

INDUSTRIAL RELATIONS.

71-

The Kyocho Kai or Harmonizing Society.

THE FOUNDATION OF THE SOCIETY.

A BOUT the middle of January, 1919, a meeting was held at the official residence of the Minister of Home Affairs, attended by Prince Tokugawa, the Lord Chancellor; Viscount Kiyoura, Vice-President of the Privy Council; Mr. Ooka, Speaker of the House of Representatives; Baron Shibusawa, a well-known business man; and the Minister of Home Affairs. The meeting was arranged to discuss a proposal for the formation of an organization, having as its main object the maintenance of amicable relations between capital and labour.

Prior to this, in December 1918, the Minister of Home Affairs referred to the Relief Works Investigation Committee the question as to what method should be followed in order to bring about good relations between capital and labour ; as the Commission was of opinion that a private society should be established for that purpose, the authorities of the Department of Home Affairs had already begun investigations. At the same time Baron Shibusawa, who had recently retired from business life, resolving to devote his remaining years to social welfare work, was also planning the formation of a similar society.

It was decided at this meeting that an organization should be created, capable of acting from the standpoint of a third party, that is to say, impartial to both capital and labour, and able to carry out the following duties :—

- (1) The education of labour, to be effected by means of the publication of newpapers and magazines, the arrangement of lectures, etc., with the object of raising the intellectual standard.
- (2) The investigation of labour conditions and the study of labour questions at home and abroad likely to contributie towards the solution of the labour problem.
- (3) The management of the Central Employment Bureau, and the encouragement of activities of employment bureaus in the various districts.

- 4) The establishment of an internal organization to deal with the settlement of labour disputes.
- 5) The establishment of branches of the organization in several of the larger cities in the country, to take charge of such questions as the protection and assistance of workers, the education of their children, and the finding of housing accommodation.

The plan of this proposed organization was submitted for consideration and comment to the Nippon Kogyg Club (Japanese Industrial Club) and the Shihon Rodo Kenkyu Kai (Society for Studying Relations between Capital and Labour), who in return presented draft schemes and made various suggestions. Thus the organization gradually took definite shape.

Meanwhile the original promoters obtained the consent of 406 persons to act as legal promoters. The first meeting of promoters took place on August 16, 1919. at the Imperial Hotel in Tokyo, when 185 persons were present, including Cabinet Ministers and other well-known and distinguished people. Baron Shibusawa gave an account of the progress so far made towards the formation of the organization, expressing hopes for its establishment and development under the title of the Kyocho Kai, or Harmonizing Society. Mr. Hara, the Prime Minister, Mr. Yamamoto, Minister of Commerce and Agriculture, and several other distinguished men supported the Baron. The formal proceedings of the meeting continued, with Prince Tokugawa in the chair, and when a motion was put to the meeting proposing to establish the society, the voting was unanimously in the affirmative. Prince Tokugawa, Baron Shibusawa, Viscount Kiyoura, and Mr. Ooka were selected as members of the organizing committee, and it was decided that permission for its definite establishment in the form of a legal corporation serving public ends should be obtained.

The four members of the organizing committee held several meetings, and eventually agreed that the society should have a fund of 10 million Yen, to be raised by public subscription, donations from the imperial privy purse, Government subsidies, etc. They assiduously set about creating this fund. In October the Prime Minister and other ministers concerned further assisted the promoters by inviting the principal business men of the country to a meeting and there suggesting that they should give their sympathy and aid to the proposed Kyocho Kai. By December 1919, the total sum subscribed amounted to 6,250,000 Yen.

On December 22, after having obtained the necessary sanction from two ministers, the Kyocho Kai was definitely established, and duly registered on December 27.

IDEALS

When the Kyocho Kai was established, its ideals and the causes which gave rise to a desire for its formation, were made known in detail to the public in the form of a manifesto. This statement reads as follows :—

"The maintenance of harmonious relations between capital and labour is the most important element in the promotion of industrial progress and social peace. In Europe and America things are not going smoothly. Even though in this country there exists so far no general marked hostility between employers and employed, still the rapid progress of social organziation has brought industrial disputes and strikes. which are menacing social peace, while, with the changing world and the new generation, growing doubts in many minds are shaking old beliefs, so that we can no longer look to the traditional relationship of capital and labour for the maintennance of harmony. Necessary laws and regulations must be made and put into force; the necessary provision must be made for social welfare. Masters, respecting the personality of the men, must do their best to improve the conditions of their lives and endeavour to secure greater efficiency. The men, on their part, must make efforts to train and raise themselves. Each must seek to bring out the best in the other.

"In Europe and America much has been done in the direction of social reform, but the results have not always been satisfactory. Therefore, in adopting methods and systems of other countries, great care must be taken that the measures selected are those which are most effective and most fitted to conditions of Japanese life.

"The Kyocho Kai does not presume to be able to effect the realization of all measures of social reform. It only desires to study the advantages and drawbacks of these several methods, and to select and put into operation those most suited to the age and the times. To meet the necessity for some solution of labour problems, which are now becoming so serious, the Kyocho Kai proposes itself to take whatever action it considers most advisable. At the same time it will recommend to the Government or public bodies the consideration of those problems with which it is felt they are best fitted to deal. In the same way recommendations will be made to employers and employed.

"Thus, from an impartial point of view, and with an understanding of the needs of the day, the Kyocho Kai hopes that employers and workers will co-operate to promote the welfare of society in general. It is also hoped that members of this society will be gathered from all quarters of the country, and by a frank expression of their thoughts and feelings will contribute towards the harmonization of capital and labour.

"The Kyocho Kai earnestly desires that the sincerity of its intentions should be realized, that all classes should welcome its endeavours and that they should give the necessary assistance in the establishment and progress of the Society".

THE CONSTITUTION.

The constitution, determined at the time of its foundation, is set forth in 11 chapters and 35 articles. The most important are as follows :—

Aim. (Chapter 2.)

The society has for its object the study of social problems, and the establishment and maintenance of harmonious relations between employer and employed.

The Work. (Chapter 3)

In order to realize the aims of the Society, the following procedure is proposed :---

- (1) To maintain good relations with public and private organizations, to study social problems, and to publish the results of such investigations.
- (2) To propose to the Government or any other public or private bodies reforms which the Society, by reason of its investigations, may deem advisable.
- (3) To prepare lectures and courses of lectures, and to establish libraries.
- (4) To institute employment bureaus.
- (5) To endeavour, by means of arbitration or conciliation, to settle labour disputes.

Foundation fund. (Chapter 5).

The foundation fund on the inauguration of the Society shall be six million Yen.

Officials. (Chapter 7).

The numbers and grades of officials are as follows ::---

- 1 President.
- 3 Vice Presidents.
- 7 Advisers.
- 15 Directors (3 of whom are to be active).
 - 1 Inspector.

Councillors.

Active Councillors.

[192]

THE ACTIVITIES OF THE SOCIETY.

Soon after the legal establishment of the Kyocho Kai, the election and nomination of officials took place. Prince Tokugawa became President, and Viscount K. Kiyoura, Mr. I. Ooka, and Baron E. Shibusawa were appointed Vice-Presidents. The directors, with their staffs, were appointed. In addition 191 councillors, 46 active councillors, and other officials were nominated, chosen from among members of both Houses of Parliament, professors, ecclesiastics, journalists, distinguished officials, and business men.

It should be noted that the actual working of the Kyocho Kai was entrusted to three active directors, occupying positions in the following order :

Dr. K. Matsuoka, Chief of the Business Section.

Dr. K. Kuwata, Chief of the Investigation Section.

Mr. T. Taniguchi, Chief of the Common Services Section.

The first activities of the Society after its establishment are given below :----

(1) The institution of lecture courses.

These were arranged for those anxious to study social problems and to take an active part in social work, and to spread the knowledge so gained throughout factories, workshops, and business concerns. The duration of a lecture course was five months, and comprised more than 20 subjects, given by professors from the Imperial University, Commercial College, the Industrial College, and by the specialists from Government departments and business concerns. The courses were free. 200 students, who had finished the primary school course, chiefly recommended by government and municipal offices and employers, attended the lectures, which began in April and ended on July 29, 1920. 120 students, several of them women, graduated from this The second lecture course began on September 15. course.

(2) Employment bureaus.

A central employment bureau was established and was opened on June 1. Its main features are :

(a) The collection of statistics regarding employment and the publication of a report every ten days, every month, and every year;

(b) The investigation of conditions of employment and unemployment, and provisions against unemployment.

(c) The establishment or improvement of local employment bureaux. Although the Central Bureau

does not itself function directly as an employment bureau, it can do so if necessary. Recently information was distributed from this centre to the local employment bureaus as to demands for workers in railways, factories, arsenals, and other Government undertakings.

(3) The establishment of technical supplementary schools.

This function was formerly attributed to the Tokyo Higher Technical School, but was handed over to the care of the Kyocho Kai on June 22, 1920. The schools are divided into three classes,—common, middle, and higher—and include a thousand more pupils.

(4) The official organ of the Kyocho Kai.

From September, 1920, the Shakai Sejsaku Jiho, or The Social Reform, a monthly magazine, was published regularly. It has a wide circulation and many subscribers.

(5) Propaganda by means of lectures.

For this purpose recognized authorities were sent to many districts to make known the principles of the Kyocho Kai and advocate social reform.

(6) Investigations into social and labour conditions.

These were carried on by the staff of the Kyocho Kai, who not only made investigations in Japan, but collected information from all parts of the world, and translated and distributed it widely to public and private concerns.

THE RECONSTRUCTION OF THE KYOCHO KAI.

In spite of the high ideals of the Kyocho Kai, there were many difficulties in the way of their realization, and the activities of the Society, though contributing to the future harmonization of capital and labour, touched very little on the urgent problems of the day¹. This may have been partly due to the fact that the chief promoters of the Kyocho Kai were representatives of the highest class in Japan and that the funds came mainly from the wealthy capitalists, so that the Society was regarded with suspicion in many quarters. It may also be due to the fact that after the resignation of Dr. Matsuoka, chief of the Business Section, upon his appoinment as delegate to the Second International Labour Conference in Genoa, his place was taken by Dr. Kuwata,

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¹ For instance, soon after the establishment of the Kyocho Kai, two important strikes occured in Tokyo, one of the Muncipal Tramway Workers and the other of the men in the Fuji Spinning Company. In both cases the Society was not able to act as arbitrator.

who still remained chief of the Investigations Section, and who was of opinion that efforts should be mainly directed to this side of the work. These and other reasons brought the Kyocho Kai into disfavour with the people, and in some quarters it was considered that the existing staff of the Society was incapable of coping with the situation.

The resignation of Dr. Matsuoka was followed by those of Dr. Kuwata and Mr. Taniguchi at the beginning of October, and the three chief positions were filled by Mr. Soeda (former Director of the District Bureau of the Department of Home Affairs), Mr. Nagai (ex-Director of the Bureau of Accounts and Supplies in the Railway Department) and Mr. Tasawa (former Secretary of the Department of Home Affairs).

At the commencement of their administration they reconstructed the internal organization of the Kyocho Kai, for which permission had been granted by the Assembly of Active Councillors. Instead of a Business, an Investigations, and a Common Services Section, the new administration took form as a General Section under Mr. Soeda, a First Section under Mr. Nagai, and a Second Section under Mr. Tasawa. The staffs were also increased.

On several occasions meetings were held with all those taking an active part in labour and social problems — Government and municipal authorities, managers of Government factories, representatives of employers' associations and labour unions — and attempts are being made to arrange regular meetings for the representatives of these various interests. Already every Saturday all Government and municipal authorities meet the Kyocho Kai officials, and on Thursdays the managers of Government factories have a similar consultation The leaders of the Kyocho Kai are endeavouring to start a new phase of activity in connection with social and labour problems, and it was with this object in view that they published the following Manifesto on November 10, 1920.

"The principles and the programme of the Kyocho Kai are clear from the statement setting forth its aims, made at the time of the inauguration of the Society. Unfortunately, there are some who misunderstand and miscontrue its real aims and objects, thus rendering very difficult the carrying out of its aims and ideals.

"It is unnecessary to mention that the principle of harmonization involves the co-operation and mutual aid of all classes, in order to realize the ultimate peace and welfare of society; that the proper rights and claims of every class must be respected on the ground that each, especially capital and labour, has equal personal values and that reasonable tolerance and restraint must be exercised for the maintenance of the social order.

"Consciousness of responsibility is the starting point of harmonization, while justice and humanity form the foundations. Such principles as the 'Onjo Shugi' (benevolent principle), possibly implying the idea of superiors patronizing inferiors, are widely different from the principles of harmonization.

"Differences in knowledge and circumstances do not necessarily mean differences in personality, and no one person should be permitted to use another as a means for the attainment of his own ends. This respect for personality is the foundation of harmonization. Even though the Kyocho Kai does not expect to be able to free society from all conflicts, it distinctly denies such a desperate idea as that there is no scope for harmonization in this world, and that the position of the labourer cannot be raised without class war. Those, be they capitalists or workers, who with a biased opinion are selfishly pursuing their own ends and menacing the peace of society, must be awakened to a sense of responsibility to society as a whole.

'Thus the harmonizing principle condemns class war on the one hand, and endeavours, on the other hand, to bring into harmony all classes of society. For this purpose the capitalists are advised to act with consideration and humility, while everything possible must be done to raise the position and further the welfare of the workers. The Kyocho Kai will put forth its best efforts in this direction, but it is hoped that workers will form unions with the same end in view and work for the progress of such unions. It must be distinctly understood that the Kyocho Kai cannot join with those who, by the abuse of organized power, threaten the peace and order of society.

"In order to realize these aims, the following measures are proposed :----

(1) To make known, widely and by means of propaganda, the principle and theory of harmonization. Though the Kyocho Kai will not hesitate to institute measures of conciliation or arbitration when labour disputes occur, its primary aim will be to prevent the occurence of such disputes.

(2) To work for the thorough realization of social reconstruction. The Kyocho Kai will do its utmost, but it will be necessary to recommend the reform of existing social systems by reasonable measures.

(3) To endeavour to establish a good understanding between capital and labour. Towards this end the Kyocho Kai proposes to keep in close contact with individual or organized capital and labour, and clear away their prejudices and misunderstandings.

"In conclusion the Kyocho Kai will, to the best of its ability, work for the realization of the harmonizing principle, and rouse public opinion to take an interest in social reform. At the same time it is hoped that people in all walks of life will make use of the Kyocho Kai for this purpose and with the same end in view".

The Trade Union Movement.

THE month of January was not marked in the Trade Union world by important Congresses, but the special International Trade Union Congress held in London in November 1920, has had certain after effects worthy of note. In continuation of the report of that Congress given in the last number of the International Labour Review. we reproduce this month extracts from some interesting with regard to the relations between documents the International Federation of Trade Unions and the Third (Moscow) International. The first extract is from the resolution already mentioned in last month's Review. This is, in effect, the reply of the organized workers of Western attacks previously made on them by the Europe to Bolshevists. Its most important clauses were as follows :

The Special Congress of the International Federation of Trade Unions, representing twenty-six millions of organized workers in eighteen countries, takes note of the fresh attacks directed against the Congress by the leaders of the Third International.

The Congress considers that these calumnious criticisms and this declaration of war prove either a total ignorance of the composition and actions of the International Federation of Trade Unions, or else an evident bad faith, arising out of the unwholesome desire to destroy the workers' organizations in every country.

The Congress affirms that the International Federation of Trade Unions and the central organizations in every country are directing their efforts towards transformation of the social system and towards abolition of the system of capitalist exploitation.

The Congress sends an appeal to the workers of Russia and declares its full solidarity in sympathy with their sufferings and revolutionary efforts. It invites them to join the International Federation of Trade Unions and to add their fighting strength to that of other workers in order to establish one single fighting line against social reaction.

At the same time a letter was sent by the Bureau of the International Federation of Trade Unions to the President of the Third International, suggesting an exchange of views in order to clear up misunderstandings between the two organizations. In reply, the Moscow Wireless Press issued, on January 28, an open letter from Zinovieff to MM. Jouhaux, Fimmen, and Oudegeest, the President and Secretaries of the International Federation of Trade Unions. This document emphasizes the irreconcilable difference in principle and point of view between the two organizations. In his "letter" Zinovieff says : You declare that you speak in the name of thirty millions of organized workers. Allow me to disbelieve you, gentlemen. You represent solely a small group of Union bureaucracy, supporting the bourgeoisie against the workers in all basic questions. Your letter demands that we should still suppose you to have honest intentions and a sincere desire to serve the working class. Notwithstanding our desire to be amicable, we are sorry that we cannot grant your demand; to be sure, there may be leaders in your Yellow International, who sincerely suppose themselves to be serving the working class; but it is not these elements which have influence among the leaders of the Amsterdam International.

have influence among the leaders of the Amsterdam International. The First World Congress of the Red Labour Unions is summoned for May 1, 1921, at Moscow. Every Union truly desirous of struggling against the bourgeoisie is invited to this Congress. We do not lay down any conditions, except that the Labour Unions wishing to attend our Congress shall be truly desirous of struggling against world imperialism and therefore also against its agent, the Amsterdam International. You will see that this First World Congress of the Labour Unions will be a triumph for the Third International and will be a decisive blow to the treacherous International founded at Amsterdam.

You propose to give our organization more detailed information of your work, on the ground of mutual interest. You seem to wish to enter into detailed discussion with us on the question of our principles and yours. The Executive Committee of the Communist International and also that of the International Soviet of Labour Unions have, on my proposal, unanimously decided to accept a public debate with you.

Suggesting that the leaders of the Yellow International would have no difficulty in persuading their Governments to allow the Executive of the Third International to visit Western Europe, Zinovieff continues :

If this is so, the Executive Committee of the Third International proposes to arrange for a public debate before the workers of Paris, London, Amsterdam, and other European capitals. In order that the representatives of the Amsterdam Yellow International may be able to take part with the Third on equal terms, it will not be difficult for you to obtain assent to our proposal through the help of the League of Nations, which is so friendly to you, and the International Labour Office, which is the connecting link between the Yellow Amsterdam International and the League of Nations.

The first reply to this communication came from the French General Confederation of Labour, whose National Confederal Committee met on February 9 and 10, and devoted much of its time to discussing the claims of the two Internationals.

Two opposing parties within the Confederation respectively support the Moscow and the Amsterdam Internationals. The Left, who are the minority, proposed withdrawal from the International Federation of Trade Unions and from co-operation with the International Labour Office, and adhesion to the revolutionary Trade Union International of Moscow, but were defeated by 88 votes to 24, with 10 abstentions and 14 absentees. The majority condemned the disintegrating action of the minority in forming "revolutionary" groups within the existing unions with the object of forcing the Confederation towards the Moscow International. They re-affirmed the decision of the Congress of Oileans in several resolutions, of which the followingare extracts :

The National Confederal Committee condemus the insulting argumentative methods employed by the so-called Communist leaders against those trade union groups, which do not tamely accept the methods of dictatorial and inquisitorial centralization preached by Zinovieff and Co. It denounces all arguments and methods which tend towards the disintegration of trade union federalism and towards preparation for the dictatorship of demagogues and scribblers. The Confederal Committee declares that organizations, which give their adhesion to the Trade Union International which is a section of the Communist International, will thereby place themselves outside the Confederation of Labour, and will lose the right to participate in the Confederal Congresses and in the National Committee.

In this connection, it is interesting to note that all the larger Socialist German trade unions, building workers, metal workers, wood workers, textile workers, railwaymen, transport workers, etc. have recently declared against the Moscow International. They decided, in fact, that all members should be expelled who take part in the organization of Communist "cells" within the unions, in Communist trade union conferences, etc. Several well-known Communist leaders have since been expelled from their unions on the strength of these decisions.

In another direction the discussions at the London Congress have had results. The Spanish delegates there complained bitterly of the treatment of the trade unions of their country by the Government. At the Congress they urged the International Federation of Trade Unions to send a Commission of Inquiry to Spain. Later they submitted a full report of the Spanish workers' grievances to the Headquarters of the Trade Union International. The Executive Committee of the International Federation of Trade Unions has now informed the General Union of Workers in Spain that it intends to institute an inquiry into trade union conditions in that country. The Committee of the General Union of Workers has unanimously agreed to the project and has urged the International Federation of Trade Unions to send its Commission as soon as possible.

The various craft Internationals have also held no congresses during the month; but in this spere again certain action has been taken as a result of previous meetings or in preparation for forthcoming meetings.

Thus, the Committee of the International Federation of Miners met in London on January 24 and 25, in accordance with the instructions of the Congress held in August 1920 at Geneva. Depression and short time were reported to be general, except in Germany; there overtime was necessitated by the deliveries of coal under the Spa agreement. A

49

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resolution was passed protesting against the inadequacy of transport facilities and the resulting inefficient distribution of raw materials, especially coal; also against the treatment of the German miners and the abuse of overtime.

The International Committee of Miners notes the reports of the German delegates, which indicate that stocks of coal are now accumulated, which could be distributed both for home purposes and for the delivery of coal to France, if adequate transport were provided for the purpose. It also notes that overtime has been imposed on the German miners, while their food supplies have been extremely inadequate. ...Transport facilities should be improved and international exchange stabilized. The Committee calls upon the Governments to take international action for more closely relating supply to demand throughout Europe. In order to ensure that the present evil conditions shall not extend, it calls upon the International Labour Office to set up an International Control Board for the sharing and exchange of all raw materials indispensable to the restoration of all countries.

The other resolution emphasized and amplified the resolution on socialization passed by the Geneva Congress, concluding :

The Committee calls upon all affiliated unions not to enter into any agreement with their respective owners, which might have the effect of compromising, at any time, the taking of international action to realize the resolution passed at the Geneva Conference.

Mention should finally be made of the Annual Convention of the International Seamen's Union of the United States, held in January. The President's report, among other interesting features, contained suggestions for co-operation with the European seamen's unions in catering for their members in American ports. It also dealt with the opposition to the Seamen's Act, which specifically covers, in its provisions regarding wages, hours, etc., foreign seamen on board foreign vessels while in the harbours of the United States. The opponents of the Act, according to the President, wish to limit this broad application, and to "destroy the trend to equalization of wage cost, which is operating steadily and persistently," and which the Seamen's Union supports.

The shipping industry reflects the general labour situation in the United States, especially as regards the controversy over the open and closed shop. The Seamen's Union, like most of the American labour organizations, has had for the present to admit the principle of the open shop, but the following passage from the report of the President is interesting as a suggestion of possible future developments.

We may be compelled to continue this system, but if the shipowners can be induced to give to Union members the preference in shipping, we can and should insist upon as high a standard as possible, and we should, on shore as well as on board vessels, do our best in developing such a standard of skill that the vessels need not go to the repair shops except for general overhauling, or to repair damages arising from accidents. Recalling the promise the Union had given, the President continues:

We will therefore try by all just means to provide harmonious relations with those in command, by exercising due care and diligence in the performance of the duties of our profession and by giving all possible assistance to our employers in caring for their gear and property.

The President said that he felt that they had come short of their word in this respect.

The report quoted certain clauses in shipping contracts, which allow the employers to transfer seamen from the vessel on which they have shipped to any other belonging to the same owner, thus attacking the traditional conception of the seaman's duty as being to the ship and not to the owner. In conclusion, reference was made to the progressive americanization of the United States mercantile marine. The International Seamen's Union includes a very great variety of nationalities, and, while in 1917 only 28.8% of its members were American-born, the percentage rose to 44.1 in 1919, and in January 1921 was 50.99 of a membership of 156,000.



PRODUCTION, PRICES, AND COST OF LIVING.

Retail Price Fluctuations in Various Countries.

Food Prices

In the following table¹ the index numbers of retail food prices have been brought together after having been reduced to a common base, viz. prices for July 1914 = 100. This base is used instead of the 1913 base used in the table of wholesale prices² because in several cases information for 1913 was not available, many index numbers being started in 1914, when the great increase in prices first made itself felt. In a few cases, as shown by the footnotes to the table, the base is some period in 1914 other than July.

The method of obtaining price quotations, the system of weighting, and the number of items included in the index numbers differ from country to country, and the results should not therefore be considered closely comparable with one another. In one or two cases the figures for a particular country are themselves not absolutely comparable from month to month, owing to slight changes in the list of commodities included.

Cost of Living

"In some countries index numbers are published showing the cost of a standard family budget, in which not only food, but clothing, lighting, heating, rent, etc., are included. These figures are generally known as "index numbers of the cost of living"; but as no allowance is made for modification in the standard of living during the period, they cannot be accurately described as a measure of changes in the cost of living, assuming, as they do, a standard which has not varied. But during the war period considerable changes took place in family expenditure, not only in food, due to rationing and shortage, but in the other items making up the family budget.

^{&#}x27; See p. 64.

^{*} See the International Labour Review, January, p. 107.

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INDEX NUMBERS OF RETAIL PRICES OF FOOD

INTERNATIONAL LABOUR REVIEW

[204]

The following paragraphs deal with the index numbers of retail food prices and of the cost of living, published by various countries.

AUSTRALIA.

A Basic Wage Commission was appointed by the Commonwealth Government to inquire into the actual cost of living at the present time, according to reasonable standards of comfort, including all matters comprised in the ordinary expenditure of a household for a man with a wife and three children under 14 years of age, into the corresponding cost of living during each of the last five years, and into the automatic adjustment from time to time of the basic wage to the rise and fall of the purchasing power of the sovereign. The Commission found that the cost of living at present, on the above basis, ranged from £5 6s. 2d. in Brisbane to £5 17s 0d. in Sydney. Corresponding figures for 1914 ranged from ± 3 4s. 11d. to ± 3 13s 11d.

BELGIUM.

The new index number of retail food prices started by the Belgian Government in 1920 was described in the last issue of the *Review*. The latest figures are shown in the attached table; the old index number, which includes other items besides food, is also given. It will be seen that since October last prices began to fall, the level in February 1920 being 7 per cent, lower than in October 1920.

	Index No.	Index No. o	f 22 food items
	56 commodities	Weighted	Unweighted
1920			
January	396	381	376
July	453	454	424
August	463	492	447
September	471	500	455
October	477	517	462
November	476	505	458
December	468	506	456
1921			
January	450	493	436
February	434 ·	484	418

BULGARIA.

La Direction Générale de la Statistique du Royaume de Bulgarie publishes the following figures of the rise in retail prices in Bulgaria. The figures are based on the average consumption of 47 articles. (40 of food and drink, tobacco, soap, petrol, spirit, wood, charcoal, and coal).

	Index No.		Index Number
•			
	•	1920	
1901-1910	100.0	January	2,560.6
1911	120.7	February	2,647.5
1912	130.2	March	2,781.3
1913	138.3	April	2,666.7
1914	140.0	May	2,724.7
1915	171.0	June	2,656.9
1918	289.0	Julv	2.757.8
1917	599.0	August	2,639.6
1918	1.132.0	September	2.642.71
1919	2.046.8	1	,

These numbers are based, for 1916-1919, on the prices fixed by the State and not on arbitrary prices.

It will be seen that prices are, on the average, at a level about 19 times that of 1914.

CANADA.

The monthly index number of retail prices published by the Canadian Government continues to decline. The figures are based on the cost of maintaining a family budget standing at 12.79 dollars in 1910.

The following table gives the latest index numbers available for food and for all items included in the budget.

	Food	All items
1920 October November December	230 206 200	187 185 181
January	195 190	179 175

CZECHO-SLOVAKIA.

The Prague Statistical Bureau has just issued a series of index numbers for various commodities of first importance in the householder's budget. The figures show the enormous increase in the cost of living which has taken place in Czecho-Slovakia since the war of 1914-18.

In the table given below the average price for each commodity during the period 1904 to 1913 has been taken as the standard, (=100); the figures in the second column show the percentage increase between standard prices and the prices prevailing in September 1920.

Commodity	Average Index for 1904-1913.	Index, Sept. 1920, showing percentage increase.
	100	1.440
Wheaten flour	100	1,440
$\mathbf{Kye} \ \mathbf{Hour} \qquad \dots \qquad $))	1,417
Potatoes))	1,619
Peas))	2,633
Lentils	»	1,997
Poppy seed	»	1,710
Eggs	» .	1,875
Milk	>>	1,481
Butter	· »	1,929
Clarified fats	»	1,923
Lard	»	2,527
Beef))	1,358
Pork))	2,033
Mutton))	2.105
Sugar))	425
Chicory))	1.107
Beer))	750
Soda))	4.000
Salt	3	692
Onions	'n	1 722
Cabhage	"	666
Paraffin	"	1 785
	"	9 596
Firewood	"	2,820
	. "	1,704
U0ai	. »	1,990
Average for the 25 commodities	100	1,736

It will be seen that the average increase on the above 25 staple commodities, as compared with the pre-war period, is as high as 17.36 times. It should be borne in mind, however, that figures for September 1920 are based on the Government controlled prices, and that many of the commodities which figure on the above list are not obtainable at government prices and can only be bought through "Schleichhandel" (illegal trading) at a greatly enhanced price. Further, the figures shown above represent only a certain portion of the necessaries of life. No figures are given for clothing or for manufactured goods. It is believed that, were simillar particulars available for these latter commodities, they would considerably increase the average.

The only commodity which shows a relatively small increase is sugar. Since September, however, even the price of sugar has risen very considerably.

DENMARK.

The figures of the Danish Government are only published at six-monthly intervals. They show the changes in the cost of an average workman's family budget for five persons with an income, in July 1914, of 2,000 kroner. The figures are of real importance, as on them are regulated the wages of State employees and of numerous workers in municipal and private undertakings. The following table shows the changes between July 1920 and January 1921. Since the previous investigation, the expenditure on food has increased by 23 points, and on fuel and light by 15 points, while the expenditure on clothing has dropped by not less than 63 points. Owing to a change in the classification of the items of expenditure, the figures for rent and for other expenses are not comparable. For the total expenditure a slight rise of 2 points is shown.

	January 1921		July 1920
Food	276 292 130 578 244 244	Food	$\begin{array}{c} 253 \\ 355 \\ 153 \\ 563 \\ 227 \\ 230 \end{array}$
Total expenditure	264	Total expenditure	· 262

(Basis: July 1914 = 100).

Egypt.

In order to ascertain the effect upon household expenditure of the rise in price of food and other commodities during recent months, the Statistical Department of the Egyptian Ministry of Finance recently collected 713 family budgets from employees of various government administrations.³ Of these 519 were sufficiently detailed for the purpose in view, and were utilized in the computation of a general statement. The employees filling in the budget were Egyptian clerks or Egyptian artisans and labourers. The results are tabulated separately for each of the two groups. The particulars asked for on the forms of inquiry related to (a) the composition and eanings of the family; (b) the principal expenses for the year ended March 1920, upon rent, clothing, medical attendance, and certain food articles (wheat, butter, lentils, onions, garlic); (c) detailed expenditure from March 1 to 7, 1920, upon specified foods, fuel, lighting, rent, taxation, and various miscellaneous The standard consumption of food by the average items. family in March 1920 having been determined from anexamination of the budgets, the retail cost of this was computed at the prices prevailing at various dates. For the

⁽³⁾ Report on Cost of Living, by T. L. Bennett, M.A., F.S.S., Controller Statistical Depts., Ministry of Finance, Egypt. Cairo, 1920.

pre-war period the prices taken werre the averages for January 1913 to July 1914. The other periods for which the cost of the budget was computed were the first and second halves of 1919, and each of the first six months of 1920.

On the assumption that the quantity of each commodity consumed underwent no variation throughout the period covered, i.e. that the budget of March 1920 applied to the later as well as to the pre-war period, the following figures represent the changes in expenditure due to the rise in retail prices of food, fuel, and soap taken together:—

	Increase in e in June 1920, with pre-war	expenditure às compared expenditure
	Families of Clerks	Families of Làbourers and Artisans
Cairo ⁴ Governates Upper Egypt Lower Egypt	% 170 173 171 174	% 172 173 171 170

Detailed calculations were not undertaken for other items, as they were in the case of food, but estimates were made. On the other hand, no attempt appears to have been made to carry these figures down to a later date than March 1920. Rent light, water, and the *Gafir* tax, taken together, were assumed to have risen 50% above pre-war level, fares 50%, clothing 150%, tobacco and various petty expenses 100%, school fees by 5%, and other items (doctors' fees, servants' wages, etc.) 100%. The combined expenditure upon these items, together with food, etc., at the prices ruling in March 1920, showed an increase of 138% above that of the pre-war period for families of clerks and of 149% for families of artisans and labourers. On the evidence of these figures, therefore, the cost of living in March 1920 was for these classes of employees from 2.4 to 2.5 times the pre-war cost.

The examination of the budgets brought out the point that the expenditure of the workers, who furnished the returns, exceeded their earnings. In the period before the war the excess of expenditure amounted to 53%; in 1920 it was 92% for clerks and 97% for labourers and artisans. The report states : "Since no man could continue for years to spend at least 50% more than his total income, it is clear that the average standard of living shown by the budgets is that of

⁽⁴⁾ Cairo was the only town supplying sufficient budgets to give a trustworthy mean ; the rest of the country was accordingly grouped by regions, viz., Maritime Governates (principally Alexandria), Upper Egypt, and Lower Egypt.

employees who have some sources of income in addition to the official salaries or wages."

GERMANY.

The *Reichsarbeitsblatt* now publishes each month a series of index numbers for all German towns. They are based on the monthly expenditure of a family consisting of two adults and three children of 12, 7, and $1\frac{1}{2}$ years. The prices of 13 food-stuffs, of fuel, lighting, and rent of two rooms and a kitchen are taken. The rationed food-stuffs distributed by the municipality are counted at official prices, other foodstuffs are counted at the free market prices. As the towns distribute food-stuffs at very different rates, according as they are able to get supplies or not, the result is that the figures in neighbouring towns are very often different. The figures do not cover expenditure for clothes or boots; they therefore cannot be taken as a complete indication of the fluctuation of the cost of living. The inquiry began in February 1920, at the same time as the first official statistics of wages were made; this month is therefore taken as the base.

The following table shows the latest figures available for towns of over 500,000 inhabitants.

Columns 1-5 give the estimated monthly expenditure, columns 6-10 the index numbers, taking February 1920 =100.

	Monthly expenses in marks] (H	Index Peb. 1	num 920 =	bers = 100)
	1920 1921		21	1920			1921			
	Feb.	Nov.	Dec.	Jan.	Feb.	Feb.	Nov.	Dec	Jan.	Feb.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Berlin	648	903	964	960	916	100	139	149	148	141
Hamburg	800	1,037	1,096	1,076	948	100	130	137	128	119
Munich	562	744	764	925	915	100	132	136	165	163
Dresden	580	798	932	920	892	100	138	143	152	147
Breslau	605	861	828	881	821	100	142	154	152	142

HUNGARY.

The table given below shows the principal food prices in Budapest. The prices refer to the retail market prices (fixed by the Government), and are based on the monthly averages in 1914 and 1920. They are, therefore, *minimum* prices, the corresponding prices on the free illicit market being considerably higher.

Item		1914 July	1920 Jan.	1920 July	1920 Oct.
	1	Kr	Kr.	Kr.	Kr.
Flour (1st quality)	er kilo	0.45	10.52	10.90	42.00
Flour (everage quality)	"	0.30	10.82	10.90	11.00
Flour (3rd quality)	"	0.40	2.86	3.20	2.50
Beef (1st quality)	"	2.27	62.00	90.18	93.88
Beef for soup (1st quality)	"	2.06	60.74	87.48	90.63
Beef for soup (2nd quality)	"	1.73	56.55	74.86	80.57
Veal (best quality)	"	3.03	87.60	94.51	105.42
Veal (forequarters)	"	2.12	72.23	72.34	84.46
Pork (1st quality)	"	2.10	85.09	96.14	107.20
Pork (chops)	,,	2.60	92.77	117.09	121.77
Lard	,,	1.62	119.47	122.89	159.67
Milk	per lit.	0.30	4.20	• 7.00	10.00
Haricot beans	er kilo	0.41	16.99	15.50	15.74
Carrots	"	0.32	6.08	5.34	4.27
Parsley	,,	1.18	6.37	6.54	6.44
Onions	"	0.29	12.04	4.97	4.28
Potatoes	,,	0.14	1.98	6.59	3.55
Sauerkraut	,,	0.32	11.52	11.32	7.00
Apples, choice	"	0.32	21.98	12.23	13.90
Plums	"	0.72	47.00	46.60	51.03
Fresh eggs	. each	0.07	5.11	3.07	5.00
1				1	

(Average quality)	Price in Aug. 1914	Price in Oct. 1920
Men's suits Men's shoes	$\begin{array}{c} {\rm Kr.} \\ 50.00 \\ 12.16 \\ 3.50{-}5.00 \\ 8.00 \\ 0.60 \\ 5.00 \\ 8.00 \\ 3.96 \\ 3.50 \\ 0.80 \\ 9.00 \end{array}$	$\begin{array}{c} \text{Kr.} \\ 5,000 \\ 1,300\text{-}1,600 \\ 500 \\ 600 \\ 80 \\ 300 \\ 1,200 \\ 200 \\ 200 \\ 200 \\ 88 \\ 300 \end{array}$

Though prices are so high, the greater part of the food commodities are rationed, so that even at these prices it is very difficult to obtain the necessary amount. The principal foods are only obtainable by means of cards. The weekly ration of flour per person is as follows: 2nd quality, 4.20 kilos; 1st quality, 1.80 kilos. The price of these commodities on the free market is much higher; e. g. 3rd quality flour can be obtained only at the price of 30 Kr. per kilo. There is a great lack of fat, the ration being only 150 gr. per head per month. The price of fat in the free market is 180 and 190 Kr. per kilo, while its rationed price is 150 Kr. The amount of sugar allowed per month is absolutely inadequate to the needs of the population, being only 300 gr. a month, at the price of 87 Kr. per kilo.

ITALY.

The cost of living index numbers do not show any signs of falling, contrary to what might have been expected from the wholesale prices. In comparing prices in the principal Italian towns, it will be seen that they do not vary much from one town to another.

It is to be observed that at the Statistical Congress of July 6, 7, and 8, 1920, the directors of municipal and provincial labour exchanges decided to establish new index numbers on the same bases (July 1920 = 100).

The following table gives the index numbers for the principal towns from July 1920 to January 1921.

	July 1920	Nov. 1920	Dec. 1920	Januar y 1921
Turin	$ \begin{array}{r} 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100 \end{array} $	$\begin{array}{c} 111.99\\ 119.78\\ 112.47\\ 116.10\\ 113.76\\ 111.64\\ 115.30\\ 118.85\\ 116.93\\ \end{array}$	118,11 123,46 117,87 119,90 117,40 115,32 113,94 117,55	118,95 121.70 124.43 121.30 120.10 118.98 117.62

The increase is noticeable everywhere during the second half of 1920; it is less marked in January 1921. The cost of living appeared to remain nearly stationary at Turin and Perugia; at Florence and Genoa it increased 2.70%; at Venice, 3.60%; at Rome alone there was a fall of 1.76%. At Milan, on the other hand, there was a rise of nearly 7% during last month.

It is interesting to compare the index numbers at Turin and Milan for December 1920 and January 1921.

	(Basis : July, 1920=100)								
	Decem	ber 1920	Januar	y 1921					
	Milan	Turin	Milan	Turin					
Food	$125.20 \\ 120.00 \\ 128.68 \\ 144.94 \\ 111.41 \\ 117.87 \\ 1$	119.69 114.25 110.00 127.43 112.66 118.11	$ \begin{array}{r} 120.59 \\ 120.00 \\ 128.68 \\ 170.27 \\ 123.93 \\ \hline 123.93 \\ 123.93 \end{array} $	121.07114.25110.00127.06112.96118.95					

[212]

In Milan, the rise was considerable for heating, lighting, and sundries; on the other hand, the price of food commodities fell. The cost of living at Turin was practically the same in January 1921 as in December 1920.

JAPAN.

The following table shows changes in the cost of living in Tokio in 1914 and 1919 as compared with 1909. The figures are based on information supplied by the U. S. A. Committee for Conciliation and Industrial Relations, which was sent on a Commission of niquiry into Japan.

	Low	er sal	arie	d empl	oyees	Manual Labourers					
	Percent. of total cxpendituro	Relative cost compared with 1909 in		Percent. of total expenditure of 1909 in		expenditure of 1909 in Percent. of total expenditure		compared with 1909 in	Percent. of total expenditure of 1909 in .		
	1909	1914	914 1919		1919	1909 1914		1919	1914	1919	
RentRiceOther foodFuelClothesCar faresSundries	$12.5 \\ 11.0 \\ 15.5 \\ 5.0 \\ 14.0 \\ 2.0 \\ 40.0$	110 107 108 112 112 129 112	165 455 307 358 417 143 308	$13.75 \\ 11.77 \\ 16.74 \\ 5.60 \\ 15.68 \\ 2.58 \\ 44.80$	$20.63 \\ 50.05 \\ 47.59 \\ 17.90 \\ 58.38 \\ 2.86 \\ 123.20$	$16.0 \\ 18.7 \\ 18.5 \\ 6.1 \\ 7.3 \\ 2.5 \\ 30.9$	$110 \\ 107 \\ 108 \\ 112 \\ 112 \\ 129 \\ 112$	165 455 307 358 417 143 308	$17.60 \\ 20.01 \\ 19.98 \\ 6.83 \\ 8.18 \\ 3.23 \\ 34.61$	$26.40 \\ 85.09 \\ 56.80 \\ 21.84 \\ 30.44 \\ 3.58 \\ 95.17$	
Total	100.0			110.92	320.61	100.0			110.44	319.32	

(Basis : 1909 = 100)

The changes in income in the two groups are set forth in the form of index numbers in the following table :—

	(1909 =	= 100)	(1914 = 100)		
	1914	1919	1909	1919	
Lower salaried employees Manual labourers	$120 \\ 111$	227 494	83 88	$\frac{190}{445}$	

NORWAY.

According to the index numbers calculated every three months by the Norwegian Government in the *Sociale Meddelelser* the cost of maintaining the pre-war standard budget of a typical Norwegian worker's family in the matter of food, fuel, lighting, rent, clothing, taxation, etc., shows an increase from July 1914 to December 1920 of 235 per cent., as against 231 per cent. at the time of the previous investigation, September 1920.

Monthly index numbers are published, dealing with increased expenditure on the single item of food. The figure for December 15, 1920, was the same as in November, viz. 242 %. According to information received from the Norwegian Department for Social Affairs, the food prices have now begun to decline, the index figure for January 15, 1921, showing an increase of 234 % since July 1914, which means a decrease of 8 points, or 2.34% as compared with the preceding month. Figures for fuel prices are also available for January 1921, showing a decided drop of 102 points, or not less than 16.45% from December 15, 1920, when the prices for fuel were 520 per cent. above the prices in July 1914. On the assumption that the prices of the other items included in the quarterly general index number are unaltered since the last investigation, the abovementioned drop in the prices of food and fuel would mean a decline of 8 points in the general index number of total family expenditure, or that it would stand at from 235 to 227 per cent. above the expenditure in July 1914.

SOUTH AFRICA.

A marked downward movement is recorded in the prices of the cost of living in South Africa. The official cost of living figures issued by the Union Government for December 1920, show that prices for food, fuel, light, and rent rose to their highest level in Cape Town last July, when the proportionate index figure (base 1914 = 1,000) was 1,704; it has since gradually declined to its present level, 1,668. While this decline cannot be attributed wholly to the ameliorative measures passed by the Government last Session, it is undoubtedly true that the Government's legislation has helped to lighten the economic burden.

SWEDEN.

The official index number of the Swedish Government, representing the cost of maintaining a standard pre-war budget of a typical Swedish town-worker's household for food, fuel and light, rent, clothing, and taxes, is given in the following table, in comparison with previous months since the beginning

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of the war. This index number is only calculated every three months. It will be seen that there is a fall of 3.6 per cent. in the cost of living on January 1 as compared with October.

	% of		Index	numl	oers (July	1914 =	= 100).
	tot. ex- pend. in July 1914	1918 Dec.	1918 Jan. 1	1919 Jan. 1	1920 Jan. 1	1920 Apr. 1	1920 July 1	1920 Oct. 1	1921 Jan. 1
Food	43	152	214	323	307	287	287	298	286
Rent	15	108	112	120	130	130	130	155	155
Fuel & Light .	4	168	275	381	307	333	372	400	380
Clothing	12	160	250	350	345	370	390	390	355
Taxes	8	109	109	114	160	290	290	290	290
Other items .	18	125	175	225	220	230	235	245	245
Total	100	139	192	267	259	265	270	281	271

SWITZERLAND.

No official index number for retail prices is published by the Swiss Government, but monthly figures are published by the Union of Swiss Co-operative Societies in the 23 large towns of Switzerland. They are based on the average consumption of a working-class family, and include, in addition to food, lighting and heating materials. The following table shows the estimated cost of these articles on January 1, 1921 and previous months, compared with June 1, 1914.

					-							All i	tems	Food items.		
												Total	Index No.	Total	Index No.	
June	1, 191	4	•	•			•	•		•	••••	1,066.70	100	966.25	100	
Oct.	1920	•	٠	·	٠	٠	·	٠	•	·	٠	2,790.5	261.6	2,391.1	247.5	
INOV.	1920	•	٠	•	•	٠	•	٠	•	•	٠	2,756.7	258.4	2,379.6	240.3	
Dec.	1920	•	٠	•	•	•	•	٠	•	•	•	2,651.7	248.6	2,274.3	235.4	
Jan.	1921			•	•	•			•		•	2,591.7	243.0	2,224.6	230.2	
Feb.	1921	•	•	•	•	•	•	•	•	٠		2,531.9	237.3	2,167.6	224.3	
													j l		1	

UNITED KINGDOM.

The index number of retail prices for articles of prime necessity published by the British Government in each month's *Labour Gazette* has declined considerably since the maximum point reached on November 1, 1920. The following table gives the index numbers of retail prices during the last five months for food only, and also for all items, viz. food, rent, clothing, fuel, lighting, miscellaneous.

	Food.	All articles.
July 1914 .	100 291 282 278 263 249	100 273 269 265 251 241

THE UNITED STATES.

The following table shows the movement in retail prices of food in the United States during January and February, in continuation of the table given in the last number of the *International Labour Review*.

	ec. 1920	Jan. 1921	Feb. 1921
17			
Sirloin Steak	177	158	151
Round steak	160	163	153
Rib roast	152	157	148
Chuck roast	145	148	138
Plate beef	136	140	129
Pork chops	157	171	156
Bacon	176	171	166
Ham	186	180	179
Lard	162	141	131
Hens	189	200	201
Eags	268	229	139
Butter	162	159	148
Cheese	176	175	171
Milk	189	183	173
Bread	193	193	189
Flour	200	203	197
Corn meal	183	173	167
Rice	152	137	121
Potetoes	169	176	153
Sugar	190	176	162
Coffee	100	190	126
	199	129	121
	100		
All articles combined	178	172	158

For the past eight years, the index number has been issued on 22 items of food, but, as stated in the last number of the *Review*, prices of 43 commodities have been obtained for some time, and from January 1921 onwards the index number is based on 43, instead of on 22, food items. The quantities consumed by the average family for each of these 43 articles of food were ascertained by the Bureau of Labor Statistics in an investigation conducted in 1918. Over 9,000 families were visited in the 51 cities from which monthly prices are secured. The use of new consumption figures, with almost double the number of articles, gives a broader basis of comparison than did the list of the 22 articles, used from 1913 to 1920. The new figures have been so linked on to those previously used as to make the index number for January 1921 comparable with the index numbers based on 22 articles from January 1913 to December 1920.

The weights used are given in the following table, which shows the annual consumption per family :---

	Consump- tion.		Consump- tion.
Sirloin Steak. Round Steak Rib roast Chuck roast Plate beef Plate beef Pork chops Bacon Ham Lamb Salmon, tinned. Milk, fresh Mutter Margarine, Oleo Margarine, Nut Cheese Lard Bargas	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Flour Corn meal Rolled oats Corn Flakes Cream of Wheat Macaroni Rice Navy Beans Potatoes Onions Cabbage Beans, baked Canned Corn Canned Tomatoes Sugar Tea Coffee Prunes Raisins Oranges	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

The fall in retail prices, which began in June 1920, continued throughout January and February. At the end of February the general level of prices stood at 58 % above the 1913 level, as compared with 119% above that level in June and July, 1920.

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EMPLOYMENT AND UNEMPLOYMENT

A New Survey of Industrial Employment in the United States

THE Employment Service of the United States Department of Labor has recently inaugurated an "Industrial Employment Survey", in order to meet the growing demand for the regular collection, analysis, and presentation of current information about employment throughout the country. The first survey, begun on December 15, 1920, was completed on January 15, 1921, and the results have recently been published in the Industrial Employment Survey Bulletin No. 1. The country is divided into nine districts, each in charge of a District Director. The nine districts are as follows :—

No.1	• • • • • • • • • • • • • • •	New England.
2		Middle Atlantic.
" 3		East North Central.
$^{\prime\prime}$ 4		West North Central.
"5	• • • • • • • • • • • • • • •	South Atlantic.
" 6		East South Central.
" 7		West South Central.
" 8	• • • • • • • • • • • • • • •	Mountain District.
" 9	• • • • • • • • • • • • • • • •	Pacific District.

The figures given in this first survey are of two kinds :—
(a) Comparison of numbers employed in January 1921 with those employed in January 1920, for 35 States and the District of Columbia ;

(b) Estimated volume of unemployment in 182 principal industrial cities, having a total population of $32\frac{1}{2}$ millions.

The data are based, according to the *Bulletin*, "on the consensus of figures from neutral bodies, State labor departments, State Commissioners of Manufactures, employment exchanges, workmen's compensation boards, employers' organizations, trade unions, and all other sources competent to furnish authoritative information. All the information has been checked or confirmed by consultation with other authorities, in order that judgment may be formed as to the accuracy of the figures".

COMPARISON OF NUMBERS EMPLOYED

The following table shows, for the States for which information is available (viz 36^1 out of 49.), the numbers employed in January 1920 and January 1921, for eight groups of trades.

i.	Jan.	1920	Jan.	1921		
	Numbers employed	Percentage of total	Numbers employed	Percentage now employed		
1. Metals, machinery, electrical goods, and foundry						
products	2,870,956	30.5	1,997,862	69.5		
2. Building trades	1,067,572	11.4	508,322	47.6		
3. Packing and food products 4. Textiles. clothing.	1,111,421	11.8	900,941	81.0		
hosiery, under- wear	1,819,596	19.4	1,175,086	64.5		
goods, boots and shoes	417,209	4.4	271,931	65.1		
6. Automobiles and accessories	780,340	8.2	240,413	30.8		
box, packing- case, etc	793,424	8.4	538,766	67.8		
8. Clay, glass, cement and stone pro- ducts	541,482	5.8	437,327	80.7		
Total	9,402,000	100.0	6,070,648	64.5		

TABLE I. -- STATE OF EMPLOYMENT BY INDUSTRIES, JANUARY 1920 TO JANUARY 1921.

The table shows a decrease of 3,331,352 for the 36 States. In the case of the remaining 13 States employment figures for January 1920 and January 1921 were unobtainable, but

'Throughout this article the District of Columbia has been counted as a State. figures of the number of work-people estimated to be unemployed have been obtained for the chief industrial cities; these indicate a total of 142,114 unemployed. This figure added to the above total of 3,331,352 gives, to quote the *Bulletin*, a figure of "3,473,446 less workers employed in industry in January 1921 than in January 1920 out of 9,402,000, or a reduction of 36.9 %" (*Bulletin*, No. 1, page 2).

This statement, however, suggests some points for comment. First, it is to be noticed that the figure of decreased employment (viz. 3,473,446) relates to 49 States, while the figure of the number employed in January 1920, with which it is compared (viz. 9,402,000), relates to 36 States. The figures in the above table show that 64.5% of the numbers employed in January 1920 in the eight groups of trades were still employed in January 1921 i. e. a reduction of 35.5%.

Secondly, the figures do not give an indication of the reduction of numbers employed "in industry"; for the above survey covers only the eight large industrial groups set out in Table I. No figures are given showing the changes in employment in transport, paper and printing, public services, or mining and quarrying. Agriculture also is entirely omitted.

The total population engaged in wage-earning occupations in the United States at the present time is probably about 45 millions. The numbers covered by the survey amount to nearly $9\frac{1}{2}$ millions or 20%. Agriculture alone, the greatest industry in the United States, probably employs nearly 10 million work-people. As more than half the population of the United States was engaged in the industries not included in the survey, the results of the survey cannot be said to be representative of industry as a whole. Contraction in one industry may be set off by expansion in another, and it is not possible with the existing data to give any estimate of the total decrease in employment in the U. S. A. since January 1920.

Finally, no attempt has been made to show how far the numbers reported as employed are representative of the total numbers employed in the industry; e. g. in New York State the figures cover over $1\frac{1}{2}$ million work-people, apparently the whole of the factory workers of the State, while for other States the proportion covered varies considerably; e. g. the report on the State of Wyoming includes a total of only 470 employed persons.

ESTIMATES OF UNEMPLOYMENT

The number of persons estimated to be unemployed, for 182 industrial eities with a total population, in January 1920, of 32 $\frac{1}{2}$ millions, is estimated at 1,802,735. The following table gives the figures for the cities with populations of over half a million.

TABLE II

ESTIMATED UNEMPLOYED IN CITIES OF OVER 500,000 POPULATION.

City	Population	Estimated No. of Unemployed
New York Chicago Philadelphia Detroit Cleveland St. Louis Baltimore Boston Pittsburg San Francisco Buffalo	5,621,157 2,701,705 1,823,158 993,737 796,836 772,897 733,826 748,060 588,193 508,410 506,775	$\begin{array}{c} 234,243\\ 86,000\\ 70,000\\ 160,000\\ 81,000\\ 49,350\\ 39,565\\ 25,000\\ 12,500\\ 13,000\\ 35,000\end{array}$
Total, 182 cities	32,560,953	1,802,755

Presumably these estimates of the members unemployed have been obtained from business men, employers' and workers' organizations, employment bureaus.

The reliability of these estimates, no doubt, varies considerably from town to town. The estimates themselves are given in some cases in thousands, in some cases in hundreds, and in some cases to the nearest unit. For example, for the City of New York, with a population of over $5\frac{1}{3}$ millions, the number is "estimated "to the nearest unit, viz. 234,243, while for Philadelphia, with a population of nearly 2 million, it is given in tens of thousands, viz. 70,000. However, the figures of both Tables, I and II reflect the great depression which undoubtedly exists in the United States at the present time. It is particularly acute among the industrial States in the East North Central District, comprising Ohio, Illinois, Indiana, Michigan, and Wisconsin, and least in the Middle Atlantic, comprising NewYork, New Jersey, and Pennsylvania. In the former district a large number of workers are engaged in the automobile industry, especially in Detroit (Michigan) and Cleveland (Ohio), where the depression is most serious.

As this is the first Industrial Employment Survey undertaken by the Employment Service of the Department of Labor, the results, as indicated above, are not as complete as it could be desired. It is, however, the first attempt to give a survey of industrial employment for the whole of the United States, and as such it is an important development. It is hoped, in the next and subsequent monthly issues, to extend the data to include 231 industrial cities and to add statistics of employment exchanges and of immigration. It is only an initial step in a large undertaking, the object of which is to supply a business barometer not now available, viz. the translation of employment facts into business policies.

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HOURS OF WORK

Attendance of Workers in Moscow Factories

THE Moscow Section of Labour Statistics, which is part of the Commissariat of Labour, has published in the *Economitcheskaia Jizu* (October 16, 1920, 231) an extremely interesting article, containing the results of a statistical investigation on the number of days worked by the workers employed in the Moscow factories, from the month of October 1919, to June 1920.

It is a well-known fact that the productivity of labour in Russia has considerably decreased, owing not only to the decline in the physical strength of the workers, and to the replacement of skilled by unskilled workers, but also to the fact that non-attendance of workers at the factories has considerably increased. The results published by the Moscow Section of Labour Statistics bear on the last-mentioned factor. It is the first statistical study of this kind published in Russia under the present régime.

For this work, the same cards were used as are used for recording the supply of labour. The cards are filled up by the workers and by the factory managers in the different Moscow factories. The number of workers covered is from 25 to 30 per cent. of the whole number of workers in the town of Moscow. The monthly results are tabulated according, to the different industries and also according to the size of the factory.

A. NUMBER OF DAYS WORKED PER MONTH

The general results are shown in the following table, which gives the average number of days per worker worked in each month.

TABLE	Ι'	
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		1919		1920					Ave:'-	
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	age
Textile Industry . Metal Industries . Other Industries . Average in all In- dustries	$13.0 \\ 19.3 \\ 22.5 \\ 18.8$	13.7 16.4 19.1 16.4	$14.7 \\18.2 \\20.5 \\17.8$	$13.0 \\ 13.0 \\ 16.3 \\ 14.6$	$13.0 \\ 15.9 \\ 17.1 \\ 15.5$	$\begin{vmatrix} 14.0 \\ 17.5 \\ 18.5 \\ 17.4 \end{vmatrix}$	$13.4 \\ 15.4 \\ 16.0 \\ 15.2$	13.517.718.717.6	$ 18.5 \\ 20.3 \\ 19.9 \\ 19.8 $	13.9 17.1 18.7 17.0

From this table it is seen that the number of days worked per worker was on the average 17, varying between 13 and 22 days. It is also seen that the number of days worked is lowest in the textile industries and highest in the group of "other industries".

The next table gives the same information according to the size of the factories :---

	1919			1920						Aver-
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Мау	June	age
 I. Factories employing up to 50 workers II. Factories employing from 50 to 500 workers . III. Factories employing above 500 workers	22.4 19.8 17.7	19.4	20.9 19.7 16.3	15.1	17.6 16.9 14.8	19.8 18.9 16.3	17.2	20.0 18.3 16.9	20.9 20.3 19.4	19.1 17.9 16.3
Average	18.8	16.4	17.8	14.6	15.5	17.4	15.2	17.6	19.8	17.0

TABLE II

The above table shows that the larger the factory, the smaller the number of days of actual work, the average falling from 19.1 for the smallest group to 16.3 for the largest. In none of the largest sized factories has the number of actual working days been above 20; in many cases the number of working days has been less than 15.

' Tables I-IX refer to Moscow industries; tables XIa and XIb to Petrograd Factories.
B. CAUSES OF NON-ATTENDANCE

What are the causes of this considerable loss of work? A first cause is stated to be the *closing of the factory* due to lack of raw material. The loss in working days for each month due to this cause is given in the following table for the three groups of industries.

		1919				19	20			Aver-
	Ģct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Мау	June	age
Textile Industries . Metal Industries . Other Industries .		8.1 0.4 0.5	5.9 0.1 1.3	4.3 0.5 0.7	5.9 0.0 1.9	5.6 0.0 0.7	0.9 0.0 0.4	4.8 0.4 0.4	1.6 0.0 0.4	5.1 0.2 0.7

TABLE III

The above table shows that the loss of working days due to the closing of factories is very unequal in the several industries. It is especially high in the textile industries, and very low in the group of metal industries, and it varies also from one month to the other, being considerably higher in the winter months than in the summer months. On the whole, however, the loss of working days due to this cause is very small as compared with the total loss of working days indicated by Tables I and II. Here again the statistics reveal that the loss of work is higher in the larger factories than in the smaller ones, as the following table shows.

TAPLE	IV
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	1919		1920					Aver-		
•	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	age
 I. Factories employing up to 50 workers II. Factories employing from 50 to 500 workers III. Factories em- 	4.5	4.2	2.7	4.5 4.2	3.6 2.6	1.3	1.6	0.9	0.2	1.6 2.5
ploying more than 500 workers	10.3	10.2	6.9	4.4	6.7	8.1	0.7	7.5	2.8	6.4

A second cause of loss of work are holidays and free days. The following table gives the number of working days thus lost :—

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1	υ
	_

		1919	-		•••	19	20			Aver-
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	age
Textile Industries . Metal Industries . Other Industries .	$3.8 \\ 4.7 \\ 3.2$	$6.0 \\ 6.5 \\ 6.1$	$4.1 \\ 4.2 \\ 4.1$	$8.5 \\ 10.7 \\ 9.8$	4.8 5.1 5.0	$5.8 \\ 6.1 \\ 6.2$	8.7 8.7 8.8	7.87.26.9	$\begin{array}{ c c }\hline 3.7\\ 4.0\\ 4.9 \end{array}$	$6.0 \\ 6.4 \\ 6.1$
Average	3.8	6.2	4.1	9.5	5.0	6.1	8.7	7.1	4.1	6.1

TABLE V

In general, one can see that the average loss of work of six days per month due to holidays and free days is not above the normal loss, which occurs in all countries and in all periods. It must, however, be noted that, from this point of view, the factories in Moscow are in a more favourable position, as the number of holidays is in this town restricted to the minimum possible; in the country, on the contrary, the number of holidays is considerably higher, but statistical data are not available for this purpose. The average loss in the several industries is remarkably similar for each month and for the total of the nine months. For each of the industries it is highest in the months of January and April, (probably the Christmas and Easter holidays), and lowest in October and June.

There is, finally, a third group of causes occasioning loss of working days. This is the worker's *absence from work for various individual reasons*. The average loss due to this cause is as follows; separate monthly figures are not available.

	No. of Days
Textile Industries Metal " Other "	$5.6 \\ 6.8 \\ 5.0$
Average	5.5

TABLE VI

In general, it can be said that, for the nine months from October 1919 to June 1920, each worker was, on an average, absent from his work for individual causes, 5.6 days in the textile industries, 6.8 days in the metal industries, 5.0 days in the other industries, and 5.5 days for an average of all industries. The metal industries therefore show an abnormally high loss of working days due to voluntary absence of the worker from the factory. Comparing the factories of different sizes we get the following table :---

77

		1919			•	19	20			Aver-
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	age
 I. Factories employing up to 50 workers II. Factories employing from 50 to 500 workers. III. Factories employing above 500 workers 	5.4 5.5 6.0	4.8 5.0 4.9	4.4 5.7 6.9	4.4 4.9 5.1	5.0 5.1 5.5	4.9 5.4 6.2	4.2 5.5 5.8	3.7 5.0 5.1	5.2 5.7 5.5	4.7 5.3 5.7
Average	5.7	4.9	5.6	4.8	5.2	5.5	5.2	4.6	5.5	5.5

TABLE VII

This table proves that the average loss of working days per worker on account of individual reasons, i.e. what might roughly be called voluntary absence, also increases with an increase in the size of the factory.

The term "voluntary absence" includes the following causes: leave of absence granted for just cause; for the fulfilment of social duties (membership of organizations, delegations, and so forth); periodical leave of absence; illness; absence without just cause.

The proportion of loss of working days due to each of these causes separately is given in the following table, which represents the monthly average for each worker during the nine months above-mentioned :—

_	Textile Industries.	Metal Industries.	Other Industries.	Average.
On account of social duties	1.1	1.5	0.8	1.0
Periodical leave of absence	0.1	0.2	0.3	0.2
ment	1.4	1.9	1.9	1.8
cause	0.6	0.5	0.4	0.5
just cause	2.2	2.8	1.6	2.0
Total	5.6	6.8	5.0	5.5

TABLE VIII

The greatest voluntary loss is due, as is seen from the above table, to absence from work without just cause, and on account of social duties. The average on these two counts is highest in the metal industries.

Absence without just cause forms a very high perceentage of the total amount of absence, being 39.6% in the textile,

40.3% in the metal, and 31.1% in other industries, with a general average of 37%.

Another important cause of absence is disease and confinement (women). For each worker there is an average monthly loss under this item amounting to 1.8 days; the larger the factory the higher the average. This means that in a year each group of 100 workers loses on an average 2,100 days of work. This loss is considerably higher than the one anticipated by the Commissariat of Social Insurance, and is considerably higher than the loss existing before the war. when, in the 13 central insurance institutions of Moscow, the ascertained average was 532 days of illness for each group of 100 workers, in the other insurance funds 793, while in the district insurance funds of the Province of Moscow the number was 1,027 days. The loss of 2,100 days of work is more than double that of the highest loss which existed in the period preceding the Revolution, and probably includes a large proportion of shammed illness.

The general results of the inquiry are summarized in the following table. The total number of days in the nine months was 274, an average of 30.4 per month.

	Textile Trades	Metal Trades	Other Trades	All Trades
Days worked Days lost	13.9	17.1	18.7	17.0
(1) due to closing of factory	5.1	0.2	0.7	1.8
(2) due to non- days	6.0 .	6.4	6.1	6.1
sence	5.4	6.8	5.0	5.5
Total	30.4	30.4	30.4	30.4

TABLE IX

The chief facts may also be summarized as follows :---

- (1). The number of lost days in the Moscow factories, and particularly in the textile and metal factories, is comparatively high.
- (2). The considerable number of lost days in the textile industry is largely due to the frequent closing of the factories from want of raw material; the larger the factories, the greater the number of days lost on this account.
- (3). In the metal factories the high average of lost days is mostly due to the number of those who absented themselves from work without just cause, or on account of illness.

(4). Illness is a very important factor, and the average number of days lost on this account is considerably higher than the average established for the period preceding the Revolution.

* *

For purposes of comparison, the following figures relating to absenteeism in Petrograd factories, taken from the *Krasnaya Gazeta* of November 13 last, are given. No information however, is available as to how they were drawn up; moreover, they relate to a much shorter period than these given by the *Ekonomitcheskaia Jizu*. Again, while the first article is a careful review of the subject by a competent authority, the second is more in the nature of a popular survey. In the main, however, the figures will be found to agree.

	Voluntary	Sickness	Total
	Absence	Absence	Absence
Land workers	$\begin{array}{c} 3.1\\ 1.1\\ 4.0\\ 2.8\\ 2.8\\ 4.2\\ 6.0\\ 5.4\\ 7.4\\ 7.3\\ 11.3\end{array}$	$2.5 \\ 7.2 \\ 4.3 \\ 6.5 \\ 6.6 \\ 6.5 \\ 6.1 \\ 7.4 \\ 8.7 \\ 13.2 \\ 11.7 $	5.6 8.3 9.3 9.4 10.7 12.1 12.8 16.1 20.5 23.0

TABLE X a

The Krasnaya Gazeta observes that the percentage in such trades as needle and leather workers, which are in no way injurious to health, is suspiciously high when compared with textile and chemical workers, and that this should receive the attention of the Medical Control Commission². Another factor suggested as contributing towards the increase of absenteeism in certain trades, such as tailoring, bootmaking, metal work (including locksmiths' and fitters' work), is the possible tendency of the workers to practice their callings illicitly in the open market. The low percentage of absenteeism shown in the case of land and food supply workers is put down to the favoured position these workers enjoy as regards their own food supply.

A second table is given for the following period from September 22 to October 17. This table includes figures for leave of absence :—

⁽²⁾ A body which deals with the distribution of labour according to the physical capacities of the worker.

	Voluntary Absence	Sickness Absence	Leave of Absence	Total Absence
Land workers Food supply work- ers Textile workers Wood workers Railway workers Water transport Chemical workers Communal workers Paper workers Metal workers Leather workers Needle workers	$1.5 \\ 1.0 \\ 3.6 \\ 5.2 \\ 4.4 \\ 5.9 \\ 2.8 \\ 5.0 \\ 9.3 \\ 8.0 \\ 5.6 \\ 11 5$	1.7 5.1 5.6 4.0 6.0 4.8 8.4 7.3 5.3 7.1 12.4 13.2	1.2 3.4 4.8 2.9 2.7 2.7 2.3 6.4 3.7 1.7 2.8 3.3	4.4 9.5 14.0 12.1 13.1 13.4 13.5 18.7 18.3 16.8 20.8 25.7
Average	5.3	6.7	3.3	15.3

TABLE X b

The report notes that the total percentage of voluntary absence has increased by 3% over that obtained for the previous period, and states that, though there has been an apparent decrease in absence through sickness, absenteeism continues and more energetic means should be taken to cope with it. The paper workers show an increase which might be ascribed to fuel shortage, or to the fact that the greater number of paper factories are to be found, not in Petrograd, but in the surrounding country districts, which might constitute an attraction to workers to absent themselves in favour of field Considering the figures week by week, the Krasnaya work. Gazeta finds that, from October 4 to 10, the voluntary average is 4.7 %, the sickness average 6.5 %, with a total absence from all causes of 14.1 %. A propaganda week in aid of the Western front having been conducted during the week following, the number fell, but rose again during the succeeding week to 15 %. It is pointed out, however, that on the whole, absenteeism shows a slight decline. The leather workers show an improvement, and, during the last two weeks of the period under consideration, only 3% of the total number were absent. The metal workers show no improvement. There are estimated to be 22,600 of them in Petrograd, and that of that number three-fourths, or 17,000 only, were at work.

Finally, the Krasnaya Gazeta gives two sets of figures for November 23; communal workers, during the preceding week, are shown to head the total of absenteeism with 29%of absentees, while textile workers have 15%. No explanation of these figures is given, but in the case of the textile workers it may safely be assumed that lack of raw materials and fuel must have played an important part.

INDUSTRIAL HYGIENE.

Industrial Tuberculosis and the Problem of Factory Dust.

The virulence of the germ and the resistance of the organism are the two factors, which in tuberculosis, as in all infectious diseases, determine the origin and the development of the disease. The effects of the operation of these factors are obvious, though their existence and especially their modifications are not always immediately evident. There are certain circumstances, however, in which the pathogenic conditions of tuberculosis appear with extreme clearness. This is the case in certain industries, in which one constant factor is found, namely, the presence in the atmosphere of fine particles of mineral and metallic dust, which are associated with an excessive incidence of deaths due to respiration diseases, an excess so enormous that it cannot be considered as a coincidence, but must be regarded in its relation of cause and effect.¹

RELATIONS BETWEEN DUST AND RESPIRATORY DISEASE IN CERTAIN OCCUPATIONS

At all times, excessive incidence of tuberculosis among workers exposed to certain types of atmospheric dust has been noticed. Many authors have drawn attention to this point²; in more recent times, the statistics of industrial tuberculosis among steel grinders at Sheffield (England) and at Solingen (Germany) have supplied interesting data on this problem.

The data obtained in regard to the prevalence of occupational disease in different countries and at different periods of time must be interpreted with the greatest caution, on account of the fact that industrial processes differ so widely and change so frequently.

During the last decade, three important studies have been made in the United States on the absolute and proportionate

6

⁽¹⁾ The Journal of Industrial Hygiene publishes in its issues of January and February, 1921, an elaborate study of this question by Messrs. C. E. A. Winslow and Leonard Greenburg, which is summarized in this article.

⁽²⁾ GEORGE AGRICOLA, De Re Metallica; THACKRAH, The Effects of the Principal Arts, Trades, and Professions of Health and Longevity.

ratio of the death rate from industrial tuberculosis and on the relations which exist in different industries between mortality due to tuberculosis and that due to other causes. The first of these is contained in the *Bulletins* of the United States Bureau of the Census, giving the proportionate mortality, by occupations, for the population of the registration area for 1908 and 1909. The second is a *Bulletin* of the Metropolitan Life Assurance Co., by. L. I. Dublin (*Bulletin* 207 of the U. S. Bureau of Labor Statistics). The third is a work by F. L. Hoffman, of the Prudential Assurance Co. of America, published in 1918 as *Bulletin* 231 of the United States Bureau of Labor Statistics.

According to Dublin, the percentage of deaths due to tuberculosis is 33.8% for the ages from 15 to 18; 40.9% from 25 to 34; 32.9% at 65 and over; and 20.5% for all ages over 15.

The following table of the Prudential Assurance Co. shows the figures of mortality from tuberculosis in a certain number of occupations.

CASES OF DEATH FROM TUBERCULOSIS IN OCCUPATIONS WHICH ARE EXPOSED TO METALLIC OR MINERAL DUST

			Ag	es		
	15-24	25-34	35-44	45-54	55-64	15 & over
All Workers	33.2	40.9	32.9	19.0	• 8.8 ·	20.5
Brick, Tile, & Terracotta						1
Workers	22.9	35.3	19.8	18.6	10.7	15.6
Iron & Steel Workers .	30.0	34.1	31.1	14.7	8.7	21.0
Plasterers	34.5	43.6	40.4	23.5	11.8	21.9
Moulders	23.7	40.4	30.7	21.6	13.9	23.0
Paper Hangers	35.1	44.0	42.5	15.7	11.5	29.1
Jewellers	50.9	58.3	45.3	21.2	11.1	29.3
Glass Blowers	45.1	53.3	31.3	28.3	15.4	32.1
Other Glass Workers .	31.5	51.1	34.4	23.1	15.5	30.5
Tool and Instrument .						
Makers	37.5	52.7	36.9	33.7	10.4	31.9
Potters	31.2	49.6	39.8	30.2	21.1	32.2
Marble & Stone Cutters	38.3	51.1	44.4	39.0	26.7	33.6
Brass Workers	58.2	51.0	43.8	24.2	16.1	36.7
Compositors and Type					· ·	}
Setters	46.3	55.9	41.1	24.9	9.8	36.8
Pressmen	42.9	47.7	44.0	20.0	11.1	39.6
Polishers	43.4	56.1	44.0	24.9	14.3	36.8

(per 100 deaths from all causes)

When comparisons are made between a dusty trade and an average group of persons of as nearly as possible the same general social and economic status, there must always be a large measure of doubt in regard to the significance of high tuberculosis ratios. Ratios, as distinct from rates, depend

82

INDUSTRIAL HYGIENE

on two independent variables, and a high ratio of tuberculosis deaths to total deaths may be produced by a low mortality from other causes as well as by a high mortality from tuberculosis. Whenever possible, deductions with regard to mortality must be controlled by determination of actual death rates.

In England, numerous statistics are available which indicate that in many industrial employments high tuberculosis ratios are associated with high tuberculosis rates. The following table illustrates these facts :---

MORTALITY DUE TO PULMONARY TUBERCULOSIS

AND TO OTHER CAUSES IN OCCUPATIONS EXPOSED TO METALLIC DUST

		All	Worke	rs	Occupations exposed				
	Deatl	hs per	1000	Percent		to metallic dusts			
Ages		Tu-	Other	age due	Dea	ths per	1000	Percent.	
	Total	bercu- losis	causes	to tuber- culosis	Total	Tuber- culosis	Other causes	due to Tuber.	
15—19	2.4	0.5	1.9	22	2.7	0.7	2.0	27	
20 - 24	4.4	1.5	2.9	35	5.3	2.7	2.6	52	
25 - 34	6.0	2.0	4.0	34	6.3	3.3	3.0	53	
35 - 44	10.2	2.7	7.5	27	11.7	5.07	6.7	43	
45 - 54	17.7	3.0	14.7	17	21.0	5.0	15.8	25	
55-64	31.0	2.2	28.8	7	36.0	3.0	32.1	11	
65 & over	88.4	1.1	87.3	1	95.5	1.5	94.0	2	

This shows, in particular, that the ratio of tuberculosis deaths to total deaths indicates an actual excess death rate from tuberculosis of 1 to 2 persons per 1,000 of the population. At the later age periods, the death rate from causes other than tuberculosis among the workers exposed to the influence of metallic dusts is well above the normal rate.

In Sheffield in 1910 it was shown, for example, that the mortality from pulmonary tuberculosis among grinders was 14.8 per 1,000 for the age of 18 and over, a very high figure compared with that of 2.7 for all other workers of the age of 20 and over. The corresponding death rate from other causes was 15.1 per 1,000 for grinders and 13.7 for other The ratio of tuberculosis deaths to total deaths workers. was 49% for grinders and 16% for other workers. Even in an industry like the pottery trade³, which is generally considered to be one of the industries most affected with plumbism, lead poisoning is far less important as a factor in the death rate than is industrial tuberculosis. In the pottery industries in Staffordshire, among 5,299 workers exposed to lead poisoning, there was an annual death rate

⁽³⁾ Report of the Departmental Committee on the Dangers attendant on the Use of Lead and the Danger or Injury to Health arising from Dust and other Causes in the Manufacture of Earthenware and China.

of 4, or 0.8 per 1,000, while of 21,000 workers exposed to pulmonary tuberculosis and other respiratory desases, there were 144 deaths per year, or 7 per 1,000.

In the United States some statistics on this subject have been published in a Bulletin on Tuberculosis in the United States, prepared by the Bureau of the Census for the meeting of the International Congress of Tuberculosis held in Washington in 1908, which gives the highest and lowest mortality figures. The mortality per 1,000 is 2.36 for all workers. It increases to 5.4 for marble and stone cutters, to 4.76 for cigar makers and tobacco makers, to 4.34 for compositors and printers, 4.3 for servants, 3.9 for bookkeepers, clerks, and copyists. It decreases to 1.2 for railways workers, 1.2 for miners and guarrymen, 1.1 for farmers, planters, and farm labourers, and to 0.9 for bankers and officials of companies. The absence of an analysis by age periods detracts seriously from the value of these results, as does the fact that the occupational groups are often loosely defined. The high rates among miners, compositors, printers, bookkeepers, clerks, and copyists, and the low rates among bankers and brokers, are no doubt in large measure due to the age. composition of the respective groups. In the high rate among servants, the racial factor most certainly plays an important part. Important data have recently been presented in the Second Preliminary Report of the Committee on Mortality trom Tuberculosis in Dusty Trades (New York, 1919), which shows that the death rate from industrial tuberculosis in the quarry districts of Vermont varied from 0.19 per 1,000 to 2.336 per 1,000 during the years 1906-15. The normal death rate is 0.9 per 1,000 in the State of Vermont ; it increases to 0.971 and 1.49 in the marble districts, from 1.11 to 1.76 in the slate centres, and from 1.43 to 2.33 in the granite cutting districts.

The most comprehensive study of this kind which has yet been completed was conducted by Dr. Herbert Drury of the Department of Public Health of the Yale School of Medicine, who deals with the incidence of tuberculosis among the employees of an axe factory in the State of Connecticut. The following figures are among the most interesting collected on this subject. The death rate from tuberculosis is 1.5 per 1,000 in the State of Connecticut; it increases to 2.0 per 1,000 in an axe factory district, to 6.5 for axe factory makers, to 19.0 per 1,000 for polishers and grinders, while it is only 1.6 for the other axe factory workers. It must be added that the polishers and grinders, among whom the tuberculosis death rate is already very high, have also a very high mortality from pulmonary infection. For the period 1900 to 1919 the figure was 4.7 per 1,000, when it was only 1.7 for the other employees in the factory.

The most exhaustive results on the symptomatology

and anatomo-pathology of industrial tuberculosis are presented in the report Silicious Dust in relation to Pulmonary Disease among Miners in the Joplin District, Missouri, and the reports of the South American Commission on phthisis and pulmonary tuberculosis among miners. The first effect of mineral dust is to produce a chronic disease of the lungs, characterized by progressive fibroid changes in the lung tissue and pleura, and accompanied by chronic catarrhal processes in the respiratory passages. In the later stages tuberculosis becomes super-imposed upon this condition and the type of the disease becomes that of a tuberculosis infection in a fibroid lung. It is, of course, possible to find the condition of pneumoconiosis, without tuberculous infection. In the examination of 720 miners, Dr. Lanza reports 5% as suffering from tuberculosis without evidence of injury from dust, 46% as suffering from pneumoconiosis without evidence of tuberculous invasion, and 15% as suffering from miners' phthisis with pneumoconiosis. on which the specific infection of tuberculosis had been superimposed. It should be pointed out in passing that pneumoconiosis by itself is rarely a fatal disease, and that old miners had lungs so damaged by fibrosis that they were incapable of the least additional respiratory effort, while otherwise hale and hearty. As a rule, however, tuberculous infection follows in time.

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Certain industries have a specific influence on the development of industrial tuberculosis. It is an interesting fact that those forms of industrial tuberculosis, in which there is a heavy incidence, are those in which the industrial dust in question is made up of crystalline rock. Silicosis lies at the base of miners' phthisis, and is probably the general factor in tuberculosis among axe grinders, although steel dust probably plays an important part in the aetiology of the disease.

Evidence exists to show that the presence of dust in the lung tissues, and even the development of marked fibrosis, do not tend to predispose to tuberculous infection. Such is the case, for example, in line and cement dust. The most striking example, however, is that of coal dust, which appears to exert a protective influence against the invasion of the tubercle bacillus. This appears, on the other hand, to favour a very high mortality from acute respiratory diseases, but the death rate from tuberculosis among coal miners is remarkably and uniformly low. In a mining district of Pennsylvania the death rate from pulmonary tuberculosis varies between 0.75 and 1.1 per 1,000; for the other forms of tuberculosis from 0.16 to 0.19, and for other respiratory diseases 1.84 to 2.61.

•In Great Britain, the comparative mortality figures from tuberculosis, for the period 1900-1902, were as follows: —

1.86	\mathbf{per}	1,000	for	all workers
1.85	_,,	` , ,	"	coal miners
8.38	"	"	"	tin miners

Up till now no satisfactory explanation exists of the reasons why, according to the dusts from which they arise, certain fibroses predispose to tuberculous infection, while others exert a protective influence.

The most easily predisposed industries are those in which the workers are exposed to the absorption of large quantities of crystalline dust : metal mines, quarries, pottery manufacture, and grinding. Other industries, however, involving a comparatively slight exposure to dust, such as boot and shoe manufacture and the textile industries, are exposed to industrial tuberculosis.

METHODS TO DETERMINE THE DUST CONTENT OF THE ATMOSPHERE.

It seems evident that the exact determination of the dust content of the atmosphere is absolutely necessary, in order to estimate the extent of the hazard involved in various industrial processes, and to estimate the efficiency of various protective devices, which may be introduced for the mitigation of the dust hazard. The desideratum is a method which will give, with reasonable accuracy, the number of dust particles of a diameter between 10 microns and 1 micron. The weight of dust present is interesting, but much less important than the number of dust particles, since one very large particle (over 12 microns) will be less injurious to the lung tissue than a number of smaller ones.

There are three methods in use at the present time: The Palmer water spray apparatus, the Kotzé konimeter, and the Bill electrostatic method⁴. At the present time, the Palmer method is the one most in use.

k (4) Dr. Vernon Hill's dust counter consists of an exhaust pump for producing the movement of the air and a small capsule or shield fixed at the end of the pump, carrying a cover-glass covered with adhesive material for catching and retaining the dust. The air to to be sampled with the Palmer apparatus is drawn through water in a shallow trap at such a rate as to break the water up into a fine shower of spray in a glass bulb above, and this spray retains the dust in the air and finally washes it down into the trap. After the completion of a run, the dust which has accumulated in the water may be estimated by direct microscopic enumeration of the number of particles in a Sedgwick-Rafter cell and by weighing the dust after filtration through a special apparatus.

The Kotzé konimeter is based on exactly the same principle as the Hill dust counter, but the diameter of the nozzle through which the air passes is very small, and the air is drawn through this small opening by a piston rod moved with great rapidity by a brass spring, so that the velocity of the air impinging on the plate is sufficient to give a practically complete sample of even the minute particles of dust.

Dr. Bill's electrostatic apparatus is certainly deserving of most thorough study, but in its present form it is too bulky for ordinary field work. The following figures give an idea of the dust content of air in normal and 'industrial' environments.

The air examined in the country contains per cubic foot a number of particles varying from 5,700 to 59,600, or an average weight of mg. 0.0031 per cubic foot. In towns the figures are from 125,000 to 199,000, with an average of 153,000, which represents an average weight of 0.0012 mg. In an office, the following figures were obtained : 128,000 and 150,000. But the following figures are still more interesting:—

	Average dust particles per cubic foot	Average mg. of dust per cubic foot
Cigar shop	$103,000 \\183,000 \\204,000 \\337,000 \\490,000 \\648,000 \\2,086,000 \\6,791,000 \\15,800,000 \\15,800,000 \\159,779,000 \\$	$\begin{array}{c} 0.0840\\ 0.1300\\ 0.03\\ 0.1352\\ 0.4330\\ 0.0670\\ 0.1277\\ 2.1859\\ 0.4140\\ 7.8050\end{array}$

It is interesting to notice the comparatively slight significance of the determination of the weight of the dust present, which is so markedly influenced by the presence or absence of a comparatively few large particles.

PROPHYLACTIC MEASURES

There are, in general, four different methods in use at the present moment for protecting the worker against the influences of industrial dusts : substitution of wet processes for dry ; the conducting of dust-producing operations in enclosed chambers ; the removal of dust by hoods equipped with exhaust draught ; and the use of respirators and helmets.

(1). The most successful example of the use of moisture for decreasing the danger from atmospheric dust is to be found in the measures taken to protect the worker in the South African Metal Mines.

The use of water is effective in other industrial processes, (wet grinding of white lead, for example). Care must, however, be taken in stating that an industrial process is non-productive of dust for the sole reason that it is a wet process. This effect was emphasized in an axe factory in Connecticut, where the dominant process is wet grinding. The enormous mortality from tuberculosis among workers employed on this proceeding (1,900 per 100,000) is due to the dust produced in the process of wet grinding. The grinding steels at this plant were of natural sandstone, so friable that a stone

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originally 72 inches in diameter was reduced to a diameter of 29 inches in one month.

The efficiency of the use of moisture depends most of all on the details of the process and on the method by which the water is supplied. The only way to determine its efficacy is by a study of the actual dust content of the air.

(2). The isolation of dust producing processes in enclosed chambers has proved notably successful in dealing with poisonous dusts, like that which is encountered in white lead manufacture. Here again, the efficiency of the particular installation depends on the care with which the details of design and operation have been carried out, and the dust hazard can only be determined by actual examination of the air of the workroom.

(3). In cases where the first two processes cannot be employed, a prophylactic measure consists in supplying the machinery, which causes the dust, with special hoods and a system of suction ventilation. The value of the process depends upon the details. The essential conditions for the success of a suction system for carrying off dust are four in number:

> (a) the design of the hoods themselves, so that the point where the dust is generated may be covered as completely as possible, without interfering with the work, and as closely as possible, so that a full suction velocity may be maintained;

> (b) the arrangement of the suction draught, so that it may operate with, and not against, the centrifugal force which throws the dust particle from the wheel;(c) the elimination of all obstacles between the hood and the main exhaust duct which may decrease the velocity; and

> (d) the maintenance of an adequate suction head in the main exhaust duct itself.

Glaring defects in construction are unfortunately only too frequent and render the methods employed useless, if not harmful. Particular attention must be paid at all times to the control of the suction head in the main exhaust duct, for a reduction in suction head is quickly followed by an increase in air dustiness.

(4). In industries such as those of packing and granite and marble working, the sole means of effective protection consists in supplying the workers with respirators. One type filters the dust particles from the air before it is drawn into the respirators, the other type consists of helmets which exclude the dusty atmosphere more or less completely from the mouth. The use of these must be exclusively reserved for cases where no other method is possible. It is all important to determine

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the actual efficiency of the various types of respirators and helmets which are available. Such studies must be made with the particular dust, and under the particular conditions, with which it is desired to deal in practice.

The most extensive studies on this subject have been made at the Institute of Hygiene at the University of Berlin. Kobrak and Scharlowski conducted a series of studies on the different systems of respirators and used bacillus spores as a measure of the purifying effect of the devices examined. In Scharlowski's experiments, the various industrial dusts (e.g. cotton, cement) were intermixed with a suspension of spores and blown into the air of an experimental chamber. A person equipped with one of the protective devices under examination and a control individual with no such protection entered the chamber. The nostrils of both were plugged with sterile cotton in amount sufficient to filter out the dust contained in the air, without interfering too seriously with respiration. At the close of the experiment the cotton was washed in sterilized water and the percentage removal of bacterial spores determined by comparing the amount from the cotton in the nose of the unprotected individual with that in the nose of the individual wearing the respirator. It was assumed that the removal of bacterial spores would correspond with the removal of the dust particles in which they were mingled. The removal effected varied from 11 to 89%, according to the respirators worn. In this series of experiments, it should be pointed out that the errors were very frequent and might lead to false results. Moreover, the assumption that the efficiency of dust removal will vary with the removal of bacterial spores mixed with the dust is a somewhat doubtful one.

A more recent study on the efficiency of respirators is reported by the Miners' Phthisis Prevention Committee of South Africa in its General Report for 1916. 'Nine types of respirators were studied. Before blasting, the mine air contained from 0.028 mg. to 0.28 mg. of dust per cubic foot, and the same air, after passing the various respirators, contained from 0.014 mg. to 0.037 mg. The removal effected by the various types of respirators varied between 30 and 88%. After blasting, the mine air contained from 1.16 mg. to 1.78 mg. of dust per cubic metre, and after passing through the respirators, it contained from 0.368 mg. to 1.78 mg. . The removal effected varied from 0 to 77 %. The results obtained before and after blasting with the same respirator varied widely. For example, one type of respirator effected a 75% removal before blasting, and produced no reduction at all after blasting.

Messrs. Winslow and Greenburg have recently conducted an extensive study into the efficiency of various kinds of respirators, masks, and helmets in the operation of sand blasting of castings and forgings. After expensive research they arrived at the conclusion that it was much easier to exclude the dust from the respirator tract of a worker by maintaining a positive air pressure in a comparatively impermeable enclosure about the head than by attempting to filter incoming air through a close-grained respirator. In certain industries such a method would not be feasible, in others, it may be applied very usefully.

In order to obtain useful results in the control of the industrial dust danger, it is important that standards of a reasonably definite nature should be established, by which the accuracy of protective devices can be judged.

In certain States in America, legislation lays down and makes compulsory a minimum degree of respiration. In Wisconsin, suction in the connection to the hood must be sufficient to displace a column of water 5 inches, in New Jersey, 2 inches. A more valuable standard from the sanitary standpoint would be one based on actual velocity of exhaust at the point of dust production, instead of suction head in the duct below. Such a standard was suggested by the British Departmental Committee on the hazards in the pottery industry, in the form of a recommendation that a speed of 100 linear feet per minute should be maintained at the point of dust production.

The only standard that can be altogether satisfactory to the sanitarian, however, is one that deals directly with the actual condition of the air inhaled by the worker. It is well that certain definite standards should be maintained, but what must be ultimately relied upon in the future is a standard that rests upon the number of dust particles actually contained in the air breathed by the worker.

The Miners' Phthisis Prevention Committee of South Africa was the first to decide to adopt the tentative standard of 5 mg. per cubic metre of air. A second attempt was made by Messrs. Higgins, Lanza, Laney, and Rice in their study of the Joplin Mines; they fixed the standard at 1 mg. per 100 litres of air. Lastly, Messrs. Winslow and Greenburg have attempted to determine practical standards in polishing shops. They consider that, in polishing shops, the suction head in the exhaust pipes should not fall below 5.8maintain an ems. and should average of 7.62cms. The linear velocity of the air should vary between 1,500 and 5,000 feet per minute and should maintain a constant average of 2,500 feet. The weight of the dust should be 0.03 mg. per cubic foot and should not exceed 0.06 mg. In polishing and grinding shops these figures are likely to attain an average of 0.1 mg. as a maximum.

These standards are only tentative and must be subject to revision according to industrial circumstances. They are in any case applicable only to the two industries under consideration. The standards which can be applied in other processes must be determined by similar studies under actual working conditions.

The Health of the British Population judged by the examination of Recruits in 1917 & 1918¹.

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THE VALUE OF THE MEDICAL EXAMINATION OF RECRUITS

BEFORE the war it was difficult for the British Government to obtain an exact account of the health of the population. Statistics were only actually available for contagious diseases, which are compulsorily notifiable, and the authorities could hardly gauge the prevalence of organic disease, or the average physical fitness of the population.

The medical examination of men of military age, however, which was conducted in Great Britain and part of Ireland from November 1, 1917, onwards, in pursuance of the Compulsory Service Act, enabled the British Government to bring all men of military age before medical boards. The facts disclosed by this examination have a more than military or medical significance. The army of yesterday in the United Kingdom forms the greater part of the working population of today, and facts which were of vital importance to the army authorities during the war are of equally vital, and even greater permanent, importance to the student of working-class conditions.

The inquiries of the Ministry of National Service have given a precise and statistical form to ideas, which could previously be expressed only in general terms owing to lack of data. The relation between occupation and health, in a general way always known to exist, is established beyond doubt by the statistics of the average fitness of men belonging to such well-defined industries as coal-mining, agriculture, and textile work. Again, conditions of housing, sanitation, and women's labour were known to influence the health and physique of the workers, but it is only by the compilation and comparison of statistics, such as those now available, that their effects can be justly appreciated.

⁽¹⁾ See Report (Vol.1) upon The Physical Examination of Men of Military Age by National Service Medical Boards, Nov. 1917—Oct. 31, 1918. Ministry of National Service. London, 1920.

The systematic and wholesale examination of men between 18 and 50 in the United Kingdom indicates clearly the standard of health and strength of the population at a given period or point of time. It should also afford guidance for the development and protection of future generations of workers.

GRADES

This examination by medical boards in 1917 and 1918 was conducted on lines entirely different from those which had hitherto been followed.

Previously, the military doctors only accepted perfectly fit men, and classed them in different categories, of an administrative rather than a medical nature, according to the immediate service which they could render in the army. Thus class A. l. included fit and completely trained men; A.2., fit men, whose training was not complete; A.3., convalescents, who had not yet entirely recovered.

But, in view of the growing need of men, it was realized that certain men could be of some service in the army, although not entirely fit. The medical boards also received instructions to class recruits solely according to their physical fitness. This reform, by removing many of the anomalies of the old system, facilitated the collection of sufficient data to allow of a census of men of military age from the physical point of view.

Experience has shown that, from the point of view of physical fitness, recruits can be classed in four grades.

Grade I. Men with the normal degree of health and strength, capable of physical endurance appropriate to their age. These must be men free from any organic disease, deformity, or disability of a serious nature. Minor defects, which can be artificially remedied, do not involve exclusion from this grade.

Grade II. Men excluded from Grade I for various reasons, e.g. partial disabilities. These men should have no sign of progressive organic disease. They should have good hearing and vision, average muscular development, and should be able to undergo a certain degree of physical exertion, not involving excessive strain.

Grade III. Men presenting marked physical disability or signs of previous disease, rendering them incapable of undergoing the physical exertion required for Grades I and II, e.g. men with badly deformed toes, flat foot, certain varieties of hernia, varix etc. Men qualified for clerical or sedentary work also belong to this grade.

Grade IV. All men totally and permanently unfit for any form of military service.

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The war alone has made it possible to collect precise and complete data as to the condition of every man subject to medical inspection, and consequently to a certain extent as to the physical condition of the British people.

CLASSIFICATION BY GRADES

The classification of men in these grades is not as simple as, at first sight, it appears; for physical fitness is not a quality capable of exact measurement, and for military requirements greater importance had to be attributed to certain defects than they would have had from any other point of view.

Undoubtedly, it would be possible to fix index figures for each physical quality capable of exact measurement, (e.g. weight, height, chest, girth) and thus to establish an exact numerical basis for average physical fitness from this point of It is, however, extremely difficult to give a precise view. numerical value to defects of a purely medical nature, since the health of each individual and the condition of his organs varies by imperceptible shades between health and disease. from a slight indisposition to a serious disability. Medical interpretation of objective clinical phenomena cannot be expressed in figures. Nevertheless, a classification even according to military requirements, if it attaches to certain qualities and disabilities a higher value than would be given by a classification according to the necessities of civil life, provides a sound basis of valuation for grading men of military age, and at the same time for assessing the general degree of physical fitness necessary in members of a nation for an active life of value to the State.

From November 1, 1917, to November 1, 1918, National Service Medical Boards examined about 2,500,000 men, graded as follows:-Grade I, 871,769; Grade II, 546,276; Grade III, 756,859; Grade IV, 250,280; total, 2,425,184.

With the exception of Grade IV, which comprises men rejected as totally and permanently unfit for military service, these figures do not represent the exact number of men examined, since the same individual might appear before medical boards several times.

The boards entrusted with re-examination of doubtful cases on appeal only revised 0.4% of the decisions of the first board. This figure represents roughly the margin of probable error in the first medical examination; only experience—the fitness of the recruits to perform the duties expected of them could determine this exactly; but on this point there are no statistics available. It should, however, be noted that under the influence of the increasing need of men, doctors tended to over-estimate rather than under-estimate the physical fitness of recruits, and that, in consequence, these statistics show the health of the population in a light rather favourable than otherwise.

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RESULTS

Examination of the figures quoted above gives rise to the following inferences :---

(1). 36% of the men examined were placed in Grade I. About one in three attained a normal degree of health and strength, and were capable of enduring an amount of physical exertion suitable to their age. 64-65% (two out of every three, or a million and a half men) did not reach this standard.

(2). 22-23 % (one in five) were placed in Grade II, and were judged to be capable only of undergoing such physical exertion as does not involve severe strain.

(3). 31-32% (one in three) were placed in Grade III, and presented marked physical disabilities and such evidence of past disease that they were incapable of undergoing the degree of physical exertion required for the first two categories.

(4). Rather more than 10% (one in nine or ten) were placed in Grade IV and were judged to be totally and permanently unfit for military service.

To summarize: Of nine men of military age, three on an average were perfectly fit and healthy; two presented slightly diminished health and strength, owing to some disability or same failure in development; three were incapable of undergoing more than a very moderate degree of physical exertion, and might almost, in view of their age, be fairly described as "physical wrecks"; the ninth man was a chronic invalid.

The fact must be emphasized that the figures represent not the number of men examined, but the number of examinations conducted. The number of multiple revisions, however, was very small, and alteration of grade was so rare, that on the whole the figures quoted represent with sufficient accuracy the numerical relation between the different grades.

It would be interesting to inquire, however, what proportion of the recruits remained in the grades, in which they were placed by the medical boards, after they had entered the army. In spite of the absence of accurate statistics on this point, it appears that, after their enlistment, men were more often moved into a lower than into a higher grade. It may, then, be logically concluded that the medical boards generally assessed men on examination at more than their real degree of fitness, and only in very exceptional cases at a lower degree. It follows that, if the inferences which may be drawn from the facts and figures furnished by these examinations are at all erroneous, the error will be rather one of over-rating than of under-rating.

It is more important to inquire to what extent the recruits examined between November 1, 1917, and November 1, 1918, may legitimately represent the whole population of military age from the point of view of health and physical fitness. In this connection, no reliance should be placed on the general tendency, which would lead us to believe that the volunteers of the beginning of the war represented more vigorous men. Many of them were rejected soon after their enlistment, and there is nothing to prove that, on the whole, their physical fitness was superior to that of the men examined from 1917 onwards.

Moreover, the Government soon realized the absolute necessity of allotting to each individual the task for which he was the best suited. As the war went on, there came a time when, besides the paramount need for men for the army, there was recognized the no less urgent need for keeping a sufficient supply of labour in munition and other factories. Industries of the first importance were protected by laws and regulations, which left in civil life a certain number of men of the highest degree of physical fitness, e.g. workers in agriculture, mining, shipbuilding, etc. Later, in view of the growing need for fighting men, this protection was to a certain extent withdrawn.

' In the fourth year of the war, the men examined under the Military Service Acts included :

- (1) A large number of remarkably fit men hitherto emin protected industries ;
- (2) Men previously rejected and now called before the tribunals for re-examination;
- (3) Men who were now refused exemption by the tribunals, owing to the increasing demands of the military situation;
- (4) A large number of lads, who had attained the age of 18 years during the war;
- (5) A small number of men between 41 and 51, who became liable for military service under the Military Service Act of April 1918.

It may fairly be deduced that the observations made at the medical examination of recruits in 1917-18 may be taken as a criterion of the health of the male population of military age in Great Britain.

ANALYSIS OF RESULTS

While the facts and indications collected in the course of this great inquiry have not yet been fully analysed and studied, there are already sufficient broad principles and details, to indicate, in general, the nature and extent of the ravages upon the health and physique of the population caused by the progress of civilization in the course of the 19th century. The first question which arises is, what should be considered as the uniform average value of Grades I, II, III, and IV in relation to each other, if the general physical condition of the population is to be regarded as satisfactory? What proportion of men in the higher grades should be found in the total of recruits examined?

On this complex question Professor Keith, who has examined the reports of the Medical Boards, replies as follows:

We have every reason from present inquiries to suppose that physical fitness, the quality which separates men into classes, will be distributed exactly as are certain qualities capable of exact measurement, such as stature. We may take the well-known sample, — 1,000 Cambridge students — who were measured for stature. The students measuring 5 ft. 9 in. formed the largest group of the men measured; 5 ft. 9 in. was the *mean* stature. If we include in Grade I all men of the average height, and also the men above it, we include 56% of the total number. But we may fairly add to Grade I men who are 5 ft. 8 in. in height, being only an inch under the mean. We thus obtain Grade I as far as stature is concerned, which includes 70 % of the men examined.

The 1,000 Cambridge students furnish 70% of recruits, who reach or exceed the average stature of 5 ft. 9 in. We may regard the men of 5 ft. 7 in. and 5 ft. 6 in. as constituting Grade II. They yield us 20%. The men of 5 ft. 5 in. and 5 ft. 4 in. form Grade III, making 7.5%, while those under 5 ft. 4 in. make up Grade IV -2.5% of the total. Thus we expect, if physical fitness is distributed as stature is, that out

Thus we expect, if physical fitness is distributed as stature is, that out of 1,000 recruits, from the point of view of physical fitness, we should obtain 70% of Grade I, 20% of Grade II, 7.5% of Grade II, and 2.5% of Grade IV. In other words, our 1,000 students should, if they are on the whole of normal physical fitness, form a battalion composed of seven companies (of 100 men) of Grade I, two companies of Grade II, three platoons of Grade III = 75 men, and one platoon of Grade IV = 25 men.

Such would, in theory, according to Professor Keith, be the distribution of physical fitness in the population, and these are exactly the figures yielded by the examination of miners at Cardiff and Newport in Wales, and at Wigan and Ashton-in-Mackerfield, in north west England. This method, though excellent for expressing in a concrete manner the degree of physical fitness, is too slow and clumsy to estimate rapidly, from the practical point of view, the relative degree of a given batch of recruits.

Professor Keith proposes the use of an index similar to one used in anthropology. Let us represent, by the coefficient 1, the physical fitness of each individual in Grade I (normal grade); by the co-efficient 3/4 the degree of fitness of a man in Grade II ; by 1/2 that of a man in Grade III; and by 1/4 that of a man in Grade IV. Let us revert to our theoretical example of a group of 1,000 men :

Out of 1,000 men we have

Grade I	700 men,	index	of	physical	fitness	1	=	700
Grade II	200 men,	index	of	physical	fitness	3/4	=	150
Grade III	75 men,	index	of	physical	fitness	1/2	=	37.5
Grade IV	$25 \mathrm{men},$	index	of	physical	fitness	1/4	—	6,25

The battalion of 1,000 men has 893.75 units of fitness out of 1,000, or 89.3 %. The index of fitness of this group will thus be 89.3.

Another example, taken from a particularly bad group of recruits, is as follows :

Grade Grade	I II	$\frac{190}{270}$.	men men	units units	of of	$_{ m fitness}$	=		$\begin{array}{c} 190 \\ 202.5 \end{array}$
Grade Grade	III IV	$\begin{array}{c} 410\\ 130 \end{array}$	men men	units units	of of	fitness fitness	=		$\begin{array}{r}202.5\\32.5\end{array}$
								Total	630

The index of fitness is 63, inferior by 26.3 to the normal mean of Professor Keith.

This factor, the index of fitness, allows the medical service at any moment to measure the quality of the men examined. It is the equivalent of the test of the pulse in clinical work. As soon as the index departs from the normal standard of 89.3, immediate inquiries must be made as to the causes of this variation, to see if they arise from defective working of the medical boards or from the quality of the men examined. There is obviously nothing more difficult than to grade numerical units on a quality which cannot be estimated exactly. The mental standard on which this work of an assessment is based may be accurate, as long as the material examined presents a uniform degree of variation, but so soon as the material begins to vary widely from the usual sample, this mental standard tends insensibly to undergo alteration. Only an index figure can check this natural tendency.

The test proposed is an index of "average fitness" of the population, which is given by the proportion of soldiers in it belonging to Grade I. For a normal population this index is 70%. In some cases it rises to 77%. The average during the month of April 1918 was 54.5%, while in June at Leicester it fell to 19%.

In many cases the ratio of the grades is entirely at variance with the normal curve of frequency. Thus at Leeds, in January 1918, out of 2,027 men examined, the following percentages were reached: Grade I, 24%; Grade II, 15.2%; Grade III, 46.5%; Grade IV, 14.8%.

To account for this phenomenon, there is a choice of four explanations: (1) one might suppose that the population, to which the examination had reference, had previously supplied a large number of Grade I men; (2) the population might show such deterioration that Grade III represents the mean of its physical fitness, occupying thus the apex, instead of the base, of the curve of frequency; (3) the recruits might have been drawn from two sections of the population of unequal quality, a minority of normal physique, a majority presenting an extreme degree of physical deterioration; these classes of the population must have been so different as to attract

7

attention on examination; (4) finally, it might be supposed that it was the result of an error in assessment by the medical boards, who failed to maintain an even standard of judgment in the course of examination of the men. If we had the weights, heights, and chief measurements, it would have been possible to determine exactly which cause was at work in these circumstances. But neither in this case nor in any other are these essential data given.

The duties of the regional commissioners were of the greatest importance, since they provided the Ministry with exact information, explaining how local conditions induced such and such modifications.

By way of example, we will examine the results obtained at two great industrial centres — Leeds and Sheffield. Their industries are different, but as their populations have a common source, one might expect to find similar grading. This is not so, as may be seen from the following tables :—

LEEDS

	Total number examined	۱ %	11 %	111 %	IV %	Index of average fitness		
January 1918 April 1918 · June 1918	$2,027 \\ 5,001 \\ 3,296$	$24.0 \\ 40.5 \\ 12.4$	$15.2 \\ 23.5 \\ 21.3$	$46.5 \\ 31.1 \\ 58.0$	$14.8 \\ 4.9 \\ 8.2$	$62.3 \\ 74.9 \\ 59.4$		
	SHEFFIELD							
January 1918 April 1918 June 1918	$1,049 \\ 8,919 \\ 3,163$	$\begin{array}{c} 41.8\\ 66.0\\ 46.6\end{array}$	$24.8 \\ 17.2 \\ 21.1$	$42.1 \\ 13.6 \\ 22.7$	9.1 3.0 9.5	74.786.476.15		

The first striking point is the physical superiority of Sheffield (79.08), over Leeds (66.1), yet even the Sheffield figures are lower by 10 points than those of the average standard. Still more striking is the difference in the index of Grade I (Sheffield 59.7: Leeds 28.5), or the monthly variation in each town. A rise in Sheffield is accompanied by a similar movement in Leeds. Nevertheless, the curve for Sheffield approaches the normal standard.

Professor Keith concludes from this examination that the facts at Leeds show a very alarming physical state of the majority of the male population of this town, where 7 out of 10 men are unfit to carry arms.

It is desirable that grading results should be entered on special maps, indicating, in each of the districts from which recruits are drawn, the exact nature of the distribution of the population, of the industries of the region, conditions of housing and hygiene, the birth-rate and death-rate. The social and hygienic condition of the population would thus be graphically shown. It would be simple to establish effective average indices of fitness. Given the weight, height, and chest measurement of each individual examined, it would be possible to determine and establish, with those facts, the cause and the nature of physical degeneration.

It would also be necessary to ascertain the principal causes of physical disability, which, by relegating men to Grade IV, represents a loss to the nation, which must be reduced, and which can only be reduced by exact knowledge of the physical disabilities which give rise to it. Thus, it would be of value to know the number of cases of organic disease of the heart, arterio-sclerosis, serious pulmonary disease, epilepsy, statical defects, (e.g. curvature of the spine, flat foot), deformities resulting from accident or disease (e.g. kyphosis, ankylosis of a main joint, or imperfect recovery from fracture).

Moreover, it should be possible, in the course of experience, to check the classification by medical boards, by ascertaining to what extent men classed in Grades I and II have been able to endure the physical strain imposed on them.

In the followings pages this standard is applied to actual returns made by the medical boards, and the extent to which the results of examination of recruits confirm the normal figures adopted is shown.

INFERENCES

It is natural to find good results among men whose occupations involve physical activity, combined with healthy conditions in their work and homes. These conditions are realized among miners and agriculturists.

The subjoined table gives the results of the medical examination of four groups of agriculturists and miners in Yorkshire.

Occupation	Grade I %	Grade II %	Grade III %	Grade IV %	Index of Fitness %
Agriculturists Miners Agriculturists Miners	$74.8 \\76.4 \\71.9 \\68.9$	$ \begin{array}{r} 13.0 \\ 9.4 \\ 15.5 \\ 15.1 \\ \cdot \end{array} $	$9.4 \\ 11.4 \\ 8.8 \\ 10.5$	$2.8 \\ 2.8 \\ 3.8 \\ 5.5$	89.9 89.8 88.8 86.8

Miners and agriculturists had, up to 1917, been largely exempt from military service. The men of these occupations examined are, therefore, approximately typical in health and physique. In their case it will be noted that the index of physical fitness corresponds approximately to the theoretical ratio. This goes further to prove that we may, in practice, adopt this system of the normal mean and Keith's standard, as far, at least, as it is possible to estimate numerically a man's physical fitness, which depends on so many diverse factors, which cannot be assessed with the same exactitude in each case: age, race, occupation, and physical disabilities of all kinds.

It is certainly not too much to ask that of the men of military age in any country there should normally be a proportion of 70% of recruits capable of enduring exertion suitable to their age; this standard, although approximate, will assist us to assess the relative values of the different groups of men examined.

The general result of the examinations conducted during the year throughout the country is indicated by the following figures, which may be compared with the figures which should be given by Keith's standard.

	Grade I	Grade II	Grade III	Grade IV	Total
Actual number in each Grade Per 1,000 men	871,769 359	546,276 226	756,859 312	250,280 103	2,425,184 1,000
Numbers by Keith's standard Per 1,000 men	1,697,595 700	495,040 200	181,902 75	60,647 25 .	2,425,184 1,000

There is an enormous difference between the two sets of figures, and the index of fitness is 70.9, or 18.4 below Keith's mean (89.3).

In round figures, the medical census shows a shortage of 825,000 Grade I men, an excess of 61,000 Grade II men, and an alarming excess of 575,000 Grade III men and 190,000 Grade IV men.

It will be necessary to investigate these results rather more closely, to study the distribution of the disabilities which involve these alarming consequences, in order to discover and determine the nature of their different causes. The data obtained may be grouped in their relation to different classes, occupations, and industries, and in the light of all the factors which might affect them, such as age, physique, occupation, and disabilities.

Whenever this inquiry reveals an appreciable departure from the normal standard, it should be possible, with the help of the facts obtained, to specify its exact causes and consequently to determine the remedies to be applied.

THE RELATION BETWEEN OCCUPATION AND HEALTH

The intimate connection between the occupation and the health of an individual is now generally known. Even the most superficial observation shows the wide variations that exist between the physical fitness of men employed in different occupations.

		Grade I	Grade II	Grade III	Grade IV	Index of fitness
Poor physique. Good physique.	••••	31.6 62.7	18:2 17.8	$36.3 \\ 15.4$	13.9 4.1	66.7 84.6

TABLE I

TABLE II

Western Region Central » Eastern »	 76 60 48	$\begin{array}{c c}12\\20\\26\end{array}$	$10\\14\\24$	$\begin{array}{c}2\\6\\2\end{array}$	$90.5 \\ 83.5 \\ 80.0$
/		•			

Miners. The figures of Table I refer to the mining district of Wales at two different periods, and form an instructive contrast. The first figures refer to the close of 1917 at the end of a long period of voluntary enlistment, when most of the fit men were employed in industries, where they were exempt from military service. The index of fitness is 66.7. The second figures refer to the middle of 1918; at that time the majority of the men examined were miners. The index of fitness rose to 84.6. We may therefore infer that the physique of this class of the population was good.

Table II gives the results for the same region (Wales), divided according to district. It will be observed that the index of fitness is higher in the Western than in the Eastern district. This fact is explained by an examination of the conditions of labour in these districts. In the Eastern part of South Wales there is a continual stream of immigrants from the adjacent industrial centres attracted by high wages and better conditions of labour. These immigrants are, for the most part, already injured by bad conditions of life, of poor physical health, and diminished strength. Their presence automatically lowers the level of the general physical fitness of the population.

In the Western district, on the contrary, the miners are usually the sons of farmers in the district, who remain on the

[251]

land and send their sons to the collieries. The type of the future miner is good; he is born and bred in a healthy environment. Further, the conditions of work in the mines in this district are particularly favourable; the mines are shallow, there is very little dust, and the percentage of accidents is very low. Housing and other conditions of life are also good.

The central district represents the mean between these two conditions.

Compared with workers in other industries, the Welsh miner is an excellent type of recruit. Though slightly undersized and with a tendency to anaemia, his condition rapidly becomes excellent under the favourable conditions of army training. The physique of the metal workers, on the other hand, is poor, doubtless as a result of their conditions of labour in an overheated atmosphere. These workers suffer from varicose veins, flat foot, and atheroma.

The defects peculiar to miners which affect the grading of men otherwise perfectly fit are usually: (1) periarticular thickening of the metatarso-phalangeal joint and limitation of its movement, due to the continual hyperextension of the great toe necessitated by the position adopted at work; (2) hypertrophy of the heart, doubtless due to overstrain at an early age; (3) old fractures and other injuries; (4) miners' nystagmus; (5) among older men, the results of old injuries, nystagmus, miners' lung (anthracosis), hernia, and other disabilities due to their occupation and age.

Agriculturists. Agriculturists, as always, prove excellent recruits, especially those who are drawn from mountainous regions.

As regards England, the figures given below, provided by the examination of different groups of men between 18 and 25 in Yorkshire, unmistakably indicate the relation which exists between occupation and physical fitness.

Occupations	Grade I	Grade II	Grade III	Grade IV	Index of fitness.
Agriculturists Miners	$74.8\\76.4$	$\begin{array}{c} 13.0\\9.4\end{array}$	9.4 11.4	$\begin{array}{c} 2.8\\ 2.8\end{array}$	89.9 89.8
Keith's standard	70.0	20.0	7.5	2.5	89.3
Agriculturists Miners Agriculturists Engineers Iron and Steel Workers Lace Workers Woollen Workers Woollen Workers Tailors	$\begin{array}{c} 71.9\\ 68.9\\ 62.0\\ 60.9\\ 60.2\\ 45.0\\ 54.6\\ 37.5\\ 33.9 \end{array}$	$15.5 \\ 15.1 \\ 23.0 \\ 23.9 \\ 25.6 \\ 26.9 \\ 10.9 \\ 31.7 \\ 21.4$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$3.8 \\ 5.5 \\ 3.4 \\ 1.8 \\ 3.0 \\ 5.4 \\ 10.5 \\ 3.8 \\ 11.2$	$\begin{array}{r} 88.8\\ 86.8\\ 85.9\\ 85.9\\ 85.7\\ 77.9\\ 77.4\\ 75.7\\ 69.5\end{array}$

The miners and agriculturists head the list and approach Keith's Standard. It cannot be doubted that the fall in the index of fitness in the foregoing table is an exact criterion of the influence of their different occupations on the health of the workers. These figures correspond to what is known of conditions of life in the different trades too closely to admit of explanation by the simple hypothesis that the agriculturist is an agriculturist, because he is healthy, and that the tailor is a tailor, because he is less healthy. The determination of an individual's occupation by his health may be a fact in certain cases, and within certain limits only, but, on the other hand, daily experience has shown that atmy training can effect wonderful development in physique and health, even in men in a most unpromising condition.

Textile Workers. A striking difference in physical fitness was observed during the spring of 1918 between miners and textile workers, these two classes happening to have been examined by different medical boards. The miners were well developed, muscular and in much better condition than the textile workers. The differences in physique between these two groups of workers are so evident, that it must be admitted that they are the logical consequence of their respective occupation and environment. In the case of the textile workers, in particular, there can be no doubt that work carried on in a moist and over-heated atmosphere over a long period of time has a perceptible effect on their health.

	Grade I %	Grade II %	Grade III %	Grade IV %	Index of fitness
Colliers in N.W. region	70.7	12.5	13.2 16	3.4 .7	87.5
Average of the English male population in April 1918	55.8	19.8	19.2 24	5.2	81.5
290 cotton operatives examined April 5-9, 1918	19.6	22.0	58.	2	57.9

The following figures are especially suggestive:-

It cannot be doubted, in fact, that we have here a remarkable and arresting illustration of the health and physique of one class of workers.

EFFECTS OF CONDITIONS OF LIFE AND WORK

The conditions of life themselves explain the differences observed between Leeds and Sheffield.

Month	Grade I	Grade II	Grade III	Grade IV	Index of fitness
March May June	$\begin{array}{c} 14.5\\ 25.8\\ 12.4\end{array}$	$25.5 \\ 23.8 \\ 21.3$	$54.0 \\ 45.9 \\ 58.0$	$5.9 \\ 5.4 \\ 8.2$	$\begin{array}{c} 62.0 \\ 67.5 \\ 59.4 \end{array}$
Keith's Standard	70.0	20.0	7.5	2.5	89.3

LEEDS

SHEFFIELD

March 61.0 May 57.6 June 46.6	$ \begin{array}{c c} 17.3 \\ 20.2 \\ 21.1 \end{array} $	$16.5 \\ 17.8 \\ 22.7$	$4.6 \\ 4.3 \\ 9.5$	$\begin{array}{c} 83.3 \\ 82.7 \\ 76.1 \end{array}$
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The particular conditions in Leeds which should be considered in this connection are: (1) the large number of back-to-back artisan houses; (2) the large alien population. mostly engaged in tailoring at home under very bad sanitary conditions; this accounts for many cases of myopia and diseases of the heart, lungs, and lymphatic glands, thereby lowering the index of fitness; (3) the large number of women employed in clothing and other factories; this tends to favour rickets³ in their children and consequently places them in a lower grade later on in life; (4) the frequency of infantile paralysis, which relegates many men to the lowest grade.

In Sheffield, on the contrary, the population is almost exclusively employed in the iron and steel industries-a class of work requiring men of good physique. Female labour, on the other hand, is at a minimum, and the only women employed are those engaged in electro-plating and packing under fairly favourable conditions.⁴

To summarize, the whole population should possess a normal index of fitness of 89.3%. Experience has shown that this standard has been surpassed in certain cases in

(4) In this connection it is interesting to examine more closely into the. conditions of labour in Birmingham. The nature of the factories has as much importance as the material worked on and the processes through which it goes. In this district one finds the most modern factories, as well as old structures combining a maximum of dirt with a minimum of air. The workers employed in these industries form 1/12th of the male working

population over 10 years of age. Gun-making has a high place in the death

⁽³⁾ Rickets sometimes presents no symptoms in the bones or joints, but manifests itself solely in affections of the digestive and blood-forming systems, leading to anaemia, dyspepsia, and stunted growth. "Rickets" is rarely diagnosed, unless signs of it appear in the bones. True congenital rickets is rare, and in practice rickets in children is due to faulty feeding by inexperienced mothers.

occupations requiring fit men able to keep fit, but, in actual fact, the index figure for the population as a whole, and especially for certain groups, falls considerably below the average.

CAUSES OF REJECTION AND OF LOW GRADING

Apart from specific diseases, one of the principal reasons for rejection noted is poor "physique". Physique is naturally a quality of the first importance, when it is a question of assessing physical fitness. It is a complex quality, resulting from race inheritance and environment, and summarizes the effects of these factors on the development of every human study of individuals, whether singly being. The or collectively, as regards their physique, indicates the influence of these factors on them.

It may be said at once that there is no pronounced sign at the present moment of racial degeneration; such degeneration doubtless requires that several generations should be subject to deleterious conditions, in order to make . itself apparent. But there is ample evidence of the baneful influence of modern life on the physique of young men of military age, which should be a serious warning for the future.

The examination of 261,137 youths of 18 gave the following results :----

	Grade I	Grades II & III	Grade IV	Total	Index of fitness
Percentage	65.0	30.1	4.9		
Actual numbers Keith's standard	$169,834 \\ 182,796$	78,650 71,813	$12,653 \\ 6,528$	261,137 261,137	85.0 % 89.3 %
Excess or Deficit	—12,962	+6,837	- -6,125		4.3%

The proportions between the different grades according to Keith's standard represent the relation we may expect to find on examining the men of military age of a healthy

rate for occupations, which indicates a high sick-rate. This industry is thus responsible for a part of the general low conditions of efficiency. Housing conditions have also a great influence, and in Birmingham they are very bad. (Report by Dr. Legge, 1905). In brasswork the frequency of respiratory diseases and, in particular, of pulmonary tuberculosis is very high and particularly affects round mon high, and particularly affects young men. Alcoholism makes great ravages among nail casters. The Amalgamated Society of Brass and Metal Workers gives an allowance to workers of 55 years of age, five years before the age fixed for workers in other metal, industries.

Statistics give a mortality of 70 to 100% above the average in certain bad quarters of the town, especially for infant mortality.

population. When we are dealing especially with youths of 18, we should expect to find a very large proportion of fit men, and consequently a very high index of fitness. On the contrary, we find : (1) a deficit of 13,000 Grade I men out of 260,000 examined; (2) an excess of over 6,000 Grade IV men, or double the number of men " totally and permanently unfit for any form of military service," which there should have been according to Keith's standard; (3) a total deficit of more than 11,000 units of fitness (4.3 %) among the youths examined.

This conclusion is most disquieting, and demonstrates clearly the evil effects of modern civilization on the adolescent population. 15,807 youths of all grades examined in the West Midland region in six months presented an average height of 5 ft. $5\frac{1}{2}$ inches and an average weight of 118 lbs. A combination of the three factors, height 5 ft. 5 in., weight 116 lbs., and chest girth 32 in., represents the average standard attained by youths of 18 in the North West and West Midland regions.

The poor condition of certain groups of the adolescent population is shown generally by the following statistics. Among causes of rejection of 210 youths, poor physique accounted for a percentage of 17.14, tuberculosis of the lungs for the same, tuberculosis of other organs 0.9%, valvular disease of the heart 12.38%, eye diseases 6%, deaf mutes 3.8%, epilepsy 2.9%, mental deficiency 2.3%, skin diseases 1.9%, bronchitis 1.4%, goitre, exophthalmic goitre, nephritis and otitis media 0.9% each, other physical defects 23.3%. The existence of such men, apart from those rejected

The existence of such men, apart from those rejected for tuberculosis, heart disease, etc., shows the effect of the peculiar conditions of life created by industrial development. Their presence cannot but contribute to racial deterioration and facilitate the spread of disease.

Even youths accepted for service do not seem to present an adequate physical development. There are no complete statistics on this subject, but the reports of the medical boards suggest the inference that the average measurements of men placed in Grade I are:—

Height				5 ft. 6 in.
Weight				130 lbs.
Chest girth				34 in.

Although there is as yet no standard of normal physical development for youths and men of a given age, the averages quoted above for youths of 18 and men of military age cannot possibly be regarded as satisfactory.

It is impossible merely to accept as they are the economic and social conditions, which are responsible for such results, for there is no doubt that the physique of boys and youths can be improved by better conditions of life, especially as regards food and work. If the figures given above truly represent the average physique of the nation, they show the urgent need for at once embarking on the necessary measures, in order to ameliorate those economic conditions, which have had such pernicious effects on the general health of the British people.

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INDUSTRIAL REHABILITATION

Industrial Rehabilitation in the United States of America

THE promotion by the U.S. Federal Government of vocational education has developed during the past few years in a logical sequence, beginning, in 1917, with provision for normal persons in need of training when about to enter, or after entering, an employment¹, supplemented, in 1918, by special measures for disabled ex-Service men², and culminating, in 1920, in the adoption of a scheme for the vocational rehabilitation of all disabled persons, whatever the cause of their disablement³.

These three Acts now form a logical whole. Every citizen, after completing his elementary education, is to be given an opportunity of training to suit him for an occupation. If his skill is lost or impaired through disablement or infirmity caused by war injuries, or by any cause whatever which prevents him from continuing in his original occupation, he is to be re-adapted to his new circumstances by fresh vocational education. The first step might be regarded as purely educational, the second as a temporary necessity arising out of the war, but the third is a remarkable innovation in labour legislation and has an intimate connection with the whole question of compensation for industrial accidents and accident insurance.

The administration of these three measures was placed successively in the charge of the Federal Board for Vocational Education, set up by the first of the Acts. This Board consists of the Secretary of Labor, the Secretary of Agriculture, the Secretary of Commerce, the U. S. Commissioner of Education, and three citizens appointed by the President, to represent respectively agricultural, manufacturing and commercial, and labour interests.

⁽¹⁾ Vocational Education Act of February 23, 1917, No. 347, 64th Congress. Amended by Act of October 6, 1917, No. 64, 65th Congress.

⁽²⁾ Vocational Rehabilitation Act of June 27, 1918, No. 178, 65th Congress. Amended by Act of July 11, 1919, No. 11, 66th Congress.

⁽³⁾ Industrial Rehabilitation Act of June 2, 1920, No. 236, 66th Congress.

The cost of vocational rehabilitation of ex-Service men. which is a temporary charge upon the community, is necessarily borne by the Federal Government entirely. This intermediate step in the sequence does not in itself call for special comment : most countries have undertaken to re-fit their ex-soldiers and sailors for civil employment by re-education as well as by therapeutic measures. But in the United States the logical conclusion was drawn that, if it is important to rehabilitate ex-Service men injured in the war, it is much more important in the national interest to rehabilitate the victims of industrial and other non-military accidents, who in the United States greatly outnumber the disabled soldiers. The existing scheme of the Vocational Education Act formed the basis of a further scheme for re-educating persons compelled bv disablement to change their occupation. The rehabilitation Acts are based on the principle of encouraging the States to make their own provision for vocational education or rehabilitation by the offer of Federal grants, equal in amount to whatever sums may be appropriated by the State or local authorities for the purpose, within the limits of the maximum appropriations set aside by Congress, and also subject to a scheme of allocation to the different States based upon population.

In order to receive an appropriation from Federal moneys under the Vocational Education Act, a State must formally "accept" the Act through its legislature, and must designate a State Board to co-operate with the Federal Board in the administration of the law. The appropriations are divided into three parts, any one or more of which may be secured by any State, namely, (1) for agricultural education, (2) for industrial and commercial training and instruction in "home economics," and (3) for preparing teachers to undertake the instruction. Schemes of instruction and for the training of teachers must be submitted for the approval of the Federal Board, and an approved standard of qualifications for teachers must be observed, in so far as Federal funds are to be used in paying their salaries.

The legislature likewise must accept the Industrial Rehabilitation Act if an allocation is desired, and a State Board must be designated for its administration, which may be the existing Board under the Vocational Education Act or a special Board. In States where a State Board exists for the administration of workmen's compensation or employer's liability laws, the State legislature must make provision for a plan of co-operation between the two Boards. Schemes concerning the instruction to be given, the qualifications of teachers, and the arrangements for placing persons in employment when their training is completed, must be submitted to the Federal Board for approval. The definition of disabled persons entitled to benefit by the Act is very wide, namely, "any person who, by reason of a physical defect or infirmity,
whether congenital or acquired by accident, injury or disease, is, or may be expected to be, totally or partially incapacitated for remunerative occupation." Thus, although it is the victims of industrial accidents, who were uppermost in the minds of the promoters of the Act, — and they doubtless will form the majority of the persons rehabilitated under it the difficulty of drawing the line between what is, and what is not, an accident arising out of, or in the course of, employment (which has been such a fruitful cause of litigation under accident compensation laws), has been avoided, by including all disabled persons whatever the cause of incapacity.

The Federal Board for Vocational Education has power to make studies, investigations, and reports tending to facilitate vocational education and rehabilitation, and special appropriations are made for this purpose. The Board must also present to Congress an annual report on all three branches of its work, namely, vocational education, rehabilitation of ex-Service men, and industrial rehabilitation.

The *Report* of the Federal Board for 1920 shows that the Vocational Education Act, which has been generally accepted throughout the United States, has made considerable progress in the three years during which it has been in operation. For instance, the number of schools Federally aided has increased from 1,741 in 1918 to 3,155 in 1920, and the number of persons enrolled in teacher-training courses Federally aided has increased from 6,589 in 1918 to 12,456 in 1920. The Industrial Rehabilitation Act has as yet been in operation so short a time, that it is not possible to judge of its practical success. But the *Report* of the Federal Board for 1920 shows that 23 States⁴ have already accepted the Act, and the work of rehabilitation has already begun in some, especially in the 12 States where action had been taken to provide for general industrial rehabilitation before any Federal aid was forthcoming.

In order to encourage and aid the States in the adoption of the legislation needed to bring the Act into operation and to secure the benefits of the Federal appropriations under it, the American Association for Labor Legislation has prepared a model bill, which is published, together with an explanatory note, in the December number of the American Labor Legislation Review. It is incidentally suggested in this note that the opportunity should be taken to supplement legislation under the new Act with amendments to existing accident compensation laws, "so as, for example, to co-ordinate them most effectively with the rehabilitation programme or to provide special medical care that may be necessary to the physical restoration of the cripples." The adaptations of existing compensation laws, which it is here suggested should be

⁽⁴⁾ Alabama, Arizona, Delaware, Georgia, Indiana, Iowa, Minncsota, Mississippi, Montana, Nebraska, Nevada, New Jersey, New York, North Carolina, North Dakota, Ohio, Oregon, South Carolina, Tennessee, Texas, Utah, West Virginia.

undertaken, could not be put into a concrete form in the model bill, seeing that they will necessarily vary widely according to the form of the compensation law in each State. If the suggestion is generally adopted, and close co-ordination is established between accident compensation and rehabilitation, it will have the effect of removing the reproach attaching to compensation laws in general, that, while providing monetary support for crippled persons, they provide no true remedy for the evil of industrial accidents, seeing that they do little or nothing to help partially disabled workers to resume employment, but rather tend to keep them out of work, because a worker suffering from an injury is usually more likely to be injured again, and a further injury necessarily results in a disproportionately serious disability and correspondingly greater compensation benefits. If compensation laws can be so dovetailed into the system of industrial rehabilitation that disabled persons are transferred to fresh occupations, to which they are adaptable in their crippled condition, this will amount not only to relieving employers in some measure of the burden of accident compensation in permanent disablement cases, but will also provide a solution for the problem of industrial accidents from the point of view of the crippled worker, whose lot will be enormously improved, both financially and morally, by return to normal employment.

Some attempt has been made in the United States to safeguard partially disabled workers from being excluded from employment by the action of insurance companies. For instance, the Minnesota "Anti-Discrimination" Act of 1919 prohibits insurance companies from charging higher rates for the insurance of persons, who are physically handicapped by reason of the loss of any member due to accident. But measures of this kind do not provide a final solution of the problem. A mutilated worker is often best removed from his old trade, where his crippled condition may increase his accident risk. He needs to be transferred to a new occupation, where this danger does not exist. It is only by re-education that this result can be brought about. In Minnesota the Anti-Discrimination Act is, in fact, a complement to the Re-education Act of 1919, which is an instance of a rehabilitation measure adopted by a State Legislature without awaiting Federal encouragement. This Act established in the State Board for Vocational Education a division for the training and instruction of "persons whose capacity to earn a living has in any way been destroyed or impaired through industrial accident or otherwise". Anticipating the Federal law, the Act provides for eventual co-operation with the Federal Government.

An example of a State law to make provision for industrial rehabilitation, and incidentally amending the Workmen's Compensation Act, is to be found in the State of New York. In this case also the State took action without waiting for the adoption of Federal legislation, which it accepted in anticipation. The amendment to the Workmen's Compensation Act consists in making provision for additional compensation, to be paid in the case of persons undergoing a course of vocational training with a view to rehabilitation. For this purpose a special fund is established, by requiring the insurance carrier to pay \$900 to the State Treasurer for every case of injury causing death, in which there are no dependants entitled to compensation. Somewhat similar legislation has been enacted in California.

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CO-OPERATION

The Co-operative Societies of Japan

ORIGIN AND DEVELOPMENT

NO-OPERATIVE societies in Japan date from about 1892 and were first constituted at the instance of such men as the late Viscount Shinagawa and Viscount A great impetus was given to the co-operative Hirata. movement in 1900, when the laws regulating the constitution of co-operative societies were promulgated. Thenceforward these societies increased in number and prosperity, until at the present time there are over 13,000 in Japan, and the cities, towns, and villages in which such organizations are found number over 12,000. There are, it is true, as yet many districts without co-operative societies, but in some cases several organizations are found in the same city, town, or village. On the whole, however, considering the number of years in which the movement has been in progress, its development in all the principal cities and towns must be taken as rather encouraging. On examination into the present condition of specific societies, it may perhaps be found that some are not as active as might be expected; while others may even be said to be practically dormant, so that much yet remains to be done. Be that as it may, the whole system is fast passing from a preliminary stage into the stage of efficient work.

In looking over the whole situation up to the present time, we notice that the most numerous have been the *Credit Societies.* Next come the *Purchase Societies*, of which those for the purchase of manure head the list. About 20% of the total amount of manure used in agriculture at the end of 1918 was purchased through the medium of these societies. The Government is also lending assistance to agricultural warehousing by means of subsidies, and it is hoped that a further development by the Co-operative Societies of this branch of the work will prove helpful to the farming community. With regard to Consumers' (Purchase) co-operative societies, the movement has of late gained in activity, especially in great urban centres, in consequence of the high cost of living.

LEGAL STATUS

A co-operative society is a corporate body formed by persons of moderate or small means, with a view to promoting and developing by mutual help the industrial undertakings and economic position of each member. In other words :

(1) A co-operative society is an agency for promoting and developing the industry in which each member of the society is engaged, and also for helping to improve his economic position;

(2) Co-operative societies are for strictly economic purposes.

These are the chief features that distinguish co-operative societies from other similar bodies.

CLASSES OF CO-OPERATIVE SOCIETIES

Co-operative societies are of four kinds: Credit, Sales, Purchase (also known as Consumers' societies) more particularly societies for raw material buying, and Productive Societies. These do not exclude each other; in many cases one society will combine more than one form of co-operation, for instance, credit work is often combined with sales and purchase. In such a case the organization would be known as a Credit, Sales, and Purchase Society.

(1) The Credit Society. The chief purpose of a Credit Society is to furnish members with the funds necessary for their industries, in the form of loans, and to facilitate saving. The largest number of co-operative societies belong to this class.

A general survey of the work undertaken by Credit Cooperative Societies may be given as follows.

The maximum amount allowable for individual loans is fixed at the annual general meeting. A committee, constituted of several members, is usually elected to examine the financial status of each member and to decide upon the amount of loan to be granted, which is, of course, kept within the limits fixed at the general meeting. The loans thus granted amounted at the end of 1918 to the sum of Yen 91,700,000 (¹), that is, Yen 8,399 per society and Yen 62 per member. These loans are generally unsecured and the unsecured loans form nearly 80 % of the total amount of the loans granted. The interest is fixed at 1% or 2% lower than the local rate of interest.

If a city (Shi) or an urban district happens to be included in a Credit Society district, such a society is allowed, under conditions prescribed in the articles of association, to discount

⁽¹⁾ At par 1 Yen = 2s.

bills for members who require money in order to carry on or develop their businesses. It can also receive deposits from persons outside its membership. This is the principle adopted by credit associations known as the Urban Credit Societies, which are run for the benefit of small traders and artisans of urban districts. They practically fulfil the function of "People's Banks". These Urban Credit Societies have been constituted to the number of 80. At the end of 1918 these organizations had deposits to the amount of Yen 2,300,000, and had advanced loans (including discounts of bills) to the amount of Yen 2,600,000.

The deposits are usually of three kinds :—Current accounts, fixed accounts, and deferred deposits. The amount of deposits has rapidly increased of late years, and amounted at the end of 1918 to Yen 133,000,000, that is, an average of Yen 12,200 per society and Yen 94 per member. The usual rate of interest is 5% or 6% per annum.

(2) Sales Societies. The Sales Society is constituted for the purpose of selling articles produced by its members.

The yearly receipts from such sales at the end of 1918 were estimated at Yen 134,000,000, showing an average of Yen 22,383 per society and Yen 169 per member. The articles dealt in by these societies comprise such commodities as rice, wheat, barley, vegetables, fruits, tea, linseed oil, cocoons, raw silk, mattings, straw and straw work, cattle, textile fabrics, hosiery, pottery and porcelain, earthenware, timber, fuel and charcoal, fish, sugar, paper, etc.

Societies. Purchase (3) Purchase societies have for their object the purchase of working material or of articles necessary for everyday life, and the sale of these to their members. The generic name includes two kinds of co-operative societiesthose for buying agricultural and industrial raw materials, and consumers' societies. As most of these societies are found in agricultural districts, as a rule no distinction is made, and raw materials and requisites for work are bought at the same time as articles required in daily life. Purchases are made by the societies as orders come in from the members, or sometimes shops are kept by the societies themselves, where articles likely to be needed by the members are stocked and sold as required. The price is in many cases as much as 5% lower than the standard market price. As a rule cash payment is required, but, where old customs persist, payment is made every half year or at the end of the year. The purchases made during 1918 totalled Yen 85,630,000, which means an average of Yen 10,240 per society and Yen 89 The chief articles bought through the medium per member. of these societies are manure, agricultural implements, seeds and young plants, silkworm eggs and sericultural implements, all kinds of raw material for work , tools and machinery, fishing tackle, etc., and such articles of daily necessity as rice, wheat, barley and other cereals, salt, soy, sugar, Sake, vermicelli and the like, fish, fuel and charcoal, kerosene oil, textile fabrics, and so forth.

(4) Productive Societies. Productive Societies aim at giving additional scope to the production of articles by their members, or at placing at the disposal of their members the requisites for industry. Such "requisites" include not only the material element such as land factories, but also the human element—inspectors or expert instructors in some particular branch of work, etc. The equipment usually provided for members is, for instance, land, drying apparatus, warehouses and repositories, reeling machines, sericultural implements, fishing craft and tackle, machinery for rope and mat-making, carts, cattle, rice-cleaning machines, hulling machines, etc.

"Additional scope to production" is also a wide term, and ranges from such simple processes as sorting and making up into bundles, to the application of complicated mechanical devices, such as those employed in the manufacture of paper and sugar.

The following are some of the chief forms of work undertaken: packing and re-packing of rice and other cereals, rereeling or packing of raw silk, drying cocoons, thread manufacture, drying and weaving, cleaning rice and other cereals, the manufacture of flour, paper, and sugar, the preparation of the products of fishing, condensed milk manufacture, and so forth.

The manufacture and utilization of requisites, to quote figures, amounted to about Yen 1,160,000 at the end of 1918, making an average of Yen 584 per society, and about Yens 5 per member. In addition, as the laws relating to agricultural warehousing were put into force in 1917, many co-operative societies. were formed for building barns to preserve corn and cocoons for farmers, for working such products as were entrusted to them, for the packing, re-packing, and transport of these articles, for acting as sales agents or for performing brokerage in general, and for lending funds to agricultural communities on the security of agricultural warehouse bonds. This branch of the work gives promise of a hopeful future, inasmuch as the co-operative societies in the warehousing business already numbered 564 at the end of February 1920.

As mentioned above, the co-operative societies are organized as incorporated associations. When classified in accordance with the nature of the liability borne by the members they are of three kinds : those of *limited*, *unlimited*, and *guaranteed* liability. In the case of societies of limited liability, all that is required of each member is that he should contribute the price of his share. But in the case of those of unlimited liability, when the assets of the society are insufficient to cover the obligations, every member assumes a joint and unlimited responsibility towards the creditors. Guaranteed liability means that all members are responsible for a fixed amount over and above their own share of investment. Of these three classes of societies those of limited liability are in the majority, being about 70% of the total at the end of 1919. This class is also growing more rapidly.

The qualifications for membership may be fixed in each case by the articles of association, to suit the organization in question. In most cases only persons of independent livelihood are eligible for membership. These associations, from the nature of the work undertaken, are necessarily composed of persons of moderate or small means. As Japanese co-operative societies have mostly developed in rural districts. the larger number of their members are naturally farmers of moderate and limited means. Farmers form 82.9% of the total of these societies; the manufacturing class 3.9%, traders 6.7%, persons engaged in the fishing industry 1.6%, foresters, 0.1%, other occupations 4.8%.

The minimum membership required by law for the formation of a co-operative society is fixed at seven, but as a general rule the number is much greater, as may be gathered from the nature of the society. As at present organized, the average number of members per society is 145. Several associations have a membership of over 3,000. A new member may easily be admitted into a society, but, in the case of societies of unlimited liability, the consent of the whole body is required. Members may retire freely at the end of any business year. Such members must, however, notify the society, as stipulated in the articles of association, not less than six months, and not more than two years, previously. An ipso jure retirement takes place under the following conditions: (1) loss of qualifications for membership asspecified in the articles of association; (2) death; (3) bankrupey; (4) incapacity; (5) expulsion. All these conditions are prescribed by law.

The boundary of the district in which a co-operative society shall operate, or the local limit of membership, is fixed by the society itself, according to local conditions and the nature of the work to be performed. In the case of Credit Societies, however, the law requires them to confine their sphere of operations, except under special conditions, within the smallest administrative unit, such as city, town, or village. As a Credit Society is, as a rule, engaged in granting unsecured loans, this restriction has been imposed, owing to the practical impossibility of ascertaining a member's financial status in too extensive a district.

The General Meeting of a co-operative society is usually convoked by the directors (Riji). The ordinary general meeting is normally held in the first month of a business year. Important business matters, such as the election of directors and auditors, their re-election, revision of the articles of association, amalgamation, and dissolution, require the attendance of at least half of the members and a three-quarters majority of the votes of those present. All minor matters may be decided by an absolute majority. No distinction is made among the members as to votes; each is allowed one vote and no more, irrespective of the number of shares held. The vote may be relegated to a substitute, who, however, must be appointed from among the members.

The board of directors is an executive body and represents the society in all its transactions. Directors do their business in obedience to the regulations provided in the articles of association and to resolutions passed at the general meeting. There are generally from two or three to seven or eight directors on the board, and their term of service is from one to five or six years. In some cases each director has a different function assigned to him; sometimes one or two are entrusted with full power.

The auditors' business is to inspect the actual commercial position of the society. Their number and term of office is usually limited, as compared with those of the directors. The directors and auditors are elected from among the members at a general meeting. They receive, as a rule, no remuneration, except in some cases, when one of them is made managing director with a fixed salary. In rural districts the village headmen or other prominent personages of the locality are often elected to the position. The directors usually have a certain number of secretaries to assist them.

Each member is required to hold at least one share and, as a rule may, not hold more than thirty. In exceptional cases the number of shares may be increased to fifty. Except under special conditions, a share is required to be less than fifty Yen.

The assets of a co-operative society are made up, besides the investments above mentioned, of a reserve fund and other savings. The law requires the laying by of a fixed sum of money out of profits each year as a reserve fund, until its amount equals the total amount of the contributions. All the entrance fees and premiums paid on the increase of shares, etc. are required by law to be placed to the reserve fund. The dividend to members may be (1) in proportion to the shares held by each member, or (2) in proportiouto the amount of purchases, etc. (pro rata dividend, dividend on purchases.) The former kind of dividend, that in proportion to the shares, is required by law to be kept within 6% per annum of the shares of the individual members, and only under special circumstance may it be increased to 10%. The law does not set any limit to the latter kind, as it is based strictly on the principle of mutual aid by the distribution of profits.

The following figures will give some general idea of the present position of the work : the total value of the paid-up

shares at the end of 1918 was estimated at Yen 37,310,000, and of all forms of reserve funds and savings at Yen 17,030,000, making the total assets Yen 54,340,000, i.e. the average per society was Yen 4,340, and per member about Yen 26.

The formation of co-operative societies is accomplished on the "government permission" principle. As a preliminary step the articles of association are formulated in accordance with certain prescribed conditions, and application has to be made to the local authorities of the district where the chief office of the organization is located. On the grant of permission each member is required to pay his first instalments without delay, and the fact of the formation of the society is duly entered at the Registry Office.

A co-operative society may be dissolved :

(1) by the fact of certain conditions postulated in the articles of association having arisen;

- (2) by the decision of a general meeting;
- (3) by amalgamation with another society;
- (4) by the falling off of membership to below seven;
- (5) by the bankruptcy of the society.

Up to the present the number of societies dissolved since 1900, i.e. during a period of 17 years, totalled 3,341. Of this number 2,830 broke up of their own accord, 180 were wound up by order of the Government, 331 ceased exist as prescribed by law. Of those which were wound up voluntarily, the chief causes of dissolution were (1) the smallness of their membership, (2) lack of harmony among members, (3) lack of efficient officials.

FEDERATION

Co-operative societies cannot fully perform their functions until they come into closer relation with one another, form themselves into groups, and by mutual assistance further the objects they have in view. A federation, which itself constitutes an incorporated association, may be formed out of a minimum of seven co-operative societies. Federations are of four kinds, according as the component members are Credit, Sales, Purchase, or Productive Societies. A federation may be formed only of co-operative societies of the same character : i.e. only Sales Societies may combine to form a co-operative Sales federation. This rule does not apply in the case of Credit federations, to which not only co-operative societies may be admitted , but even all kinds of federations.

As regards liability federations are of two kinds : limited and guaranteed. The bounds within which they may do business, except in special cases, are those of one Prefectoral district. The other details of their organization and work follow the lines of the ordinary co-operative society \mathbf{as} described above. Their position at the end of 1918 was There were 100 federations the following. comprising 5,956 separate co-operative societies. The aggregate sum invested was estimated at Yen 2,000,000, of which Yen 1,250,000 was paid up, with reserve funds amounting to Yen 540,000; loans, Yen 3,250,000; savings, Yen 11,000,000; total amount received from goods sold Yen, 27,400,000; purchases, Yen 4,200,000. On the average there are 59 societies belonging to one federation; the average total investment per federation is Yen 20,000, of which 12,500 has been paid up; the average reserve fund per federation is Yen 5,400, loans Yen 40,200, savings Yen 136,800, sales of goods Yen 548,700, and purchases Yen 71,200. The work is, of course, still in its infancy.

The Central Board is organized for the purpose of developing co-operative societies and federations and also of establishing close relations between them. The Central Board was first set up in 1905. In 1910 laws relating to the formation of such organizations were promulgated, and the Board was reconstituted upon a revised basis. This Board is a corporate body composed of co-operative societies, federations of cooperative societies, and individuals specially interested in the There is only one Board, located at Tokyo. movement. At the end of March 1920 the total membership was 11,380, comprising 9,099 regular members (co-operative societies and their federations), and 2,281 associate members (individuals). There are 46 branch offices of the organization in the country. each endeavouring to promote the interests and harmonious working of local associations.

At the central office the awarding of honours for the best results, courses of lectures bearing on the topics of co-operation in industry and agricultural warehousing, publication of bulletins, pamphlets, and other kinds of literature, canvassing for the increase of co-operative societies by means of lectures and other forms of propaganda—these and kindred forms of work are carried on. The Central Board acts as an intermediary between capital and local industries, is entrusted with the profitable use of funds, and, especially by furthering the transport of goods, facilitates the performance of the manifold duties of the societies. It seeks to bring individual societies into closer touch with one another and sends proposals regarding the extension and development of co-operative work to the competent Ministry.

GOVERNMENT SUPERVISION

The co-operative societies and their federations are under the supervision of the chief of the "gun" (county), the prefectoral governors, and the Minister of Agriculture and Commerce. Ther Cedit Societies of cities and urban districts are supervised by the Ministry of Finance, acting in conjunction with the above authorities. The superintending authorities are also responsible for encouraging and guiding the societies. In the Department of Agriculture and Commerce six experts, and in the various prefectoral offices two or three officials, are usually appointed for the purpose.

With a view to promoting the interests of the system of co-operative societies and facilitating their formation in various districts, the State has granted them the following privileges :

(1) Exemption from taxation. The co-operative societies enjoy exemption from both business and income taxes, and also from the registry tax on such registration as is performed in conformity with the requirements of the law.

(2) Purchase. The Government gives preference to cooperative societies in making purchases. Military necessaries, for instance, rice, wheat, barley, hay, vegetables, etc., are in many cases bought by the army authorities from co-operative societies.

(3) The supply of funds at low interest. The Government buys debentures issued by the Japanese Mortgage Bank and the Hokkaido Colonization Bank with the funds, chiefly made up of postal savings, belonging to the deposit section of the Finance Department. These banks lend the money thus secured direct to co-operative societies or their federations at low rates of interest. The Japanese Mortgage Bank, moreover, advances loans direct to the societies through the local Agricultural and Industrial Bank. These loans were first made in 1910. The amount aggregated Yen 13,430,000 up to 1919. usually at an interest of 5 or 6 per cent per annum.

(4) Unsecured loans. The Japanese Mortgage Bank and other real estate banks are allowed to advance money to cooperative societies without security. At the end of 1918 the amount thus loaned by the Japanese Mortgage Bank was Yen 6,910,000.

CONCLUSION

In conclusion, it may be said that the co-operative societies of Japan are organized under special legislative provisions, which seek to bring out their characteristics, such as (1) the limit to the amount that each individual member may invest in the society; (2) the perfect equality of votes irrespective of the amount of shares held by the members; (3) the limit placed to dividends. These conditions were made obligatory in order to prevent the societies from becoming capitalistic and to emphasize their principle of mutual assistance. The result of these precautions has been satisfactory; at present no society seems capitalistic in character, and the development of co-operation has been healthy and natural.

 1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	Year
3,092	3,070	3,015	2,930	2,767	2,673	2,534	2,226	1,966	1,734	Credit Societies
 248	221	234	224	233	220	225	217	200	175	Sales Societies
 414	448	535	599	641	673	787	772	756	714	Purchase Societies
133	134	133	143	138	117	114	78	63	67	Productive Societies
 401	402	461	498	491	510	535	503	460	419	Sales and Purchase
 134	127	141	139	138	138	150	136	125	113	Sales and Productive
 25	29	37	41	43	44	52	49	49	52 .	Purchase and Productive
 180	195	230	242	241	245	234	222	214	170	Sales, Purchase, and Productive
 251	370	400	370	378	384	395	381	30	21	Credit and Sales
2,710	2,692	2,583	2,479	2,252	1,695	1,626	1,239	838	470	Credit and Purchase
55	53	39	37	32	27	. 15	14	10	r	Credit and Productive
 2,964	$2,795^{\circ}$	2,608	2,461	2,232	1,948	1,459	1,062	702	321	Credit, Sales, and Purchase
158	117	90	73	59	38	22	14	4		Credit, Sales, and Productive
49	56	57	46	45	45	40	26	19	11	Credit, Purchase, and Productive
1,111	1,044	946	878	765	626	475	369	254	116	Credit, Sales, Purchase, and Productive
12,025	11,753	11,509	11,160	10,455	9,683	8,663	7,308	5,690	4,391	TOTAL

[72]

1. NUMBERS OF CO-OPERATIVE SOCIETIES 1. Classified by Kind.

	Limited	Unlimited	Guar-		Percentage		
Year	Liability	Liability	anteed Liability	Total	Limited	Unlimited	Guar- anteed
1908 1909 1910 1911 1912 1913 1914 1915 1916	2,089 2,917 4,204 5,235 6,105 6,805 7,333 7,633 8,047	$\begin{array}{c} 2,214\\ 2,637\\ 2,938\\ 3,235\\ 3,368\\ 3,430\\ 3,602\\ 3,646\\ 3,460\end{array}$	88 136 166 193 210 220 225 230 246	4,391 5,690 7,308 8,663 9,683 10,455 11,160 11,509 11,753	$\begin{array}{r} 47.6\\51.3\\57.5\\60.4\\63.0\\65.1\\65.7\\66.3\\68.5\end{array}$	$50.4 \\ 46.3 \\ 40.2 \\ 37.4 \\ 34.8 \\ 32.8 \\ 32.3 \\ 31.7 \\ 29.4$	$\begin{array}{c} 2.0\\ 2.4\\ 2.3\\ 2.2\\ 2.2\\ 2.1\\ 2.0\\ 2.0\\ 2.1\end{array}$
1917	8,393	3,376	256	11,755 12,025	69.8	28.1	$\frac{2.1}{2.1}$

2. Classified by organization.

II. NUMBERS OF MEMBERS AND SHARES

Year	No. of Societies examined	Members	Average No. of Members per Soc.	Shares	Average No. of Shares per Society
1907 1908 1909 1910 1911 1912 1913 1914 1915 1916	$1,623 \\ 2,598 \\ 3,528 \\ 4,922 \\ 6,650 \\ 8,494 \\ 9,328 \\ 6,967 \\ 10,374 \\ 10,587$	$\begin{array}{c} 151,123\\ 284,654\\ 392,411\\ 534,085\\ 722,089\\ 945,578\\ 1,090,475\\ 1,204,232\\ 1,288,984\\ 1,357,502 \end{array}$	93 110 111 109 109 111 117 121 124 128	$\begin{array}{r} 319,840\\ 586,994\\ 782,203\\ 1,071,892\\ 1,441,128\\ 1,887,981\\ 2,177,910\\ 2,399,085\\ 2,567,046\\ 2,711,289\end{array}$	$\begin{array}{c} 2.1 \\ 2.1 \\ 2.0 \\ 2.0 \\ 2.2 \\ 2.0 \\ 2.0 \\ 2.0 \\ 2.0 \\ 2.0 \\ 2.0 \end{array}$

1. Total Societies.

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3. Classified by Kind.

Kind of Societies	No. of Societies examined	Members	Average No. of Members per Society
Credit Sales Purchase. Productive Sales and Purchase. Sales and Productive. Purchase and Productive Sales, Purchase, and Productive . Credit and Sales. Credit and Purchase. Credit and Purchase. Credit, Sales, and Purchase. Credit, Sales, and Productive. Credit, Sales, and Productive. Credit, Sales, Purchase, and Pro- ductive.	$\begin{array}{c} 2,863\\ 165\\ 364\\ 98\\ 328\\ 99\\ 25\\ 144\\ 328\\ 2,462\\ 50\\ 2,572\\ 122\\ 50\\ 917\end{array}$	$\begin{array}{r} 402,533\\17,167\\47,311\\7,788\\34,390\\6,354\\2,215\\14,268\\34,941\\284,770\\4,037\\344,738\\18,765\\3,871\\134,354\end{array}$	$141 \\ 104 \\ 130 \\ 79 \\ 105 \\ 64 \\ 89 \\ 99 \\ 107 \\ 116 \\ 45 \\ 134 \\ 154 \\ 77 \\ 147$
Total	10,587	1,357,502	128

	Amount in Yen	No. of Societies examined	Average per Society	No. of Members examined	Average per Member
Paid-up investment Reserve fund Borrowings Total Savings General total	24,488,68810,010,61014,975,10649,474,40443,670,20593,144,609	10,587 10,587 10,587 9,363 	Yen 2,313.090 945.556 1,414.481 4,673.127 4,664.125 9,337.252	$1,357,502 \\ 1,357,502 \\ 1,357,502 \\ \\ 1,228,009 \\$	Yen 18.040 7.374 11.031 36.445 35.562 72.007
Total of first three items for 1915 General total 1915 Surplus Surplus for 1915	$\frac{46,401,014}{76,000,173}$ 3,443,824 2,895,868	 10,587 10,374	4,472.818 7,747.061 325.288 279.147	 1,357,502 1,288,984	$ \begin{array}{r} 35.998 \\ \hline 61.652 \\ 2.537 \\ 2.251 \\ \end{array} $

III. FUNDS (INCLUDING SURPLUS) 1916

IV. WORK ACCOMPLISHED

1. Credit Societies. (Including Joint Work).

ويستخد ويستنا والمتحد والمتحد والمتحد والمتحد والمحد					
LOANS	No. of Societies examined	Amount in Yen	No. of cases	Average per Soc.	Average per case
Loans Redeemed At the end of	}	$123,644,476 \\ 67,290,482$	1,741,811 866,550	Yeu 13,205.647 7,186.850	Yen 70.986 77.653
1917	9,363	56,353,994	875,261	6,018.797	64.385
At the end of previous year	9,040	52,219,172 820,900		5,776.457	63.612
SAVINGS	No. of Societies examined	Amount in Yen	No. of depositors	Average per Soc.	Average per Depositor
Received Withdrawals	}	105,995,887 62,325,681		$11,320.718 \\ 6,656.593$	
1917	9,363	43,670,205	940, 399	4,664.125	45.438
	1	1			

2.	Sales	Societies.	(Including	Joint	Work).
			\ 4			

No. of Societies	Amount	Average	No. of	Average
examined	of Sales	per Society	Members	per Member
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 59,090,177 4 40,777,399	Yen 12,647.726 8,955.402	604,977 573,601	Yen 97.673 71.090

No. of	Purchases Made		Sol	d		Average
Societies examined	Amount	Average per Society	Amount Average per Members Society		per member	
1917 6,863 19166,732	32,865,072 27,549,914	4,793.104 4,092.382	33,814,481 28,312,753	4,927.070 4,205.697	865,917 830,603	$39.050 \\ 34.087$

3. Purchase Societies. (Including Joint Work).

4. Productive Societies. (Including Joint Work).

		Cost of	Working	Income from Rent. etc.		
No. of Societie	s	Amount	Average	Amount	Average	
examined		in Yen	per Society	in Yen	per Society	
1917 1	,502	277,734	184.909	288,413	$192.019 \\ 163.053$	
19161	,449	179,081	123.589	236,263		

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I. THE METRIC AND BRITISH SYSTEMS OF WEIGHTS AND MEASURES

A.	Metric Measur British.	es in terms of	B. British Measures in terms of Metric.					
UNIT	ENACTLY	ROUGHLY	UNIT	EXACTLY	ROUGHLY			
		A. Lineal	Measure)S				
.Millim. Centim. Metre Kilom.	0.0394 inches 0.3937 • 39.371 • 0.6214 miles	one 25th of an inch 10 cm. = about 4 in. 11 metres = 12 yards 5 furlongs	Inch Foot Yard Mile	25.399 mm. 30.479 cm, 0.9144 metres 1.6093 km,	4 in. = 10 cm. 30 cm. 11 yards = 10 metr. 5 miles = 8 km.			
		B. Square	Measure	S				
Sq. Metre (centiare) Are Hectare	1.196 sq. yds. 3.954 poles 2.471 acres	11/s sq. yds. 10 ares == 1/s acre 21/s acres	Square Inch Square Yard Acre Sq. Mile	6.451 sq. cm. 0.836 sq.metr. 0 40467 hect. 2.5899 sq. km.	6 sq. yds = 5 sq. metr. 1 acre = 2 ½ hect. 100 sq. miles = 260 sq. km.			
		C. Measures	of Capac	ity				
Litre Décalitre Hectolitre	1.76 pints 2.201 gallons 22.01 →	4 ¹ /1 litres = 1 gallon 5 décalitres = 11 gallons 22 gallons	Pint (liquid) Quart (liquid) Gallon (liquid) Peck(dry) Bushel •	0.5679 litres 1.1359 • 4.5435 • 9.067 • 36.34766 •	1 litre = 1 ³ / ₄ pints - 4 ¹ / ₂ litres 22 gallons = 1 hectol. 9 litres 36 litres			
	D. Measures of Weight							
Gramme Hectogr. Kilogr.	0,353 oz. 8.527 • 2.2046 lbs.	454 grs. = 1 lb. nearly $\frac{1}{6}$ lb. 5 kilos = 11 lbs.	Ounce Pound Hundred- weight Short Ton (2000 lbs)	28.35 grs. 453.59 • 50.802 kilos 901.6 •	7 oz. = 200 grs. ^{1/2} kilo 22 lbs = 10 kilos 30 kilos 900			
MetricTon	2204.6 lb3.	1 Long Ton	Long Ton (2240 lbs)	1016.04 •	1000 » (1 Met. Ton)			

128

[278]

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II.	Table showing the par values	of the pound (\pounds) ,	the
	dollar, and the franc in	the currencies of	the
	principal countries.		

Country	Monetary unit	$f_{=20 \text{ shillings}}$ =240 pence	One dollar =100 cents	One franc = 100 centimes
		equals	equals	equals
United Kingdom .	£1	1.00	4s. 11/6.	91⁄4.
Australia	\tilde{f} 1	1.00	4s. 1%d.	91⁄3d.
New Zealand.	•£1	1.00	4s. 1%d.	9¼d.
South Africa	£1	1.00	4s. 1½d.	9½d.
Canada	dollar	4.8665	1.00	0.193
United States	dollar	4.8665	1.00	0.193
Belgium	franc	25.222	5.181	1.00
Bulgaria	leve	25.222	5.181	1.00
Finland	mark	25.222	5.181	1.00
France	franc	25.222	5.181	1.00
Greece	drachma	25.222	5.181	1.00
Italy	lira	25.222	5.181	1.00
Roumania	leu	25.222	5.181	1.00
Serbia	dinar	25.222	5.181	1.00
Spain	peseta	25.222	5.181	1.00
Switzerland	franc	25.222	5.181	1.00
Argentine	peso	5.04	1.036	0.200
Austria	krone	24.00	4.93	0.951
Brazil	milreis	15.00	3.14	0.606
Chili	peso (gold)	13.33	2.74	0.53
Denmark	krone	18.15	5.73	0.720
Germany	mark	20.43	4.198	0.811
Hungary	krone	24.00	4.93	0.951
India	rupee	10.00	2.09	0.403
Japan	yen	9.80	2.006	0.387
Netherlands	florin	12.11	2.49	0.480
Norway	krone	18.15	3.73	0.720
Portugal	escudo	4.53	0.92	0.176
Russia	rouble	9.48	1.94	0.374
Sweden	krona	18.15	3.73	0.720
Turkey	piastre	111.10	22.73	4.386

NOTE. — This table is read as follows : fl is equivalent to 12.11 Dutch florins; 1 dollar is equivalent to 2.49 Dutch florins; one franc is equivalent to 0.48 Dutch florins.

9

PUBLICATIONS OF THE INTERNATIONAL LABOUR OFFICE

The International Labour Office now issues the following publications :--

Regular Periodical Publications

I. INTERNATIONAL LABOUR REVIEW.

The International Labour Review is a scientific, popular publication containing articles, statistics and information relating to labour and industry, of interest and value to employers, workers, and Governments. It contains, in additions to articles for which the International Labour Office is responsible, contributions by well-known economists, employers, and trade union leaders of their views on the questions of the day. The Review appears in English and French. In conformity with the Peace Treaty, it may also be published in other languages later.

II. THE OFFICIAL BULLETIN.

The Bulletin is the weekly official journal of the Office, and its purpose is to supply information with regard to the activities of the International Labour Organization. It contains the texts of official documents, reports of meetings of the Governing Body and the various International Commissions (on unemployment, emigration, etc.), as well as general information with regard to the progress of the work of the Office. It also contains particulars with regard to the action taken by the different nations, Members of the Organization, to give effect to the decisions of the Annual Conference. The Bulletin has appeared regularly in English and in French since September 8th, and in German since October 20th, 1920.

III. THE DAILY INTELLIGENCE.

The Daily Intelligence, containing brief notes on important current events relating to labour and industry, has appeared in roneod form in French since September 1st, 1920. The Daily Intelligence is now printed both in French and English, since November 15th.

Irregular Periodical Publications

IV. STUDIES AND REPORTS.

The Studies and Reports appear at frequent intervals, and contain short reports and articles on subjects of immediate importance in the field of labour and industry. The collection falls into twelve series :

(a) Industrial relations (the activities of trade unions and employers' associations, and political activity in its relation to questions of labour): (b) Economic conditions; (c) Employment and unemployment; (d) Conditions of labour; (e) Workmen's compensation, relabilitation, and social insurance; (f) Industrial hygiene, accidents and safety; (g) Welfare of workers; (h) Co-operation; (i) Protection of women and children; (j) Education; (k) Agriculture; (l) Maritime affairs.

V. BIBLIOGRAPHICAL SERIES.

The Bibliographical Series will include : (a) General bibliographical lists of publications, both official and non-official, which are printed weekly or as often as desirable and possible; (b) Special annotated bibliographies relating to particular subjects, such as the minimum wage, the 8-hour day, vocational education, employees' participation in industrial management, industrial hygiene, etc., will appear from time to time as occasion demands.

VI. LEGISLATIVE SERIES.

This Series contains reprints and translations of the texts of Iaws, decrees, orders, and regulations affecting labour issued in the different countries of the world. The series, which is published in English, French, and German, constitutes a continuation in a new form of the series published by the old International Labour Office at Basle.

VII. REPORTS OF THE INTERNATIONAL LABOUR CONFERENCE.

These Reports comprise : (a) Reports prepared by the International Labour Office for the Annual Conference; (b) Verbatim Reports of the proceedings of the Conference; (c) The official text of the Draft Conventions and Recommendations adopted by the Conference.