspectorate.

In execution of the Legislative Decree in question, the body of factory inspectors is constituted by 176 technical officials, apart from administrative staff. Inspectors are divided into chief district inspectors, chief inspectors, and assistant inspectors, and are distributed among 13 districts, each containing a chief inspector and an assistant inspector attached to the chief district inspector.

The inspection staff is appointed by an examination of qualifications and by competitive examination. Inspectors, chief inspectors, and chief district inspectors must possess an engineer's certificate, or a diploma in either medicine, agricultural science, physics, chemistry, economics, commerce, or accountancy. Women inspectors must possess a diploma of some faculty or high school.

The main duties of the technical inspectors are as follows:

(a) To ensure the enforcement of all Acts concerning labour and social welfare in industrial and commercial undertakings, offices, agriculture, and, in general, in all localities where work is carried on for wages or salary. Inspection of mines, quarries, and turf pits.

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1 Cf. also in this connection: (a) the Regulations of 27 April 1913, No. 431, and (b) the Act of 8 March 1925, No. 333, which contains the rules for the appointment and promotion of the officials concerned.

2 At the moment there is only one woman among the inspectors. She has the rank of assistant inspector.
is carried out by the special body of mining inspectors which was created in 1887.

(b) To collect all information and data concerning technical and hygienic conditions in industry, and also concerning the development of the national production and in general all information requested by the Ministry on the subject of industry or labour.

The medical inspectors have the same duties as all other technical inspectors, but they form a special body, ranking as a district (Circolo), the chief of which resides at Rome and is attached directly to the Minister 1.

Subordinate medical inspectors may be added to the service of the Head Medical Inspector for the purpose of carrying out all or certain duties in connection with the supervision of hygienic and sanitary measures. For disciplinary purposes they are attached to the head inspector of the district in which they work.

The Head Medical Inspector is entrusted with the duty of coordinating and directing all measures for the enforcement of hygienic and sanitary regulations, of proposing general principles for such enforcement, of giving his views on the general arrangements and measures for the enforcement of such general principles, of carrying out inspections in agreement with the local chief inspectors in the relative districts, of conducting enquiries into conditions of industrial hygiene and health, and of carrying out any other work which may be assigned to him by the Minister. For the better accomplishment of these duties the Head Medical Inspector possesses a chemico-physical research and bacteriological laboratory, etc. He may also be authorised to utilise other scientific laboratories for special research work, etc.

He also receives from the chief district inspectors, and may demand from them, information of all kind concerning hygiene and health conditions.

As a logical consequence of this form of organisation the ordinary work of the assistant medical inspectors in the districts is, by periodical visits, to ensure the enforcement of the legislative regulations concerning hygiene and health. Their powers are identical with those of the other technical inspectors, including the right to issue injunctions.

1 The Medical Labour Inspection Department at the moment includes a head medical inspector, Professor Giovanni Loriga, and two chief inspectors, Dr. Pietro Didonna and Dr. De Ruvo Tommaso.
The assistant inspectors attached to the Head Medical Inspector lay down what measures shall be taken to enforce the regulations in question, but do not personally supervise the execution of such measures. They only take a personal part in the work of inspection in the following special circumstances:

1. Whenever they are requested to intervene by the other chief district inspectors.
2. Whenever the Minister requests them to carry out special visits.
3. Whenever they have to carry out enquiries or studies on given subjects.

The work of supervising hygienic and sanitary conditions of labour is to a large extent assisted by the other sanitary officials in the municipalities throughout Italy. In order to secure an appointment, such officials must, after they have obtained their diploma, have attended a special course in hygiene. They are paid by the municipalities, but appointed by the State, and rank as public officials. Thus, in large municipalities, such as Milan or Turin, special inspectors attached to the sanitary officer directing the Office of Health are entrusted with the work of supervising the enforcement of municipal decrees relating to occupational hygiene, more especially as affecting industrial work.

The main duties of the sanitary officer are as follows:

1. To advise as to the classification of industrial undertakings as regards their situation among, or apart from, dwelling-places, and to propose such precautionary measures as should be adopted by these undertakings to avoid inconvenience in their neighbourhood.
2. To carry out the medical examination of young persons and women under age, and to give certificates of capacity to be attached to the labour book, stating that such persons are fit for the work which they are to perform.
3. To certify that women after childbirth are able to resume their work without any risk to their health.
4. To ensure by periodical visits that women under age and young persons are fit to carry out the work on which they are employed; to determine whether or not they are suffering from infectious diseases, and to repeat the medical examination on every occasion on which young persons or
women under age are transferred to work other than that for which they had been certified fit at the previous medical examination.

(5) To repeat the medical examination on every occasion on which a Government factory inspector has declared that the state of health of such persons does not permit them to continue the work upon which they are employed.

(6) To advise the factory inspectors of the work carried out on the factory premises and annexes, with a view to ensuring that such work fulfils the necessary conditions of hygiene and safety for the protection of young persons and women under age.

(7) To advise concerning all exemptions granted to bakers advancing the hour for beginning work, and to see that such exemptions are properly supervised in practice.

(8) To certify that contagious diseases do not exist among workers engaged in decortication work on the rice plantations, who emigrate to other provinces, and to determine the period to be observed before and after childbirth in the case of pregnant women who wish for employment in decortication work on the rice plantations.

(9) To determine, whenever necessary, the consequences of industrial accidents.

(10) To supervise the proper working of the medical and pharmaceutical services set up by manufacturers.

The 9,188 municipal sanitary officials form a body of educated workers, chosen and controlled by the State, which is at the present, and can be still further in the future, of valuable assistance in work connected with the hygienic and sanitary supervision of labour.

When the Italian Act concerning labour hygiene and social welfare is as far developed in practice as similar Acts in other countries, this body of officials can still further be utilised, and can render services no less valuable and complete than those rendered by the "certifying surgeons" in Great Britain and by the approved doctors (médecins agréés) in Belgium.

The level of excellence of the organisation of medical labour inspection in Italy has been proved by long experience. It has never given rise to disputes between the various services as to the limits of their various duties. It has never resulted in fresh charges for the manufacturers (who are always inclined to be opposed to the
multiplication of inspection organisations), and it has rendered valuable services to the other State administrations.

In reply to a question from Dr. Kaploun, Dr. Loriga stated that up to the present there were no regulations in Italy governing either medical inspection at the time of engagement, periodical medical inspection, or the medical inspection of young persons.
Medical Inspection in the Austrian Factory Inspection Service

By Dr. Adler-Herzmark

Medical Inspector of Factories in Austria

The Austrian Factory Inspection Service included a medical department since 1919; until now, however, only one medical factory inspector (a woman) has been appointed. She entered on her duties in 1921, after two years’ probationary service in the Ministry; and it may be noted that she had previously enjoyed five years’ hospital experience and eight years’ private practice, the latter including three years’ work in a chemical laboratory and in the ambulance section (women’s department) of a workers’ sickness insurance fund, and four-and-a-half years’ war service in a military hospital. Her district consists of Vienna; and in this case the Factory Inspection Services of the city are attached directly to the Ministry of Social Welfare. The medical factory inspector is responsible personally to the chief of the first factory inspection district, which deals with all matters connected with factory inspection in Vienna; but in reality she is mainly responsible to the Chief Inspector of Factories, because her duties extend, in certain cases, to Lower Austria and to some of the other federated States. She is empowered, as a representative of the Factory Inspection Service, to inspect all undertakings, workshops, premises where homework is performed, apprentices’ workplaces, and workers’ dwellings. Mines, railway workshops, and agricultural undertakings are not included. While the technical factory inspector (i.e. chief inspector, district inspectors) or his representative is empowered to make visits of inspection (i.e. to give official instructions verbally or in writing for the proper observance of safety regulations), the medical factory inspector, when visiting undertakings alone, only carries out what is known as Revision, in other words, her reports and suggestions must be submitted to her hierarchical superiors, after previous notifica-
tion of her intention to visit the undertaking concerned has been given. The statement or report (Befund) then issued by the district inspector must be communicated to the medical inspector. The latter in most cases accompanies the technical factory inspector in the course of her inspection, more particularly in all cases of dangerous occupations or processes. Either the factory inspector (technical or medical) or the Chief Inspector of Factories can demand the presence of the medical inspector during any given inspection. The medical inspector in these cases usually discusses with the technical inspector on the spot the measures necessary for ensuring the health of the workers concerned. The medical inspector, acting as a member of the Building Committee (Genehmigungskommissionen), is similarly empowered to state what measures he considers necessary, particularly in connection with dangerous processes, when the plans for the construction or renovation of factories and workshops are being examined and approved by these committees, which are responsible for passing the plans and supervising the construction of buildings.

The medical inspector can submit individual workers to a medical examination in the undertaking itself or can instruct them to present themselves for examination at her office; in other cases she obtains the history of the case from the hospital where the patient is being treated. She can also visit workers in hospital suffering from diseases which have come to her knowledge, either as a result of voluntary notification, by physicians, or when reported by the undertaking; or she may discuss the case with the doctors by whom it is being treated (specialist, clinical, or panel doctors); she also visits and inspects hospitals maintained by the specialists attached to sickness insurance funds, obtains their opinions, carries out blood tests, etc. The reports of the periodical medical examinations of workers employed in lead factories must be submitted to the medical factory inspector. These examinations are now carried out by doctors appointed by the municipal authorities, and their fees are paid by the employer, through the municipality. The principles on which the examinations must be carried out are laid down by the municipality, in agreement with the factory inspection authorities and the National Health Office; the medical factory inspector is responsible for ascertaining whether they are complied with. The

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1 The assimilation of occupational diseases to industrial accidents, involving compulsory notification of the former, is at present in preparation in Austria.
medical factory inspector is also responsible for keeping up to date the lists of undertakings and examining doctors (for Vienna).

She is empowered, like all factory inspectors, to take samples of material in order to test them chemically. All tests and their results, including those carried out in the States, must be sent to the medical factory inspector, classified, and kept up to date.

The medical factory inspector must answer all enquiries relative to medical matters from the Chief Inspector of Factories, or from district inspectors. In certain cases, files are submitted to the medical inspector for her decision.

The medical factory inspector must prepare a special annual report, for inclusion in the annual official Factory Inspection Report submitted by the Chief Inspector of Factories to the Minister of Social Welfare, and laid before the National Assembly. Special scientific studies, giving an account of *seriatim* investigations in industrial undertakings, or general statistical enquiries, are also published in the annual report, with the consent of the Chief Inspector of Factories, but may only appear in ordinary periodicals after the annual report has been issued.

The medical factory inspector is at liberty to engage in scientific work of this kind, or in teaching, provided this does not interfere with the performance of her official duties. Reports dealing with interesting cases can also be issued by the medical inspector if she considers it expedient; or extracts made from medical publications which may be of interest to the factory inspection authorities. Reports or extracts of this kind are then circulated by the Chief Inspector of Factories.

The medical factory inspector takes part, as an expert of the Factory Inspection Service, in the work of the so-called "Accident Prevention Committee", a joint organisation responsible for preparing and drafting amendments to protective labour laws and regulations.

The medical inspector delivers lectures dealing with occupational diseases and industrial hygiene to workers, women, and young persons, and groups of medical men.

Her official position is regulated in accordance with the principles applicable to technical factory inspectors with university training. She is at liberty to engage in private practice, but does not, in fact, do so owing to lack of time.
Medical Inspection of Labour and its Problems in the Union of Socialist Soviet Republics

BY PROFESSOR S. I. KAPLOUN
President of the Labour Protection Section in the People's Commissariat of Labour, Moscow

Prior to the Revolution of 1917 the protection of labour in Russia was reduced to the minimum, and factory inspection was a purely bureaucratic organisation comprising about 200 inspectors whose duties consisted mainly in the inspection of boilers or activities of a purely formal or political nature. After the Revolution inspectors were elected by the workers. To ensure the protection of labour in technical and sanitary matters there were instituted at the same time medical inspection and technical inspection. The Order promulgated by the Commissariat of Labour on 28 March 1919 concerning the organisation of medical inspection was at first rather difficult to carry out, since the great majority of physicians were on military service.

The number of medical inspectors in 1920 was 17; on 1 January 1921 it was 120; on 1 January 1922 it was 291; on 1 January 1926 it reached 295. 79.6 per cent. of the inspectors are men, the remaining 20.4 per cent. are women. They are distributed as follows:

1 Summarised by the Industrial Health Service of the International Labour Office.
<table>
<thead>
<tr>
<th>Republics</th>
<th>Number of medical inspectors</th>
<th>Number of undertakings</th>
<th>Number of workers employed</th>
<th>Per medical inspector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union of Socialist</td>
<td>191</td>
<td>6,247</td>
<td>1,767,535</td>
<td>32.7</td>
</tr>
<tr>
<td>Soviet Republics .......</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ukraine ..................</td>
<td>48</td>
<td>1,736</td>
<td>522,419</td>
<td>36.2</td>
</tr>
<tr>
<td>White Russia ............</td>
<td>4</td>
<td>150</td>
<td>17,774</td>
<td>37.5</td>
</tr>
<tr>
<td>Transcaucasia ..........</td>
<td>13</td>
<td>297</td>
<td>65,275</td>
<td>22.8</td>
</tr>
<tr>
<td>Usbekistan .............</td>
<td>5</td>
<td>145</td>
<td>12,258</td>
<td>29.0</td>
</tr>
<tr>
<td>Turkmenistan ...........</td>
<td>1</td>
<td>47</td>
<td>2,782</td>
<td>47.0</td>
</tr>
<tr>
<td>Total for all the Soviet Union .</td>
<td>262</td>
<td>8,622</td>
<td>2,388,33</td>
<td>32.9</td>
</tr>
<tr>
<td>Railways and marine . .</td>
<td>33</td>
<td>—</td>
<td>1,203,851</td>
<td>—</td>
</tr>
</tbody>
</table>

1. In the railways and marine services both workers and salaried employees are included; in industries workers only.

Only undertakings employing over 30 workers are shown. Except in the small Republics, each medical inspector has thus under his supervision less than 25 undertakings and 9,000 or 10,000 workers, which makes his task fairly easy and enables him occasionally to visit the undertakings more often than the factory inspector.

The medical inspectors are attached to the provincial sections of the People's Commissariat. In large centres, where along with the medical inspector there are other factory inspectors, they form together an organic whole with the duty of supervising conditions of labour; the factory inspector is responsible for legal conditions of work, the medical inspector for hygienic and sanitary conditions, and the technical inspector for the prevention of accidents. The factory inspector has seniority in rank and is responsible for inspecting his district. Medical inspectors are, however, completely independent in everything within their competence. The factory inspector only co-ordinates and organises the work of the other inspectors and cannot modify the recommendations of the medical inspectors. Prosecutions for non-observation of regulations can, however, be instituted by medical inspectors only through the factory inspectors.

The work of the medical inspectors is regulated by the Order of 1 December 1925 (replacing the Order of February 1920) promulgated by the People's Commissariat of Labour.
Its essential object is to supervise the hygienic and sanitary conditions of physical and mental work of all paid workers. To this end it carries out:

(1) General investigations, where possible, of the conditions of labour affecting health and compilation of all information, scientific, statistical or otherwise, of use in the systematic struggle against industrial diseases.

(2) The organisation and application of measures of hygienic improvement of production and of conditions and methods of work.

(3) Supervision of the execution of legal regulations in the field of industrial hygiene and prevention of accidents.

The concrete tasks carried out by medical inspectors of labour in the supervision of undertakings are as follows:

(a) Maintenance of existing regulations for the protection of labour. Supervision of sanitary conditions of undertakings and of production from the point of view of industrial hygiene.

(b) Study of different occupations and trades from the point of view of their hygiene and measures for the improvement of conditions of work and the protection of workers and employees against industrial diseases.

(c) Study of the pathology of workers and employees (frequency and conditions) in relation to occupation:

(i) by periodical examination of the personnel;

(ii) by participation in the preparation and study of the statistical material of the social insurance banks and medical establishments to which the undertakings concerned are attached;

(iii) by careful study of cases of poisoning or industrial diseases and other observations and researches in general.

(e) Supervision of the proper organisation of medical attention for workers, employees, and their families.

(f) Instruction of the workers in hygiene and the protection of labour.

(g) Collaboration with the local services of the Commissariat of Public Health in planning and carrying out measures for prevention of epidemics and contagious diseases among the workers and in the struggle against social diseases, particularly tuberculosis.

(h) Participation in the work of social insurance, principally in the classification of industries according to danger and unhealthiness; collaboration in investigations for determining increases and
decreases in the premiums to be paid by undertakings. (According to law undertakings pay different premiums according to the dangers involved, but the factory inspector has the right to make an increase of 25 per cent. or a decrease dependent on certain special protective measures.)

Among the tasks of the medical inspector of the highest rank, the following may be mentioned:

(a) Responsibility for the execution and co-ordination of the duties of the district medical inspectors.
(b) Drawing up of programmes of duties of medical inspectors of the whole province and plans for scientific research.
(c) Making reports on the collective activities of the medical inspectors.
(d) Supervision of the work of the district medical inspectors.
(e) Holding conferences of district medical inspectors.
(f) Collection and arrangement of statistical data on poisoning and industrial diseases.
(g) Representing the service in the various organisations concerned with industrial hygiene.

In carrying out these different tasks it is necessary for the medical inspectors to visit the various factories, warehouses, etc., either of their own accord or at the request of the factory inspector or the workers' organisations. The medical inspectors enjoy the same authority as other inspectors (freedom of entry, on presentation of an identity card, into all places where paid labour is done).

The medical inspector carries out his duties in close touch with the local workers' organisations. He takes part in the activities of the committees for the protection of labour and enjoys the active co-operation of trade organisations in the study of industrial pathology. He is also in touch with the local medical or sanitary organisations of the province or of the local section of the Commissariat of Public Health and co-operates in their work. In this field, especially in connection with the struggle against occupational diseases and the organisation of medical inspection of labour, co-ordination of functions is regulated by a joint Ministerial Order of May 1924 issued by the Commissariats of Labour and Public Health.

The result is that the work is planned in common, and the organisations of the two Departments meet in conferences and committees. Measures concerning industrial hygiene, the prevention
of accidents, and the prevention of fires come under the Commissariat of Labour, while the organisations of the Commissariat of Public Health give their advice within the limits of their scope in matters of protection of the health of the population or the industries of the neighbourhood. Similarly, the plans of workers' houses and industrial undertakings are examined by the two organisations.

Without entering into details on the subject of the visits made by medical inspectors (alone or with other factory inspectors), it may be mentioned that the work of medical inspection is regulated by the "General Compulsory Rules for Industrial Undertakings", published by the Commissariat of Labour and laying down the principal regulations of industrial hygiene. Medical inspectors have also the right in connection with the sanitary protection of labour to lay down special measures not contained in the General Rules mentioned above. The medical inspectors write their remarks in special registers kept on the premises. The percentage of compliance with regulations prescribed increased from 62.7 in 1922 to about 80 per cent. in 1925.

The medical inspectorate does important work in the field of preventive medicine, especially in connection with revision of plans for buildings or alterations in industrial establishments. During the first nine months of 1925 in 22.2 per cent. of the cases the opening of premises was partially or totally forbidden pending compliance with instructions given.

The medical inspector is obliged to ensure the observance of the Order concerning compulsory declaration of occupational diseases (1924). It is his duty to see that he is notified of each case of poisoning or of an occupational disease both by the managers of undertakings and by physicians in attendance. He checks the information received by the reports of works committees for protection of labour or the lists of the social insurance banks.

Whenever notified of a case of poisoning or of an occupational disease, the medical inspector carries out as soon as possible, especially in instances of poisoning or of a plurality of cases, a thorough investigation into each case. It is his special duty to verify the diagnosis, determine the causes of the poisoning or the disease, and prescribe the necessary prophylactic measures to prevent the development of further cases. He describes the results of this investigation in a special report which is attached, together with copies of the notifications, to the monthly report which he submits to the provincial Labour Protection Section. In cases where legal punish-
ment of offences is involved, the medical inspector forwards the necessary documents to the district inspector and sends a copy to the provincial Labour Protection Section.

The medical inspector also takes part in the organisation and execution of the compulsory periodical examination of workers in unhealthy industries and of young persons. It is his duty to prepare a systematic distribution of the examinations in his district in co-operation with the local section of the Commissariat of Public Health, the social insurance banks, and the trade unions involved. He informs the examining physicians of the nature of the work done by the persons examined and the danger to health connected with it. He keeps track of the results of examinations, transfers workers if necessary from unhealthy work to another occupation, and settles general questions with the workers themselves, the managers of undertakings, and the works committees. He compiles statistics of the results of examinations, especially for comparison with previous examinations. The results also enable him to classify unhealthy industries for taxation and for the granting of increases or decreases in premiums.

In visiting factories the medical inspector investigates the condition of the sanitary services and especially the general organisation (extent and qualification of physicians) of first-aid in connection with accidents, poisoning, and occupational diseases. It is his duty to warn general practitioners of specific risks in certain industries or kinds of work and to verify the correctness of registration in hospitals of cases of accidents, poisoning and, occupational diseases. In addition to visiting undertakings, medical inspectors are instructed to carry out a systematic study of industrial injuries and to determine the necessary measures for abolishing them, or at least diminishing their number. These researches are carried out in various ways. General and special problems are studied either on the spot or in laboratories with the necessary scientific instruments, furnished by the Commissariat of Labour at the headquarters of the subsections of the Labour Protection Section. In the large cities there are special laboratories for industrial hygiene, and medical inspectors are entitled to use the laboratories of universities or those of the Public Health Service.

Medical inspectors are also asked for advice on a large number of questions: draft labour legislation, and various problems such as the right in certain industries to longer periods of rest, shorter working days, working dress, distribution of milk or fat, etc.
Finally, they carry out extensive propaganda among the working class (lectures, courses, newspaper articles, etc.).

The professional training of medical inspectors is received in the universities, all of which give a compulsory course in industrial hygiene. Under the present arrangements only four universities have a chair in this subject (Moscow, Leningrad, Charkow, and Kief). In others inspection is given by "docents" as a part of social hygiene.

The practice of medicine is not formally forbidden in the case of medical inspectors, but none of them are in practice partly through lack of time and partly, in the majority of cases, on account of frequent absence from their place of residence, which makes practice impossible.

II

Scientific research in industrial hygiene and pathology is carried on by the Commissariats of Labour and Public Health, i.e. by physicians belonging to these Departments and by special institutions founded a few years ago.

The Commissariat of Labour determines each year the plans for scientific research to be carried on by the medical inspectorate and assigns to each province the task of studying the sanitary features of the industries in their territory which are most extensive or most important from the point of view of industrial hygiene.

Without entering into details as to the work done, it may be mentioned that, so far, about 60 investigations have been made (about 40 in 1925) in 24 provinces concerning the following subjects: hygienic and sanitary conditions of industries, special laboratory research, studies in the psycho-physiology and pathology of labour, and miscellaneous subjects.

Among the special institutions the foremost is the Provincial Institute for Protection of Labour founded at Moscow jointly by the Commissariat of Labour, the Commissariat of Public Health, and the Supreme Economic Council, the first being interested in the scientific study of the hygiene and pathology of labour, the second in the study of occupational diseases, and the third in modern industrial organisation.

The Institute is not to be regarded as a purely scientific organisation concerned merely with abstract problems; its work in
general should be mainly of a practical nature. Apart from the study of fundamental scientific questions, it has to deal with everyday problems, give advice, and decide on any questions that may be submitted to it by factory inspectors, trade unions, economic organisations, etc.

The tasks of the Institute are more precisely as follows:

1. Theoretical and practical study of the problems of industrial pathology (occupational injuries, diseases, accidents); advice to local officials on their scientific work.
2. Propaganda for protection of labour.
3. Scientific training of persons to be occupied in protection of labour.
4. Elaborating the most important practical measures in the field of industrial hygiene and prevention of accidents.
5. Advice on sanitary and technical questions connected with protection of labour and on labour legislation in general.

The Institute consists of four departments: (a) scientific research; (b) museum and library; (c) instruction; (d) technical preparation of proposals.

The department of scientific research, which is the most important, consists of five sections: (1) industrial hygiene; (2) prevention of accidents and sanitary equipment; (3) industrial psychology; (4) statistics of health in industry; (5) preparation for inspections and investigations.

The industrial hygiene section, which is the central point of the Institute as a whole, has at its disposal laboratories of industrial physiology, experimental biology, industrial hygiene, and chemical research. The laboratory for industrial hygiene has an experimental room for the study of conditions of environment (temperature, humidity, pressure, circulation of air, etc.).

The industrial psychology section studies the psychological problems of industry, especially the psychological classification of occupations according to their principal characteristics. From this point of view it has studied numerous occupations (telephone operators, tram conductors, compositors, weavers, bookbinders, physicians, commercial employees, etc.).

The section devoted to prevention of accidents and sanitary equipment is responsible for determination of causes of accidents, safety appliances, and study of certain types of accidents. In connection with sanitary equipment, the section examines different
ventilating arrangements and studies such subjects as ventilation, heating, and lighting.

The technical department prepares practical proposals for sanitary improvements. It acts through the medium of an office for proposals and a technical office, the former being responsible for preparing material as a basis for technical measures to be applied in industries and for the actual drawing up of proposed regulations.

During the years 1925-1926 the Moscow Institute undertook various investigations (78 in all) affecting all fields of industrial pathology and hygiene.

It should also be noted that the Institute acts as the local organisation for inspection and investigation and carries out work on behalf of other organisations.

Another very important institution is the Ukrainian Institute for Industrial Medicine founded in 1924 at Charkow. Its object is not so much the study of industrial hygiene as that of occupational diseases and their pathology. It is attached to the Ukrainian Commissariat of Public Health and co-operates with the officials of the Labour Protection Service, who are represented in the administration of the Institute. It comprises numerous services (clinics, hospital section, laboratories, etc.), and publishes its work in a series of studies and reports.

In 1923 a clinic for social and occupational diseases was founded at Moscow in connection with the two universities there and serves as an auxiliary institution to the chairs of social hygiene, industrial hygiene, and educational hygiene. It gives both practical and theoretical instruction and is used not only by the Commissariat of Instruction but also by those of Labour and Public Health.

Another institution of the same kind was founded at the beginning of 1926 by the Health Office of the province of Leningrad. It is called the Leningrad Institute for Occupational Diseases and its work is entirely local; it is closely connected with the insurance service. Special attention is devoted to cases presenting difficulty in diagnosis, which are submitted to it by the insurance authorities.

Another research organisation which goes far beyond the scope of a local institution is the Obuch Institute for the Study of Occupational Diseases, founded in 1923 at Moscow. It is not so much a specialised institution for research as a centre for co-ordinating the study of industrial hygiene and pathology carried on in the different hospitals, clinics, dispensaries, consulting-rooms, etc. It
also carries on theoretical research in its laboratories and publishes the results of its work in a periodical, the *Hygiene of Life and Labour*.

The special feature of all these institutions is that their work is concentrated on a single object: the study of industrial pathology by different methods (statistics of anthropometry, physiology, hygiene, clinics, etc.).

The great interest taken in Soviet Russia in questions of industrial hygiene and pathology is sufficiently indicated by the fact that all scientific or medical conferences include in their agenda questions on these subjects. It also finds expression in the publication of numerous articles and scientific and technical monographs and in the existence of a specialised review, *Industrial Hygiene*. 
Medical Industrial Inspection in Prussia

By Dr. Teley
State Industrial Medical Officer, Düsseldorf

In Prussia the functions of the district medical officers, who are the State health officials for the various government divisions (Regierungsbezirke), with respect to industrial hygiene, have been, and still are, very limited. They must, indeed, participate in approving the building plans for specified undertakings which have to obtain official sanction owing to their possible effects on the neighbourhood, and must keep an eye on undertakings which may be dangerous to health, but they have no statutory right to inspect the undertakings against the wishes of the management. They have only the power to make visits of inspection by agreement or in company with the industrial inspectors. Moreover, in view of the heavy burden of their other duties in relation to public health, the district medical officers have little or no time to spend on industrial hygiene and labour protection.

In 1921, five Prussian industrial medical officers were appointed with headquarters at Düsseldorf, Arnsberg, Wiesbaden, Erfurt, and Breslau, each, by reason of their very restricted number, being entrusted with a very extensive inspection district. The corresponding functions in Berlin are assigned to the Adviser (Referent) in the Ministry of National Welfare. Contrary to the system obtaining in all the other more important German States, in Prussia industrial inspection is subordinate to the Minister of Trade and Industry, while the industrial medical officers come under the Minister of Welfare. This is a very satisfactory arrangement, placing the health protection of the workers under their care and making them, in their capacity as inspection officials, a part of the public health system. It is their duty to discuss all questions relating to the protection of the workers in their respective government divisions with the government and industrial councils, but they can only enforce their rights against the latter by degrees. They are entitled
to visit undertakings, but as a rule they must come to a previous arrangement with the competent government or industrial council for its participation in the visit. They have no right to issue instructions, but if they differ from the government or industrial council on the need for specific instructions they may appeal to the competent district president, and further to the Ministry for a decision. They must work in close co-operation with the other inspection officials; a specific obligation to this effect being imposed both on them and the other industrial inspectors. They also keep in touch with the district medical officers.

The Decree of 19 April 1922 contains the following provisions on the functions of the industrial medical councillors:

§ 1. — Medical inspectors are officials as defined in paragraph 139 of the Factory Act; as such they have the right at all times to visit the establishments subject to inspection in their districts. They are bound to secrecy concerning manufacturing and commercial processes which may become known to them in the course of their duties while visiting industrial establishments.

Medical factory inspectors have no power personally to issue orders or impose penalties, but in the exercise of their official duties they may appeal to the local police authorities in the same way as other factory inspectors.

§ 4. — The functions of the industrial medical councillors include:

(a) advising and assisting the general industrial inspectors and mining inspectors in all questions relating to industrial hygiene;

(b) research into derangements of the organism of the workers caused by an industrial occupation and the relative methods of prevention and cure; and

(c) extending the general work of industrial hygiene.

The industrial medical councillors must assist and advise the general industrial inspectors and mining inspectors in the application of labour legislation and in all questions of industrial hygiene that may concern them. In particular, they must pay attention to concrete problems of factory hygiene (accommodation for changing, washing and baths, sanitary conveniences, the removal of dust, fumes and gases, etc.) and the provision of first-aid in case of accidents.

Further, they participate in the engagement and supervision of the doctors who examine the workers in unhealthy undertakings — in this respect they act as experts for their local government division — and in finding employment for seriously disabled men. They may also be consulted on matters connected with the pollution of the water, air, and soil, and undue noise produced by industrial undertakings.

The duties of the industrial medical councillors further include the compilation of morbidity and mortality statistics for industrial diseases. In agreement with the other industrial inspectors they must follow up the processes of manufacture and cases of occupational disease and poisoning in the undertakings, and where necessary submit the workers in particular branches of occupation to systematic medical examination, carrying out also any necessary experimental laboratory work. They must also co-operate in determining the individual aptitudes of the workers and in the work of vocational guidance. The industrial medical councillors must keep in touch with the sickness fund and factory doctors, the local and industrial sickness funds, the registrars, the municipal authorities and the associations of employers and workers, and by giving lectures to the persons concerned do all in their power to promote an understanding of the problems of industrial hygiene.
The explanations to the instructions issued on 16 June 1922 expressly include scientific work as forming part of the duties of the industrial medical officers.

In practice, the industrial medical officers obtain information relative to the occurrence of occupational diseases and other industrial injuries to health through the sickness funds, the workers’ organisations and to a large extent as the result of the compulsory notification of certain occupational diseases which are treated as accidents under the Order of 12 May 1925, and finally through the technical industrial inspectors. On the basis of this information, but in some cases without specific cause, they visit factories with a view to discovering the sources of possible injuries to health, and may examine the workers in so far as this does not interfere with the working of the undertaking, their rights in this respect not permitting them to go any further. If any contraventions of the law or unsatisfactory conditions are observed, the remedies considered necessary are discussed on the spot with the industrial inspector if the latter has taken part in the visit. If the visit is made alone, suggestions are submitted to the employer, and the matter is then laid before the local inspector with a view to the issue of instructions, the inspector alone having powers for this purpose.

The number of inspections undertaken by the individual industrial medical officers varies between 120 and 260 a year.

They also receive instructions from the Ministry to study certain problems and report on them, sometimes in connection with particular conditions in particular factories (e.g. shops and industries handling human hair) and sometimes on general questions (e.g. mixture of tetraethyl lead in motor spirit). They also collaborate in investigations made by the Federal Public Health Office (e.g. acid factories and glass works) particularly in the examination of groups of the workers concerned. And occasionally they act as advisers to the Prussian Ministries or the Federal Ministry of Labour on questions of industrial hygiene.

Their work is considerably facilitated by the fact that they are able to have chemical research work undertaken at a State institution.

It is also the duty of the medical officials to supervise the observance of the examinations prescribed for unhealthy undertakings. In Germany, the preliminary examination of young persons is prescribed only for a very few undertakings (glass works and, in certain circumstances, rolling mills). On the other hand, workers in danger-
ous lead undertakings and those employed on cold vulcanising processes are subject to medical examination on their engagement and subsequently at regular intervals. The doctors who carry out these examinations are selected by the management of the factory. In some kinds of undertakings in which conditions are governed by old Regulations, the employer's choice is not limited and he need merely notify the industrial inspector of the doctors he has chosen. In the factories which are subject to new Regulations the doctor must be approved by the higher administrative authority, namely, the President of the Division. The newest Order (Lead Paint Factories) also contains a certain, although slight, protection against the arbitrary dismissal of the doctor.

Under the Order of 12 May 1925 certain occupational diseases are by law treated as accidents and compensated as such. When the doctor in charge of the case has come to the conclusion that it is a disease of this kind he must immediately notify the insurance office on the prescribed form. The insurance office arranges for an examination of the sick person by a "qualified doctor", whose duty it is to check the diagnosis and, if need be, establish it by further clinical examination. As a rule, district medical officers are selected for the purpose, but other doctors may also act as "qualified doctors". The insurance office must send one copy of the notification to the district medical officer and another to the industrial medical officer. The latter must also be informed of the opinion of the "qualified doctor". In this way, he learns of the occurrence of occupational diseases in so far as these are treated as accidents, and it is then his duty to follow up these notifications from the industrial hygiene standpoint.

In addition, the industrial medical officers investigate particular questions which seem of importance from a practical or scientific point of view, if need be by conducting periodical examinations, special enquiries, and special examinations. They also endeavour to improve the sickness statistics of the sickness funds and mortality statistics, and to apply them for throwing light on industrial hygiene problems. Lectures are given to workers and other doctors in order to spread information on these problems. Some of the industrial medical officers also take part in the work of vocational guidance. They are not entitled to engage in private practice, nor may they undertake examinations for social insurance purposes at the request of the parties themselves (victims of accidents, indus-
trial insurance associations, or trade unions), but only at that of the higher authorities.

They issue annual reports separate from those of the other industrial inspectors. The first report appeared this year as «Heft No. 204 » of the publications of the medical authorities (Veröffentlichung aus dem Gebiete der Medizinalverwaltung).
The investigation of problems of industrial health, enquiries into the health conditions of particular occupations, and the effects of particular kinds of work or particular risks are undertaken as a matter of course by industrial inspectors, i.e. by experts, medical or otherwise. But individual organisations of workers and employers have also contributed to the solution of such problems. This is not the place, however, to consider in detail enquiries which, although they may be at the present time of great importance, have always remained of a more private character. Reference will be made only to those which have been carried out on the instruction of the authorities with public means by the co-operation of several experts.

Certain of these problems have for some time been dealt with by the National Health Office, usually those necessitating laboratory work. This Office has on various occasions contributed to the lead problem. Reference need only be made to the recent works published by Engel and Froboese.

In some of the Federal States the State industrial medical officers have carried out extensive investigations in co-operation with the other industrial inspectors: for instance, that on painters and whitewashers, undertaken in Bavaria by Koelsch in co-operation with the technical inspectors, and that on cigar workers in Baden (1925) by Holtzmann and the other industrial inspectors.

Every year the Federal Ministry of Labour indicates to the technical industrial inspectors, through the Ministries to which they are subordinate, the particular matters which they are to investigate for their annual reports. In former days, when these suggestions were of a more fundamental nature and did not involve detailed investigation — e.g. that of the extension of the employment of women — valuable material could thus be collected. Even now there are undoubtedly questions of fact (in what branches of industry and in what manner are the wages of home-workers governed by agreement? What part is played by women
in works councils?) and perhaps particular technical details on which valuable information might be obtained by questioning the several hundred local officials, especially those with technical training, although it must be remembered that they are overburdened with many other kinds of work. But this method is of no value in solving various other problems, especially those relating to injuries to health. Such problems, e.g. those of health injuries in acid factories or caused by typewriting, can be solved only by the most thorough investigation by experts of various kinds, especially medical, whose examinations must be carried out with the adequate materials; the opinions of technicians, however numerous, cannot be taken into consideration.

In recognition of the fact that special means and a special type of examination are necessary for settling complicated questions of industrial hygiene, the Prussian mining inspectorate arranged some time ago for the investigation of mining hygiene in cooperation with health institutions (university institutions, etc.). Moreover, the mining authorities receive considerable assistance by study and investigation undertaken in important experimental centres financed by the employers. The creation of a large State research centre is at present under consideration.

Among other authorities, the Committees of the Federal Health Council is often consulted for its advice and expert opinion on questions of industrial health. Recently certain questions — the health conditions of acid workers and glass workers — were examined nationally under the management of the Federal Health Office. The procedure adopted was that a committee, consisting of experts and representatives of the employers and workers, visited a certain number of the undertakings in question in order to obtain a general impression. Statistical data were then collected from various sources; the industrial medical officers examined several workers, while in some cases a limited number of examinations were carried out by specialists (X-ray examinations, etc.). The whole material was then worked up by two experts, one technician and one doctor. Although these enquiries were an advance on the methods described above, they still suffered from certain defects: the disproportionately high cost of the inspection by the committee as compared with the results obtained, which precluded more detailed examination of the conditions in the undertakings and of the workers, with corresponding defects, lack of scientific hygienic investigation (temperature measurements, atmosphere experiments, etc.),
the unreliability of the statistics supplied, the excessive number of medical investigators (for the number of investigations made), and the like.

It is to be hoped that this method of investigation will soon be altered, extended, and intensified in the only way that can secure correct and reliable results. For efficient working, the author would suggest transferring the actual investigations to individual selected experts chosen from among medical specialists, chemists, technicians, etc., extending the research to the exact scientific definition of atmospheric conditions, gas contents of the air, etc., arranging for enquiries with experts, employers, and workers, having the whole material worked up by the experts responsible for the investigations, and, finally, discussion of the results of the investigations by experts of various kinds together with employers and workers.
Medical Inspection of Labour in Bavaria

By Dr Koelsch
Medical Inspector of Factories, Munich

After repeated requests from representatives of the workers as well as from the medical profession in Bavaria, it was decided in 1908 to create the post of medical inspector of labour with senior rank and the title of industrial medical adviser (Landesgeverbeardzt). The inspector entered on his duties on 1 January 1909.

Under the service regulations then in force he was incorporated in the Factory Inspection Service as medical inspector and scientific and medical collaborator, acting in the same capacity in the inspection of mines. The position of this official was later modified so that he became technical adviser to the Ministry of Social Welfare, and his duties extended to all medical questions coming within the scope of that Ministry.

The medical inspector was subordinated to the Chief Factory Inspector as an official in the Inspection Service under paragraph 139b of the Factory Act. Objections have recently been raised to this subordinate position, and in future the medical inspector will be a medical collaborator and adviser; he will hold the same rank as the Chief Factory Inspector and will not be under his orders; he already possesses equal status in the inspection of mines. The final decision as to these modifications has, however, not yet been made.

Co-operation with the technical factory inspectors and with the inspectors of mines has, up to the present, been arranged very smoothly; very close relations are also maintained with the district medical officers of health.

The practice of medicine is not allowed on account of the demands of the service.

When entering on his duties the medical inspector received only very vague instructions as to the scope of his work; during the last two years of his appointment he has developed his own programme and since the results have been favourable it has not been modified.

His tasks are as follows:
(1) To act as a referee, giving advice to factory and mining inspectors and doing technical work for the Ministry, the aforesaid officials, and the higher insurance tribunals.

(2) To visit industrial establishments and mines in order to investigate the different conditions of labour and equipment, to study various methods of work, to carry out medical examination of workers, and hygienic research (determination of climatic factors, dust, gaseous or toxic impurities, examination of disinfecting apparatus in undertakings exposed to the risk of anthrax, etc.)

The word "visit" has been used intentionally instead of "inspection" because the medical inspector acts not so much as an official in the Inspection Service as in the capacity of a medical official with definite scientific duties. Where defects are found the necessary instructions are given verbally and in case of need are prescribed in writing by the technical factory inspectors.

(3) Supervision of the work of "examining physicians".

(4) Supervision of safety appliances.

(5) Scientific work: study of certain occupational groups from the point of view of health; statistical and clinical research; laboratory research in all fields of industrial medicine.

(6) Continual study of the literature of the world on the subject and collection of bibliography.

(7) Propaganda and instruction by means of lectures; newspaper articles; lectures in universities and technical high schools; communications to medical conferences.

(8) Institution and maintenance of the social hygiene section of the Bavarian Sociological Museum.

(9) Study of the various problems of social hygiene affecting the workers: alcoholism, tuberculosis, lodging, nourishment, etc.

(10) Compilation of all notifications of occupational diseases, the declaration of which is compulsory; elaboration of this material.

The official duties away from the place of residence, attendance at conferences, congresses, etc., involve on the average 100 days of travelling each year (80-120).

As the plan of work indicates, the duties are far beyond the competence of a single official. In spite of the greatest diligence I have not been able to carry out even approximately the programme laid down. But, in spite of the urgent need of a second medical collaborator, it has not been possible for one to be appointed on account of the financial situation.
The Medical Service of Factory Inspection in Saxony

BY PROFESSOR L. THIELE

State Industrial Medical Officer, Dresden

In German legislation for the protection of labour, as developed, special stress has been laid on the health aspects of the economic and social interests of the workers. Whether the question is one of unhealthy workplaces, etc., of the material handled, of the method of working, of the length of the working day and rest pauses, or even of safety, the protection of labour ultimately resolves itself into the question of the protection of health (section 120 (a), and following of the Federal Industrial Code).

In the State of Saxony, too, the tendency has been to entrust to technically trained industrial inspectors the consideration of health, or even medical problems. So long as the industrial inspectors (section 139 (b) of the Federal Industrial Code) regarded themselves merely as a special kind of supervisory or police officials, whose only business was to check the observance of the letter of the law, this tendency could still be accepted. Gradually, however, the position of the inspectors changed, not least during and after the war, when several functions far exceeding the technical field were attributed to them. Questions of economics, administration, and industrial law combined with the ordinary technical and medical problems to give the industrial inspectors more and more advisory, jurisdictional, and, in certain cases, even directly welfare functions, in their position of intermediary between employer and worker, functions which had already been assumed by the more prominent officials.

Such a change also took place in Saxony. In the matter of health protection, the occasional co-operation of the provincial doctors (district doctors) was often impossible without going through various preliminaries. It was therefore supplemented in 1919 by the appointment of a State Industrial Medical Officer, whose work
was organised mainly on the Bavarian model. This officer is attached to the Ministry for Labour and Welfare, which is the central State authority for industrial inspection, and he works in cooperation with the State Industrial Technical Inspector, who is in charge of industrial inspection.

In view of the particular economic position of Saxony, which, together with Belgium and the Rhenish Westphalian industrial area, is more densely populated and more highly industrialised than any other part of Europe, special measures were, however, needed. The most important Saxon industry is the textile industry, which, in the widest sense, employs about one-third of the population of 5 millions. It is characteristic that most of the undertakings are small or medium sized. The widespread employment of women and children, mainly in home industries, means that practically the whole population is subject to the laws on labour and industrial hygiene. In Saxony it is not so important to fight special types of injury to health, which may assuredly be of great interest from the scientific point of view, and are of course very serious for the individual persons affected (although, unfortunately, such cases occur: reference may be made to the disease of the Schneeberg miners). The duty of medical factory inspection is rather to investigate the whole field of industry from the health point of view, and to organise it in the healthiest possible manner by an indefatigable attention to detail. The work must further be carried out in cooperation with the public health authorities and especially the public welfare authorities which, in Saxony, have been set up on the basis of a model Act.

On these grounds it was soon decided to aim at giving more definite powers to the medical officer, who, working from the central office, could only make occasional enquiries on the sampling system. The object was to give the medical officer a direct position in the practical work of industrial inspection, or, in other words, to turn his medical knowledge and ability to account in the daily work of inspection. By an Order of 12 October 1921, the conditions of admission to the industrial inspectorate were amended. Until then technical training alone was sufficient throughout Germany, except in Baden, but by this Order training in economics and medicine was considered a qualification for work in the inspectorate.

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1 Belgium, 275 inhabitants per square kilometre; Rhineland, 294; and Saxony, 331.5.
Thus, the medical officers appointed under this Order are not merely industrial medical officers, but were actually appointed as industrial inspectors so that they might learn the practical work of inspection from the beginning onwards. Obviously they had serious difficulties to overcome. At the end of the prescribed probation period they passed their test as industrial assessors, and thus became fully qualified industrial inspectors in the sense of section 139 (b) of the Federal Industrial Code. The longer they were employed the more evident it became that it was essential that their competence should be more clearly defined from the medical standpoint. In an Order of 21 October 1925, principles for the employment of the medically-trained scientific industrial inspectors were drawn up. Among other things these laid down that the general Order governing the employment of industrial inspectors applies also to the medically-trained officials, subject to the restriction that they have nothing to do with purely technical duties (supervision of boilers, testing elevators, technical examination of the equipment of undertakings from the point of view of protecting the workers and the persons in the neighbourhood of the factory, etc.), which belong essentially to the technically-trained officials.

In organising the work the authorities must rather be guided by the principle of making the best possible use of the medical training of these officials, with a view to the consideration and treatment of the health aspects of the problems of labour protection and protection of the public, on a scale corresponding to their growing importance. Thus, as regards their external service, these officials must mainly be entrusted with inspection, discussion, enquiries, etc., for which their professional knowledge is of material advantage. Their internal work must be organised on similar lines.

The main duties of the medically-trained officials thus include assisting in the supervision of the enforcement of general measures for the protection of the health of industrial workers, especially in matters of a fundamental nature, seeking the origin of occupational diseases and other injuries to health which may necessitate periodical and other investigations, for determining the state of health of particular groups of workers or the effects of specified, especially new, working processes and working materials on the health of the workers, etc.; further, supervising the work of the factory doctors and, if necessary, advising them as to the most efficient method of carrying out their duties, and assisting in the examination and revision of the building plans for new industrial undertakings or
alterations in industrial premises which demand special considera-
tion from the point of view of health. These regulations must not
affect the ordered participation of the district medical officers in
the work of industrial inspection. The medically-trained inspectors
must aim at a good understanding with the district and welfare
doctors, as well as with ordinary medical practitioners. Further,
the medically-trained officials must not confine their activities to
the district of the industrial inspectorate for their place of work,
but must also cover the districts of the other inspectorates in the
government division (Regierungsbezirk) in such a way that either
the other provincial authorities consult these officials in important
questions coming within their competence, or else the latter are
entitled, ex officio, to extend their work to these districts in specific
cases. Finally the Ministry of Labour and Welfare reserves the right
to entrust the medical industrial inspectors directly with particular
duties.

At present the medical industrial inspectorate in Saxony con-
sists of the State Industrial Medical Officer, a woman doctor as
Government Industrial Adviser, and a doctor as Government
Industrial Assessor. On 1 October 1926 another woman doctor
was appointed as junior assessor.

It is obvious that industrial inspection will always retain its
specifically technical character. But the more new legislation trans-
forms it from a purely police authority to a "labour office"
fo cus sed round the worker, the more medical advice will be required.
With so far-reaching a scheme, therefore, it can never be too early
to assign due influence to the functions of the medical officer.

Replying to questions by Dr. Kaploun and Sir Thomas Legge,
the speaker gave further particulars of the administrative status
of the medical industrial inspectors.
Medical Factory Inspection in Baden

By Professor H. Holtzmann
Medical Inspector of Factories, Karlsruhe

Baden is divided into four districts for factory inspection purposes. All the inspectors reside in Karlsruhe, and their offices are situated in the Factory Inspection building. The Medical Factory Inspector also has an office in the same building. There is only one official of this kind for the whole country, who undertakes, in cooperation with the chief district inspectors, inspection applying mainly to those undertakings where work dangerous to health is carried on. The inspection of mines is independent of the general factory inspection system; but the advice of the Medical Factory Inspector is at the disposal of the mining inspection authorities in regard to all questions connected with hygiene.

The Medical Factory Inspector generally makes his visits of inspection alone, and only in exceptional cases is he accompanied by technical officials of the Factory Inspection Service. The Medical Inspector must notify the chief district inspector of his visits, whether before or after, a procedure which is facilitated by the fact that all the offices are situated in the same building. The Medical Inspector can, if necessary, issue orders on his own authority and must be prepared to defend his action before the competent court. The Medical Inspector, in the course of his inspections, is empowered to examine health installations and to submit any workers in the undertaking suffering from disease to a medical examination. He is also empowered to enquire into any complaints respecting a danger to health emanating from persons living in the vicinity of industrial undertakings.

The Medical Inspector reports observations made in the course of his inspection at weekly conferences with the technical Works Councillors. He also issues a special annual report on hygiene, forming an appendix to the annual factory inspection reports. Lectures on questions connected with industrial hygiene are held at frequent
intervals throughout the year for the benefit of persons interested in the subject; while the post-graduate courses for doctors holding official posts, given at the University of Karlsruhe, include lectures by the Medical Inspector dealing with the latest aspects of industrial hygiene. A special branch of the Medical Inspector’s work involves a technical and scientific knowledge of industrial hygiene problems.

Baden was the first German State in which a medical man was appointed (in 1906) as a factory inspector.

The latest Regulations, dating from 22 October 1920, lay down the general principles underlying the Medical Inspector’s work, without going into details. The Medical Inspector, like the Chief Factory Inspectors, is directly responsible to the Minister. The Medical Inspector for some time after his appointment acted as a technical official of the Factory Inspection Service with a view to acquiring the requisite practical knowledge of industrial conditions and protective labour legislation. A similar policy will be pursued in the future in Baden.

Emphasis is to be laid on the importance of the Medical Inspector’s duties as an instructor in the Technical High School. Young engineers, engaged in acquiring practical experience, are enabled in this way to obtain a knowledge of industrial hygiene necessary for their duties.
Discussion and Conclusion

Dr. Glibert: I believe that, after the various impressions that have been described and in view of the conclusions which we can draw from them, the proper course is to summarise in a few principles our conception of the position of the Medical Inspector in relation to his situation, rights, duties, and the limitations which should be made in order to distribute the work in the manner most useful and most favourable for the protection of the workers, and I take the liberty of submitting the following proposals:

Principles which should Govern the Organisation of Medical Factory Inspection in all Countries

1. The broadest freedom of access to all places where work is done. Freedom of investigation of all kinds: questioning, examination of the personnel, taking of samples, etc.
2. The privilege of free expression of opinion to responsible authorities without submission to the censorship of non-medical intermediary authorities.
3. Compulsory consultation of medical inspectors by all constituted authorities on all questions concerning the health of the worker as such.

Administrative Position

1. It is desirable that medical inspectors form an organisation independent of other similar administrative organisations.
2. Medical inspectors should exercise sufficient authority to ensure compliance with regulations affecting the health of the worker as such.
3. It is the duty of the medical inspector to make proposals for regulations specially connected with the personal hygiene of the worker as such directly, and not through any other official.
4. Rules should be drawn up for the co-operation of medical inspectors with other officials appointed to supervise industrial establishments of any kind.
5. This co-operation should be based on the fundamental principle of administrative equality of the different organisations taking part in factory inspection.

Sir Thomas Legge and Drs. Koelsch and Kaploun asked for certain explanations as to the proposal. It was then put to the vote by the President and unanimously adopted.
PROPOSED INTERNATIONAL SCIENTIFIC ORGANISATION OF MEDICAL FACTORY INSPECTORS

Dr. Teleky: After a long exchange of correspondence it was decided some days ago to renew the work of the Permanent International Commission for the Study of Occupational Diseases. This organisation was founded in 1906 with Professor Devoto, of Milan, as President and Dr. Carozzi as Secretary, but ceased to function at the beginning of the war; our task is now to fill the vacancies caused by death and to revive its activity. It includes a large number of physicians in all countries and it would be possible to organise within the Commission a special section comprising the medical inspectors of all countries; its object would be to effect a permanent organisation of the work of medical inspectors, which has been to-day so well begun, to facilitate constant exchange of information on experiments made and results obtained, and to bring about a distribution of scientific information in which each of its members would co-operate. I suggest that a small committee of medical inspectors already belonging to the International Commission, namely, Drs. Glibert and Koelsch, Sir Thomas Legge, and myself be appointed to take the necessary steps to create an international association of medical factory inspectors within the Permanent Commission for the Study of Occupational Diseases.

This proposal was unanimously adopted.
Communications

The Sports Physician and the Industrial Physician

By Dr. Beintrer

Medical Inspector of Factories, Arnsberg

These two fields have many points in common; in both injuries are relatively frequent, but sporting injuries are healed much more rapidly than industrial injuries. The difference is due to the psychological attitude of the injured person towards the results of the accident.

Equally great differences exist in the physical deterioration resulting from the two kinds of activity. The sportsman, in spite of efforts sometimes calling for an enormous expenditure of energy, remains in good condition even in old age, while the exhaustion of the worker is comparatively rapid. In this also the psychological attitude is of capital importance.

A research in the physiology of sport and labour respectively shows the changes that take place in the active muscle, and we can compare the physiological data of the two groups and the processes which take place in the muscles in both cases corresponding to the fundamentally different psychological attitudes towards physical efficiency. The influence of the psychological state on the physiological state may thus be determined.

Medical inspectors should endeavour to counteract the sinister influence of working conditions on the workers. To counteract the unnatural positions which are still involved in certain trades, sports and physical exercises provide adequate correctives. The medical inspector, in order to be able to give correct opinions and advice in this matter, should also be a sports physician and familiarise himself not only with physical exercise in general, but with the different sports in particular.
Lead Poisoning in Iron Blast Furnaces

By Dr. Beintker

Medical Inspector of Factories, Arnsberg

In iron foundries utilising the residues of sulphuric acid factories or zinc works, in the course of running-off, after the iron has passed, there is a flow of molten lead at a temperature of about 1,300° C. This being considerably above the boiling point, there is a profuse emanation of lead vapour, which is breathed by the workers. The vapour is not easily perceptible in the course of running-off, but causes a sweetish taste in the mouth. Several cases of lead poisoning with colic, blue line on the gums, and disturbances of the blood have been observed in blast furnaces. The only method of relief consists in a change of work.

Sir Thomas Legge remarked that in Great Britain there had been about thirty similar cases resulting from the handling of sulphurous iron ore, and the only method of prevention consisted in a regular change of work.

Case of Death from Carbonic Gas

By Dr. Gerbis

Medical Inspector of Factories, Erfurt

This case was that of a locomotive driver in a mine. The illness began during working hours and ended within ten hours in death with pulmonary oedema. The experts had diagnosed carbonic oxide poisoning, but one of them rejected this diagnosis, the symptoms being incompatible. In the course of a subsequent investigation it was ascertained that the briquettes of coal were piled in iron containers on both sides of the boiler and were frequently heaped upon the boiler itself and that they became very hot and sometimes caught fire. It is believed that spontaneous ignition brought about slow combustion of the sulphurous briquettes, and that the death of the driver was due to breathing sulphurous gas, principally sulphured hydrogen and carbonic oxide. The clinical study of the disease and the autopsy confirmed this hypothesis.
A Case of Poisoning Caused by Artificial Resin

By Dr. Kranenburg

Medical Adviser to the Factories Inspection Service, The Hague

The symptoms observed in a worker on artificial resin (Bakelite) appeared gradually and consisted principally in derangements of the central nervous system, headaches, lethargy, and loss of appetite.

Artificial resin is a solid, hard, infusible substance produced by condensation of phenol and formaldehyde. In the course of turning and polishing a very fine dust is produced which floats in the air and has a perceptible odour of phenol.

In the laboratory of the Factory Inspection Service at The Hague it was discovered that this dust when heated in water gives off free carbolic acid from a temperature of 15° C. The heat caused by turning explains the odour of phenol. When the very fine dust reaches the pulmonary cells the phenol may pass into the blood. With Becher and Litzner, who discovered free carbolic acid in the blood, it may be admitted that its passage into the Liquor cerebri sets up toxic action on the ganglionic cells. In the case cited the haemoglobin content was 75 per cent.; urine could not be examined.

The patient then changed his occupation.

Diseases Caused by Atropine and Emetine

By Dr. Krüger

Industrial Adviser, Dresden

A hitherto unknown form of dermatitis (according to the opinion of a specialist) has been discovered, affecting workers in a chemical factory. A model made by the Dresden Museum of Hygiene was presented.

The eruption appeared on the hands, arms, neck, and face of patients, and they also complained of headache, restlessness, insomnia, and fever, which compelled them to stop work. The symptoms persisted for some time after the cessation of work.

Investigation showed that this dermatitis appeared in workers employed in the manufacture of alkaloids (atropine, emetine, and veratrine), and that emetine was the principal cause of the disease;
the symptoms described appeared in workers who handled emetine alone.

The workers manufacturing atropine also showed a maximum dilatation of the pupil and were unable to read after work; in some cases there was also dryness of the mouth and attacks of dizziness.

In order to complete the investigation and prevent the appearance of hitherto unknown injuries to the health of the workers, Dr. Krüger ordered a periodical medical examination of the workers, which unfortunately did not give precise results because the factory ceased to manufacture emetine.

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Protection of Workers in Chromium-Plating Establishments

By Dr. Forster

Judge in the Industrial Court, Leipzig

In chromium-plating establishments, metal objects are covered with a plating of chromium by electrolysis. This new industry is developing rapidly on account of numerous economic advantages which it presents in comparison with processes used hitherto, such as nickel-plating.

The workers employed on the electrolytic baths are exposed to chromium poisoning and lead poisoning unless adequate protective measures are adopted.

Injury to the hands and the nasal passages may be caused when the chromium vapour which forms during electrolysis rises above the edge of the vat. It is thus necessary to dispose of the vapour by a system of ventilation.

Lead poisoning is due to the fact that part of the apparatus and some of the fittings are of lead, which under the action of chromic acid forms lead chromate, which has been demonstrated to be soluble up to 10 per cent. in hydrochloric acid. Lead should be replaced by aluminium in the equipment of the factories.

The employees should also be protected by modern equipment without technical defects and by provision for cleanliness (hot water, hand brushes, soap, and towels). New regulations should also be adopted and observed by employers and personnel.
Sulphur Monochloride Poisoning

BY DR. ADLER-HERZMARK
Medical Inspector of Factories in Austria

In a department of an india-rubber works where sulphur monochloride (not carbon disulphide) is used in manufacture, a worker who had been employed on a rubber rolling and pressing machine for many years fell ill. His symptoms included jaundice and great loss of weight. After fourteen days' treatment in hospital no signs of neoplasma appeared, but fourteen days later he was suffering from paralysis of both legs and of the bladder and rectal aperture, in other words symptoms resembling those of myelitis. There was also slight paresis of the forearms. The Wassermann and Goldsol tests were negative and the state of the blood was normal. No signs of syringomyelis; symptoms of jaundice less acute. Some days later the only symptoms were paresis of the extensory muscles of the leg. Arms normal. Rectal functions normal. Atrophy of the leg muscles. No other signs of nerve affection. Some weight regained. Analogous symptoms might have been caused by influenza. Case uncertain.

A second worker employed on similar work, who showed no other symptoms of illness, suffered from yellow discoloration of the skin of the face and of the whites of the eyes.

Lead Poisoning in Painters

BY DR. E. BREZINA
Adviser to the Government, Vienna

In the electrification of the Austrian railways numerous cases of lead poisoning were observed during the painting of the iron posts which support the wires. The first report came from the hospital at Wiedner and was made by Mr. Sternberg. Observations showed that in this work the hygienic regulations prescribed for painters by the Ministerial Order of 8 March 1923 were not completely observed, although in stationary work this industry was adequately supervised.

This case cannot be the only instance of inadequate medical supervision of workers employed in peripatetic occupations. This kind of work should receive more attention.

The Conference closed at 1.30 p.m. on 16 September 1926.
APPENDICES

I. — List of Members Present at the Meeting

**MEDICAL INSPECTORS OF FACTORIES**

**Austria:** Dr. Adler-Herzmark, Medical Inspector of Factories.

**Belgium:** Dr. Désiré Glibert, Inspector-General, Chief of the Medical Factory Inspection Service, Ministry of Labour and Social Welfare, Brussels.

**Great Britain:** Sir Thomas M. Legge, Medical Senior Inspector of Factories, Home Office, Whitehall, London, S. W. 1.

Dr. E. Middleton, Medical Inspector of Factories, Glasgow.

**Italy:** Professor Giovanni Loriga, Chief Medical Inspector, Rome.

**Netherlands:** Dr. W. R. H. Kranenburg, Medical Adviser to the Factories Inspection Service, The Hague.

Dr. P. A. v. Luitj, Medical Inspector of Factories, Groningen.

**Union of Socialist Soviet Republics:** Professor S. I. Kaploun, President of the Labour Protection Section in the People's Commissariat of Labour, Moscow.

**Germany:**

- **Prussia:** Dr. L. Teleky, Medical Inspector of Factories, Düsseldorf.
  Dr. E. Beintker, Medical Inspector of Factories, Arnsberg.
  Dr. H. Gerbis, Medical Inspector of Factories, Erfurt.
  Dr. A. Neumann, Medical Inspector of Factories, Breslau.

- **Bavaria:** Professor F. Kellisch, Adviser to the Ministry, Medical Inspector of Factories, Munich.

- **Saxony:** Professor A. Thiele, Adviser to the Ministry, Medical Inspector of Factories, Dresden.
  Dr. E. Krüger, Industrial Adviser, Dresden.
  Dr. M. Förster, Judge in the Industrial Court, Leipzig.

- **Baden:** Professor F. Holtzmann, Medical Inspector of Factories, Karlsruhe.

There were also present:

Mr. Bergemann, President of the Government Division of Düsseldorf.

Mr. A. Beyer, Adviser to the Ministry, representing the Ministry of Welfare, Berlin.

Professor Brezina, Adviser to the Government, representing the Austrian Public Health Office.

Dr. H. Engel, Adviser to the Government, representing the German Federal Public Health Service.
II. — List of Industrial Medical Officers

With a view to the proposed institution of an association of industrial medical officers within the Permanent Commission for the Study of Occupational Diseases, the Hygiene Service of the International Labour Office thought that it would be useful to publish a provisional list of medical factory inspectors of whom it has cognisance. It is to be feared that the list is defective, and the Office will be greatly obliged to any persons interested who will be kind enough to forward supplementary information or necessary corrections to the Industrial Health Service.

Germany:

- Baden: Dr. Holtzmann, Medical Inspector of Factories, Karlsruhe.
- Bavaria: Professor F. Kölsch, Medical Inspector of Factories, Munich.
- Prussia: Professor L. Teleky, Medical Inspector of Factories, Dusseldorf.
  - Dr. Beintker, Medical Inspector of Factories, Arnsberg.
  - Dr. Betke, Medical Inspector of Factories, Wiesbaden.
  - Dr. Gerbs, Medical Inspector of Factories, Erfurt.
  - Dr. Neumann, Medical Inspector of Factories, Breslau.

- Saxony: Professor Thielke, Leipzig.
  - Dr. Krüger, Leipzig.
  - Dr. Förster, Leipzig.

- Wurtemburg: Dr. Scheurlen, Stuttgart.

Australia:

- Dr. D. G. Robertson, Division Director, Division of Industrial Hygiene of the Commonwealth, Department of Health, Melbourne.
- Dr. Badham, Medical Officer of Industrial Hygiene, New South Wales, Department of Public Health, Sydney.
- Dr. M. R. Zinlayson, Medical Officer in Charge, Medical Inspection Bureau, Broken Hill, New South Wales.

Austria:


Belgium:

- Dr. Désiré Glibert, Inspector-General, Chief of Medical Factory Inspection Service, Rue Lambermont 2, Brussels.
- Dr. A. Goessens, Dr. P. Demolin, Dr. J. Roels, Dr. L. Foucart-Fassin, Medical Inspectors of Factories, attached to the Central Service, Rue Lambermont 2, Brussels.
- M. Ch. Biot, Chemical Inspector, ibid.

Provincial Inspectors:

- Dr. J. Roels: Antwerp.
- Dr. M. Lacourt: Brabant (Brussels and Louvain).
- Dr. A. Goessens: Brabant (Nivelles).
- Dr. E. Vermeulen: Western Flanders, Hainaut (Mons, Tournaï, Soignies).
- Dr. L. Vander-Snickt: Eastern Flanders.
- Dr. A. Langelez: Hainaut (Charleroi, Thuin and Canton de la Louvière).
- Dr. J. Houbotte: Liège.
- Dr. P. Demolin: Limburg.
- Dr. O. Dessent: Namur and Luxembourg.
Brazil: Dr. Alfredo Leal de la Ferrieva, Industrial Health Officer, Department of Public Health, Rio de Janeiro.

Dr. Geraldo Paolo Souza, Professor of Hygiene, Director of the Health Service.

Dr. Brenno Muniz de Souza, Chief Medical Inspector of Factories (six medical inspectors co-operate in the Inspection Service), Sao Paulo.

Industrial Health Service, Pernambuco.

Bulgaria: Professor Petrof, Factory Inspector, Department of Public Health, Sofia.

Canada: Dr. J. G. Cunningham, Chief of the Division of Industrial Hygiene, Provincial Board of Health of Ontario, Spadina House, Toronto.

United States of America: Dr. L. R. Thompson, Surgeon in Charge, Division of Industrial Hygiene, Public Health Service, Washington, D.C.

State of New York: Dr. Leland E. Cofery, Director, Bureau of Industrial Hygiene, 124 East 28th Street, New York City. Dr. C. T. Graham Rogers, Dr. Robert S. McBerney, Medical Inspectors of Factories, ibid.

Illinois: Dr. George Appelbach, Medical Division, State Department of Factories Inspection, Chicago. Dr. Harold K. Gibson, ibid.

Massachusetts: (Name not available).

Ohio: Dr. Daniel J. Kindel, Division of Industrial Hygiene, Columbus.

Oregon: Dr. F. H. Thomson, Medical Adviser, State Industrial Accidents Commission, Salem.

Pennsylvania: Dr. Francis D. Patterson, Division of Industrial Hygiene, Department of Labour and Industry, Harrisburg.


Dr. Bridge, Medical Inspector of Factories, London. Dr. Syril Overton, Medical Inspection of Factories, London. Dr. Henry, Medical Inspector of Factories, Manchester. Mr. Middleton, Medical Inspector of Factories.

Hungary: Dr. Szégyed Maszak, Adviser to the Ministry and Arbitrator in Workers' Welfare Matters in the Ministry of Trade.

Italy: Professor Giovanni Loriga, Chief District Medical Inspector, Ministry of National Economy, Rome.

Japan: Dr. Jasutoshi Kose, Chief of Medical Bureau of the Industrial Hygiene Inspection Section of the Social Affairs Bureau, Department of Home Affairs, Tokyo. Dr. B. Koinuma, Inspector of Factories, Dr. Naosaburo Kumagai, Inspector of Factories, Dr. Gishichi Sakurada, Assistant Inspector of Factories.

(There are 62 health inspectors in the Provincial Service.)

Norway: Dr. O. Lorance, Medical Inspector Factories, 8, Park Ueien, Oslo.

Poland: Dr. ZIELINSKI, Medical Inspector of Factories, Ministry of Labour and Social Welfare, Place Dobrowski, Warsaw.

Russia: Dr. SERGE KAPOUN, Chief of the Workers' Protection Section, Commissariat of Labour of the U. S. S. R., Staraja Ploschtad 6, Moscow.

Roumania: Dr. N. PRESBEANU, Director of the Industrial Medical and Insurance Service, 5 Stradela General Lahovary, Bucarest.

Sweden: Dr. A. BACKLUND, Medical Inspector of Factories, Stockholm.