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of

The City of New York

for the

Year 1920





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ANNUAL REPORT
OF THE
DEPARTMENT OF HEALTH
OF
THE CITY OF NEW YORK



FOR THE
CALENDAR YEAR 1920

NEW YORK CITY

1921

M. B. Brown Printing & Binding Co.,
New York.

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 Borough of The Bronx, 3731 Tbird Avenue..... Telephone, 1975 Tremont
 Borough of Brooklyn, Flathush Avenue and Willoughby Street..... Telephone, 4720 Main
 Borough of Queens, 372-374 Fulton Street, Jamaica, L. 1..... Telephone, 1200 Jamaica
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 Queens—Queensboro Hospital, Flushing Ave. and Lotts Lane. Telephone, 2600 Jamaica.

LABORATORIES.

Diagnosis Laboratory, Serological Laboratory, 505 Pearl Street. Telephone, 9400 Worth.
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DEPARTMENT OF HEALTH,
CITY OF NEW YORK,
505 PEARL STREET, BOROUGH OF MANHATTAN.

NEW YORK, October 15, 1921.

To His Honor

The Mayor of the City of New York:

SIR—On behalf of the Board of Health I have the honor to transmit herewith, as required by Section 1168 of the Charter of the City of New York, a report of all the operations of the Department of Health of the City of New York for the year ending December 31, 1920.

Very respectfully,

ROYAL S. COPELAND,
Commissioner of Health.

REPORT OF THE DEPARTMENT OF HEALTH CITY OF NEW YORK, FOR THE YEAR 1920

BUREAU OF GENERAL ADMINISTRATION.

Office of the Commissioner.

During the year 1920, the beginning of the reconstruction period after the war, the Department was confronted with many new problems and emergencies, due to unsettled conditions of the entire country, such as scarcity of coal, due to labor conditions; the housing condition, due to governmental restrictions during the war, and the high cost of labor and material at this time; and the protection of the City of New York against the invasion of infectious and contagious diseases from infected European and eastern countries, which were all unusual activities added to the regular routine work of the Department.

In connection with the housing and plague conditions, the Mayor designated the Commissioner of Health to attend the Royal Institute of Public Health in Brussels, the Inter-Allied Housing Conference, and to visit European countries to ascertain the actual conditions existing in the areas from which the majority of immigrants embark for the United States, together with an investigation of the housing conditions and methods employed for rehabilitation of the devastated countries.

The Commissioner made an extensive study of the problem while in Europe and, upon his return, immediately promulgated rules and regulations to supervise more thoroughly the admission of aliens from disease stricken countries through the port of New York, and to this end inaugurated a campaign for the strictest supervision of all incoming vessels from Europe and other countries, using specific methods and means to prevent entrance of disease-carrying rats and vermin, using for such purpose a large force of special inspectors, physicians and experts, who practically placed an impregnable cordon around the port of New York. This work, no doubt, is the reason that the City of New York has been spared from any serious outbreak of any of the many diseases now prevalent in European and eastern countries.

Housing—During the period of war, federal government placed restrictions on all construction work, with the result that 1920 opened with a serious shortage of houses to provide for ordinary increase in our population, together with inflow of immigrants from Europe.

The Commissioner of Health took up the question with financiers and bankers, with a view of obtaining necessary funds for small home builders on reasonable terms. This resulted in the appointment of a committee of financiers to formulate plans for financing housing projects. This plan is now well under way.

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

Fuel Shortage—With the beginning of 1920, again due to labor conditions, the supply of coal available for consumption was entirely inadequate to meet ordinary demands, which resulted in many citizens being entirely without coal.

The Commissioner held conferences with leading coal shippers and dealers in reference to relieving the situation in the most practical manner; the result was that the Department established a coal bureau and distributing coal in small quantities, reached the many instead of the few. This was successfully carried on by an interdepartmental committee who received applications and complaints, and, after investigation, issued orders, through the Coal Dealers Association, for necessary quantity, to keep the homes, apartment houses, etc., supplied. This prevented much suffering which would have otherwise resulted.

Office of the Secretary.

The year 1920 evidenced marked improvement as a result of reorganization effected during the previous year, in centralizing business activities of the Department in this office.

The Division of Audit and Accounts was merged with the office of the Purchasing Agent, and is now known as Division of Supplies and Accounts, thus centralizing control of all financial matters.

Record of Matters Acted on by the Board of Health During the Year 1920:

Actions of Board of Health amendments to Sanitary Code	13
Sanitary regulations adopted by the Board of Health	12
Permits granted	19,473
Permits denied	553
Permits revoked	1,954
Public nuisances declared.....	15
Vacation orders issued.....	40

The increase of 9,991 permits issued during 1920, over the number in 1919, is due to the requirement that permits be issued to milk dealers and to undertakers.

The inauguration of the New York City Employees' Retirement System placed a large burden on our office force in verifying the service record of every application forwarded to this office. Many errors were found and corrected, and it is a matter of record that the accuracy of those submitted was commented upon. There were 664 employees of this Department who joined the System, 114 of whom were former members of the Health Department Pension Fund.

The new roster was completed during the year, the correct address of every employee and, in addition, the January 1st and August 20th increases were entered on each record. There are upward of 3,000 employees in the Department, and this entailed a great deal of work.

Despite the fact of strictest supervision the total amount of postage distributed during 1920 was slightly in excess of 1919. The increase of \$1,612, is mainly due to the fact that more bulletins were sent out from the

BUREAU OF GENERAL ADMINISTRATION

Bureau of Public Health Education, which has an increase of over \$900 over last year. The printing of 200,000 postals increased the Bureau of Preventable Diseases account \$1,809 over last year. Sanitary Bureau also showed an increase of \$349, due to increased number of heat complaints mailed to inspectors. A few bureaus used about the same amount of postage as last year, and some showed a decrease.

The postage distributed for the past two years was: 1919, \$28,125.35; 1920, \$29,737.03.

SUMMARY OF WORK OF OFFICES OF ASSISTANT CHIEF CLERKS.

	1919.	1920.
Letters stamped, sealed and mailed.....	1,140,323	1,016,869
Postage distributed.....	\$28,125.35	\$29,737.03
Communication answered by form letter.....	82,152	87,031
Communications answered by letters dictated.....	20,262	17,586
Memorandums dictated.....	16,909	13,956
Parent cards mailed.....	63,267	48,491
Applications for transcripts received by personal application..	79,968	84,836
Applications received by mail.....	16,593	16,530
Total received for fees.....	\$49,299.04	\$52,145.10
Laboratory products distributed free.....	\$11,410.92	\$14,224.12
Laboratory products sold for cash.....	\$1,514.87	\$2,375.08

COMPARATIVE TABLE OF APPOINTMENTS, RESIGNATIONS, DEATHS AND RETIREMENTS.

	1919.	1920.
Original appointments.....	2,048	2,186
Resignations and persons dropped.....	359	1,027
Deaths.....	16	20
Retired on pension.....	27	21

COMPLAINTS AND REPORTS.

	1919.	1920.
Complaints pending Dec. 31, 1918.....	1,047	2,459 (Dec. 31, 1919)
Complaints received (Citizens).....	45,661	74,661
Complaints received (Original).....	9,271	5,557
No cause for action (Complaints).....	20,792	39,009
Abated by personal effort (Complaints).....	9,987	12,758
References.....	11,992	15,527
Returned for notice or order.....	10,649	11,700
Complaints pending Dec. 31.....	2,459	3,997
Notices and orders pending Dec. 31.....	2,093	2,358
Notices and orders issued.....	10,602	11,614

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Division of Supplies and Accounts.

APPROPRIATION AND SPECIAL FUNDS, INCLUDING TRANSFERS.

Personal service	\$3,404,565.02	
Other than personal service.....	1,321,257.41	
Total.....		\$4,725,822.43

REVENUE BOND FUNDS.

Personal service	\$292,087.00	
Other than personal service.....	203,685.15	
Total.....		\$495,772.15
		<u>\$5,221,594.58</u>

EXPENDITURES, INCLUDING UNLIQUIDATED OBLIGATIONS.

Personal service	\$3,670,619.23	
Other than personal service.....	1,448,655.64	
Total.....		\$5,119,274.87

CASH RECEIPTS.

Antitoxins.....	\$37,648.17	
Virus.....	18,803.96	
Pay patients, U. S. Government.....	17,800.00	
Pay patients, City Hospitals.....	1,644.00	
Pay patients, Sanatorium, Otisville.....	520.00	
Transcripts, death, birth and marriage.....	51,974.70	
Bulletin subscriptions.....	41.40	
Waste paper.....	398.76	
Publications.....	30.08	
Miscellaneous.....	174.42	
Total.....		\$129,035.49

CASH DISBURSEMENTS, CONTINGENT FUNDS.

Country milk inspections.....	\$25,802.53	
Postage and express.....	32,292.12	
Collectors, Diagnosis Laboratory.....	2,346.19	
Food and drug samples.....	164.53	
Total.....		60,605.37

PENSION FUNDS.

On hand January 1, 1920.....		\$17,395.08
Receipts.....		133,966.07
Total.....		\$151,361.15
Disbursements.....		143,230.84
Total.....		<u>\$8,130.31</u>

REDEMPTION OF CORPORATE STOCK BONDS.

Payment of loan.....	\$35,000.00	
Deficit.....	45,000.00	
		<u>80,000.00</u>
		<u>\$71,869.69</u>

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Sale of corporate stock bonds	\$100,000.00	
Less contingent difference	20,000.00	
		80,000.00
Difference		
On hand December 31, 1920		\$8,130.31
Corporate stock bonds		215,000.00
		223,130.31
Total assets.....		

LABORATORY PRODUCTS.

Receipts.....		\$56,452.13
Distributed free.....		146,175.55
		202,627.68
Total.....		

PURCHASE AND STORAGE OF SUPPLIES.

Requisitions approved	3,298	\$1,436,389.78
Contracts registered	298	911,862.43
Orders, contracts and open market	7,928	1,436,389.78
Invoices.....	8,065	1,297,258.70
Vouchers.....	5,885	1,297,258.70
		\$1,297,258.70
Invoices—1920.....		

PAYROLLS.

Payrolls.....		\$3,670,619.23
Payroll sheets examined and audited.....		6,734
Payroll changes.....		9,500
Deductions for absence without pay.....		1,650
Refunds to City Paymaster.....		460

Engineer's Office.

In April, specifications were prepared and work completed for painting and decorating 35 Baby Health Stations, in the various boroughs.

Upon urgent request of the Director of Hospitals, specifications were prepared, submitted, and approved for screening for windows of five hospital buildings. Contracts were awarded and the work completed.

After much delay, due to right-of-way privilege being denied, the drainage and sewage system for the Queensboro Hospital has been approved and contract awarded.

Lease of Baby Health Station at 95 Suffolk Street expired April 15, 1920. The activity was then moved to 2842 8th Avenue. Baby Health Station at Bellevue Hospital was moved to 48 Henry Street.

Lease of the Tuberculosis Clinic at 111 East 10th Street expired August 1, 1920. This activity was then moved to 540 East 13th Street.

Lease of the Tuberculosis Clinic at 974 West Street, Brooklyn, expired March 15, 1920, and that of the Tuberculosis Clinic at 215 60th Street, expired February 1, 1920. The work of these two activities was combined, and a clinic installed at 5208 4th Avenue, Brooklyn.

On September 1, 1920, in compliance with a resolution of the Board of

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

Estimate and Apportionment, the milk laboratory and eight milk stations operated by Mr. Nathan Straus were transferred to the Department of Health. During December, the following stations, due to their close proximity to the Department's stations, were moved and both activities consolidated as follows: Straus Station at 38 McDougal Street, moved to 114 Thompson Street; Straus Station at 54 Market Street, moved to 108 Cherry Street; Straus Station at 303 East 111th Street, moved to 315 East 112th Street.

Law Division.

Annexed hereto are tables which, in a measure, indicate extensive legal activities of the Department of Health during the year; particularly insofar as these activities are reflected by the disposition of criminal actions instituted for violations of provisions of the Sanitary Code.

The importance of work performed in protecting inhabitants of the City against disease and the inducing causes thereof, has so frequently been emphasized that it is now generally recognized. However, if the Department had to depend entirely upon voluntary co-operation of the public in order to accomplish the purpose of its creation, without being able to enforce its orders, it is self-evident that its activities would be curtailed and minimized to a great extent, unless supported by reasonable and proper laws, enforceable through court action.

Therefore, results obtained through the courts in the enforcement of provisions of the Sanitary Code, which necessarily act as a deterrent against similar violations, distinctly reflect the administrative work performed. These factors emphasize the importance of results obtained through court decisions, and of regulatory provisions of the Sanitary Code in its relation to public health administration.

Criminal Actions.

An examination of tables herewith submitted discloses that 17,389 criminal actions were disposed of during the year. Of this total, 2,768 were classified as serious and flagrant violations, while 14,656 were classified as minor. Under the classification of serious violations, may be mentioned various food and drug sections and regulations relating to nuisances, all of which have direct relationship to health and welfare of the community.

It is by drastic, although reasonable enforcement of provisions of the Sanitary Code that sanitary conditions of the City, the homes and workshops are maintained; purity and wholesomeness of food and drug supply are assured; the outer air kept reasonably free from dense smoke, offensive and noxious gases, vapors and fumes; spread of infectious diseases controlled; and lives, health, comfort, safety and welfare of citizens protected and promoted.

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In order to prevent unnecessary and trivial violations being presented to court, the Department has established a very comprehensive system of control which provides for careful review of complaints filed by inspectors against persons, firms and corporations whose trades, businesses and occupations are regulated by provisions of the Sanitary Code, and, by a process of elimination, only those complaints where evidence clearly establishes a violation of law, are submitted for determination and punishment.

This system has resulted in obtaining the whole-hearted support of City Magistrates, as evidenced by the number of convictions obtained, as distinguished from the number of persons, firms and corporations who were acquitted after a trial.

The serious and flagrant violations are disposed of in the Municipal Terms of the City Magistrates' Court and Courts of Special Sessions; minor violations are disposed of in the District Magistrates' Courts. Minor violations consist of complaints involving alleged violations of the Spitting, Common Drinking Cup, Common Eating and Drinking Utensil, Discharge of Smoke from Automobiles, Exposure of Food, Smoking in Subway, and Unclean Food Store Ordinances. Serious and flagrant violations include those provisions of the Sanitary Code which regulate and control purity and wholesomeness of food and drug supply, discharge of dense smoke, and general nuisances.

Out of a total of 2,768 serious violations presented to the courts for determination, only 79 were acquitted; and of 14,656 minor violations, 102 defendants were acquitted. These figures support the conclusions that the Department of Health does not bring unnecessary and trivial violations of law to the attention of the courts, but supplements the work of the courts by other and additional administrative measures, which have for their purpose the elimination of like violations in the future.

The courts imposed during the year a total of \$87,232 in fines, and 10 jail sentences.

Due to the influenza epidemic, a large force of additional inspectors were employed and detailed to enforce certain specific sections of the Sanitary Code, to minimize, as far as possible, the danger of spread of disease. The activities of inspectors, who were authorized to serve summonses, resulted in an increased number of actions instituted in District Magistrates' Courts throughout various boroughs. The work supplemented the educational campaign, instituted by the Department, for the purpose of bringing about strict compliance with provisions of the Sanitary Code, prohibiting spitting and use of common drinking and eating utensils, as well as those regulating sanitary conditions of public eating and drinking places, and retail food stores.

The City Magistrates co-operated with the Department during the emergency, and imposed fines commensurate with the offenses.

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The influenza epidemic, which resulted in increased administrative activities and more stringent and drastic enforcements of the law applicable to the City of New York, is reflected in the report of disposition of cases, as set forth in the attached table.

During the epidemic a number of individuals, claiming to have discovered "sure cures" in the form of medicines or medicinal preparations, preyed upon the credulous public. With the outbreak, however, the Department, in light of former experiences, immediately gave its attention to this fraudulent practise. As a result of its activities and drastic action taken in few instances where an attempt was made to sell a "cure-all," attempts were frustrated, and it was unnecessary to institute criminal actions.

The Department's control was strengthened by the fact that, under provisions of Section 117 of the Sanitary Code, commonly known as the Patent and Proprietary Medicine Ordinance, all secret medicinal preparations were required to be registered in the Department of Health, and preparations could not be sold unless so registered. Under such circumstances the Department was able to obtain knowledge of the curative value of any medicine before it was placed upon the market. The value of this law is emphasized by results obtained. Mention is hereinafter made of a general revision of this particular law, which was made during the year in order to further strengthen the Department's control of patent and proprietary medicines.

Many important prosecutions, relating to the sale and distribution of unwholesome, adulterated or misbranded food, by manufacturers, producers, wholesale and retail dealers, were instituted and resulted in successful prosecution. Heavy penalties were imposed by criminal courts. The high cost of food, resulting from extraordinary conditions existing throughout the country and in Europe, continued to furnish an incentive to unscrupulous dealers to dispose of unwholesome or fraudulent products. New schemes and devices to defraud, substitution of inferior and cheaper products for well-known articles of food, and misrepresentation to the public, were discovered and drastic action taken to punish the perpetrators thereof, and constant and continuous inspection made by food inspectors, not only of the places of distribution but of the source of supply, and methods of transportation, furnished a ready means of detecting and preventing violations of the food and drug laws. As a result of this vigilance, heavier penalties were imposed by the courts and a larger number of prosecutions were instituted against those persons, firms and corporations who were detected or prevented from attempting to sell and distribute unwholesome, fraudulent or misbranded food. The great proportion of cases submitted to the criminal courts emanated from this branch of the service.

A number of actions were instituted upon complaints involving the maintenance of nuisances created by offensive trades and businesses. These

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prosecutions were uniformly successful. Actions were also instituted against food factories, wholesale and retail food establishments for maintaining their premises in an unclean and insanitary condition. This branch of the Department's activities supplements work performed in maintaining the purity of food supply, and its purpose is to protect the health of workers, as well as to prevent contamination of the food which is produced, manufactured or sold on the premises.

With the advent of prohibition, a number of cases of wood alcohol poisoning were discovered, and many deaths were reported. Extreme difficulty was experienced in fixing responsibility for such fatalities, as the supply of the liquor could not be traced. However, criminal actions were instituted against two defendants who had sold liquor containing wood alcohol to two persons who became blind as a result of drinking same. In one instance the defendant was found guilty and sent to prison for an indeterminate sentence. In the other instance, defendant was permitted by the court to pay to the injured person \$1,000 in settlement, in accordance with provisions of the Penal Law. The disposition of this case was satisfactory to the Department, inasmuch as payment of this money enabled the unfortunate man to obtain treatment at an institution.

A number of prosecutions were also instituted against persons, firms and corporations for manufacturing, selling and distributing adulterated, misbranded or mislabeled drugs and medicinal preparations. The Department and courts consider that these classes of cases warrant severe punishment, as substitution of one drug for another in the prescription of a physician, to be used in treatment of a patient, or sale of an inferior or cheaper drug may result in possible death. Also, false and misleading advertisements, to promote the sale of drugs in the treatment of disease sometimes incurable, has prevented such persons from receiving proper medical care and attention, with the result that their lives are shortened.

The Department discovered that a number of sour cream dealers were selling a product consisting of a mixture of cocoanut oil and sour cream, and fraudulently representing same to be sour cream. These prosecutions were pushed to a successful termination, heavy fines were imposed by the courts, and a recommendation made that permits of certain dealers be revoked and they not be permitted to again engage in the milk business in the City.

For a number of years, poultry slaughter houses were a source of constant complaint because of the insanitary conditions under which, it was claimed, they were maintained. Apparently, fines imposed by the courts did not act as a deterrent, in most instances. The Department instituted an intensive campaign to clean up this situation. The Board of Health enacted more stringent regulations, and proprietors of poultry slaughter houses were warned that they must install additional sanitary facilities to maintain

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premises in a clean condition. Those who did not obey were prosecuted, and the courts imposed heavy penalties. In most instances, fines amounting to \$350 were paid, although defendants, after having been examined, had complied with requirements of the regulations. These heavy penalties were imposed so that the attitude of the Department would be clearly and definitely demonstrated, and to impress upon holders of permits that their establishments must not, in the future, constitute a nuisance. In few instances, the Board found it necessary to revoke permits of certain proprietors.

The vast number of criminal prosecutions instituted in behalf of the Department—17,389—precludes the possibility of considering in detail the different classes and kinds which have been submitted to the courts. Their scope and effect undoubtedly have direct bearing upon public health, and support given by the courts, where evidence presented, was sufficient to warrant conviction, has been such that the Department's administrative activities in enforcing provisions of the Sanitary Code are now based upon a firm and sound basis, and the continued and intensive work performed in this field of health activity will ultimately reduce the number of criminal prosecutions instituted.

In the enforcement of the Heat Ordinance, attention of the Department must necessarily be first called to violations of the law by tenants who suffer for lack of heat. Some landlords, realizing this situation, have, in many instances, attempted to dispossess the tenant or tenants whom they suspected to have made complaints to the Department of Health. Many such instances occurred during the year, and the facilities of the Department, its records showing the result of investigation, and legal support, were made available to aid tenants in defending such actions as were instituted by landlords. Inspectors were detailed to appear, and counsel was obtained through co-operation with the Mayor's Committee on Rent Profiteering and the Corporation Counsel's office, in behalf of the tenant. In most instances the efforts of the landlord were defeated.

However, one very aggravated case was brought to the attention of the Commissioner in which this method of procedure was unsuccessful, and tenants whom the landlord suspected with having made complaints were ultimately dispossessed, although the Department appealed to the landlord in their behalf. Finding the landlord obstinate, vindictive and arbitrary in his attitude, the Commissioner determined to use every available legal method to punish him, provided the evidence was found sufficient to warrant institution of a criminal action. All criminal statutes were carefully examined and considered, and it appearing the landlord had, prior to eviction, written a threatening communication to one tenant who had occupied the same apartment for more than twenty years, informing him, in effect, that inasmuch as he had complained to the Department of Health, the landlord demanded that he vacate the premises. A criminal action was

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instituted against this landlord for an alleged violation of two sections of the Penal Law, one relating to the sending of threatening communications, and the other to the use of threats by one person to intimidate another with a view to compel such other person to abstain from doing a lawful act.

This criminal action was instituted in co-operation with the District Attorney, the Commissioner personally appearing as complainant. The action was ultimately tried in the Court of Special Sessions, and the defendant found guilty of sending a threatening letter. Considerable publicity was given this case and its successful termination served as a warning to this type of landlord. It has been noted that complaints from tenants against landlords for alleged similar offenses have practically ceased, and the case mentioned undoubtedly caused this result.

New Laws Regulating Food-Products.

In order to protect the consumer, and to maintain the purity and wholesomeness of well-known and recognized articles of food, such as milk and products of milk, legal standards have, from time to time, been established by the legislature of the State of New York, and such standards have been incorporated in the Sanitary Code. After enactment of any such standard, articles of food must conform therewith, and if a person, firm, or corporation is detected in selling such a standard article of food, not conforming with standard, criminal prosecution could be instituted. The necessity for establishing such standard has long been recognized by those charged with enforcement of food and drug laws, and the courts. The public benefit derived, as a result of standardization of foods, whereby fraud, misrepresentation, inferiority, impurities, substitution, and imitation are prevented, cannot be over-emphasized. Such standards also protect the honest and legitimate food dealer against the dishonest dealer who manufactures or produces a cheaper and inferior article having all the physical characteristics of the genuine article, thereby underselling the honest dealer and, possibly, driving him out of business, as well as deceiving and misleading the purchaser and consumer. In addition to these factors, food standards, in establishing the purity and wholesomeness of an article of food, assure the public that if the particular article is sold, they have a reasonable assurance that they will obtain the food value that the article named is reputed to contain.

With advent of the World War, high prices created an added incentive for the food adulterator to extend his activities, with the result that facilities of the Department have been taxed to their utmost to keep abreast of new fields opened by unscrupulous dealers, in manufacturing substitutes and imitations for well-known articles of food. Numerous attempts have been made, during the year, to invade the New York market with substitutes, represented to the public either as the genuine article or just as good.

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There is, of course, always the difference in cost of manufacture which permits vendors of the substitute product to undersell the legitimate dealer. Again, we find articles of food which have all physical characteristics of a standard article of food sold as and for standard food, with the added incentive of additional illegitimate profit being derived by those interested in promoting the sale of substituted product.

The necessity of establishing standards, therefore, has received the careful attention of the Board of Health, and exhaustive investigations have been instituted, standards established by other governmental agencies considered, and the field of investigation exhausted, so that complete data could be available, in order that it might consider and determine the advisability of standardizing certain recognized articles of food for which no standard had already been created.

In the case of ice cream, the investigation disclosed that while manufacturers of the highest grade, produced an article which contained only wholesome and pure ingredients, among which might be mentioned milk, cream, and milk products, there was no uniformity as to the amount of ingredients entering into the mixture. It was further found that all high grade mixtures contained more than 8% milk (butter) fat, less than 1% of gelatin or other thickener, in addition to flavoring extract, fruits and other like substances. These products were found to be composed of wholesome and nutritious ingredients. Manufacturers of medium grade ice cream were found, generally, to approximate the standard of high grade product, in so far as the use of wholesome ingredients is concerned. These products, also, were found generally to contain more than 8% milk (butter) fat.

The low priced product sold in the New York Market was found to contain numerous substitutes for milk, cream, and milk products, which are normally present in ice cream, and which the purchaser and consumer expect to be contained therein. This mixture also contains various other ingredients, in most instances wholesome, but nevertheless substituted for other ingredients which the consumer assumes should be present. Impure gelatin, consisting of a mixture of food gelatin and glue, was, in some instances, found on premises of the manufacturer.

This discovery opened a new field of investigation and, inasmuch as gelatin is used as a thickener in most ice cream, investigation of the industry was extended to include the food gelatin industry as well. As a result of conditions found to exist, a comprehensive report, showing the result of the investigation, was presented to the Commissioner, who determined that a provision of the Sanitary Code should be enacted, standardizing this recognized article of food. The ultimate purpose of such standardization was, not to prohibit the sale of other wholesome frozen products under their own distinctive names, but, by creation of such a standard, to assure

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the consumer, when asking for ice cream either for use as a dessert or in the sick room, that the product purchased for and sold as ice cream would contain ingredients prescribed by the section of the Sanitary Code.

An examination of various laws on the subject disclosed that there was no real comprehensive standard established by any other legislative body, and, after very careful consideration, a section was enacted by the Board, defining and standardizing this food product. Another section defining and standardizing food gelatin was also enacted. By virtue of the provisions of these sections, the Department will be able to fully control and conserve the purity and wholesomeness of articles of food. Such control will begin at the place of production and follow the product until it reaches the ultimate consumer.

The oyster and shellfish industry was also the subject of a very extensive investigation. This investigation resulted in the enactment by the Board of Health of additional provisions of the Sanitary Code, and supplemental regulations, which had for their purpose the regulation and control of production, transportation, and sale of oysters and shellfish in the City of New York. The regulations provided for a system of supervision, similar to that established for the purpose of maintaining the purity of milk supply. In both instances, source of supply must first be approved before food is permitted to be sold within confines of the City of New York, and the product properly identified by labeling or tagging from the time of production until it reaches the consumer. Dealers are required to obtain a permit, and must conduct their business in accordance with the regulations. These articles of food—milk and shellfish—provide a fertile means for transmitting disease, and extraordinary conditions must be imposed to protect them from contamination. The adoption of these regulations relating to the shellfish industry has resulted in exclusion from the City shellfish from contaminated sources of supply, and with the control vested in the Department, the purity and wholesomeness of shellfish will be maintained.

Regulating Drugs.

Section 116 of the Sanitary Code, which is similar in scope and effect to the Federal Food and Drug Law, and which defines adulterated and misbranded foods and drugs was amended. Prior to amendment, a drug was declared to be adulterated "if its strength or purity falls below the professed standard under which it was sold." In conducting an investigation of drug stores, the Department had a number of prescriptions filled and, upon analysis, the strength of the drug sold upon such prescriptions was found to be in excess of strength called for in the prescription. It was quite evident, that where a physician prescribes drugs in certain definite quantities for a patient, if the strength is above or below that which he believes necessary in treatment of the particular disease, harmful results

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might follow. A prescription might call for a carefully limited quantity of a harmful drug, which quantity would have no injurious effect; but if, through carelessness or negligence, the druggist dispenses a larger quantity than that called for in the prescription, serious results might follow.

With these factors before it, the Board amended Section 116 so that a drug is deemed adulterated if its strength or purity falls below or its strength is in excess of the professed standard under which it is sold. The section as amended will, in future, provide a means whereby criminal prosecution may be instituted in the instances above cited.

Regulating Hydrocyanic Acid Gas Fumigation.

A number of fatalities resulted from the use of hydrocyanic acid, cyanogen or cyanide gas, for fumigating purposes, with the result that the Department instituted an investigation which disclosed that a number of persons, firms and corporations were using this deadly gas for fumigating purposes, and that adequate protection was not afforded to prevent accidents. As a result of the investigation, the Board enacted a section of the Sanitary Code placing such persons, firms and corporations under permits, and restricting the use of cyanide gas for fumigation purposes to prescribed methods, embodied in definite regulations which restrict its use in such manner and to such an extent as to prevent the loss of human life. Since enactment, these regulations have had a most salutary effect and the control exercised by the Department through its inspectorial force has been such as to prevent any further loss of life.

Special Regulations Re Influenza.

During the influenza epidemic, special regulations were adopted by the Board governing the quarantine, care and treatment of persons affected with influenza and pneumonia. The scope of these regulations included the establishment, period, and termination of quarantine, care and disposal of infected materials, cleansing of eating and drinking utensils, and cleansing and renovation of rooms which patients had occupied. These regulations, coupled with various sections of the Sanitary Code relating to spitting, dry-sweeping, ventilation, and cleansing of theatres, railroad cars and other public buildings, the use of common eating and drinking utensils, overcrowding, etc., establish legal basis upon which the Department reduces danger of the spread of these diseases. These special sections and regulations must also be considered with other sections of the Sanitary Code governing reporting of cases of infectious diseases, and supervision and control exercised by means of physicians and nurses of homes, schools, and places of public assemblage.

In addition to these precautionary measures, it was found necessary to close a number of moving-picture theatres because of the failure of

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proprietors to maintain mechanical means provided for adequately and properly ventilating such places during performance, or failing to keep such places in a clean and sanitary condition. In closing these theatres, the Board acted under and by virtue of the provisions of Section 1299 of the Charter because of the fact that they were a public nuisance.

Poultry Slaughter Houses.

The establishment, operation, and maintenance of poultry slaughter houses throughout the City has been a source of annoyance and trouble to the Board of Health. There are three steps which must be followed before a permit to operate a poultry slaughter house is issued: first, the approval of site; second, approval of plans and specifications; and third, the application for a permit to operate. Numerous changes have, from time to time, been made by the Board of Health in the past to systematize and regulate the granting of an approval of site. Some of these provisions of the Sanitary Code, at different times, required that owners of property within a prescribed radius must consent to establishment of the poultry slaughter house. Another required that the slaughter house could only be established in certain prescribed zones. Another required that it must not be established or maintained more than 200 feet from the waterfront. Another required that it must not be within a certain prescribed number of feet of a tenement house, dwelling house, hospital or public institution, etc. With the enactment of the Building Zone Resolution by the Board of Estimate and Apportionment, establishment of poultry slaughter houses were limited to unrestricted zones or areas, but did not affect existing poultry slaughter houses, conducted prior to enactment of the Building Zone Resolution and which had been established in residential and business districts.

With the enactment of this provision of law, regulations were modified to meet conditions and, as a condition precedent to the granting of the approval of site, the Board of Health provided certain additional restrictions. In an endeavor to protect the community in which the poultry slaughter house was to be located, it became necessary, under the regulations adopted prior to 1920, to afford owners of property in the neighborhood of proposed site, an opportunity to present objections to the Board against establishment of a poultry slaughter house. As a consequence of this condition, most of the Board's time was taken up with these hearings, and it was found to be extremely difficult to proceed with much more important matters of public concern. The Commissioner determined that a complete survey should be conducted, the regulations carefully considered, and, if possible, a solution to the problem reached. An investigation, conducted by the Bureau of Food and Drugs, established the necessity for a general revision of regulations and amendments to the Sanitary Code which regu-

late and control establishment, operation, and maintenance of poultry slaughter houses. These recommendations were embodied in additional provisions of the Sanitary Code and the regulations were extended and made more comprehensive in their scope and effect. The necessity of holding hearings was entirely eliminated and the Board, in reaching its determination, was in possession of much more complete and comprehensive evidence than it was theretofore possible to obtain under the old methods of procedure.

Under the new regulations, existing poultry slaughter houses have to be renovated and reconstructed to comply with sanitary restrictions imposed. The determination as to whether a particular site should be approved by the Board is dependent upon a most complete and comprehensive survey made by representatives of the Department detailed for such purpose, supplemented by figures and other data which is gathered for the purpose of conveying to members of the Board a complete and comprehensive picture of the locality and neighborhood in which it is proposed to establish this offensive trade. Immediate enforcement of these new regulations was instituted, and negligent proprietors of existing poultry slaughter houses have been prosecuted for failing to maintain their premises in a clean and sanitary condition. The intensive study conducted by the Department of poultry slaughter houses, and the strict enforcement of the provisions of the Sanitary Code and regulations adopted by the Board of Health have already had a most salutary effect.

Filing Delayed Certificate of Marriage.

Upon recommendation of the Commissioner, the Legislature enacted Section 1239 of the Charter—a remedial statute—which vested in the Commissioner the power and authority to file certificates of marriage which, through neglect of the person performing the marriage ceremony, had not been filed. Prior to enactment of the section, if a marriage certificate was not filed within the time prescribed by law, no authority was vested in any official to file such a certificate among the records of the Department of Health. Consequently, the parties to a marriage ceremony were unable to file the record of a marriage which had not been filed by the person officiating. Under provisions of this section, the Board of Health was authorized to enact rules and regulations to govern conditions under which delayed records of marriage might be filed. In accordance therewith the Board adopted rules and regulations which, in substance, specify what the petition shall consist of, as well as the supporting evidence that must be submitted therewith. A number of delayed marriage records have been filed since the enactment of this remedial statute.

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Overcrowding of Cars.

During the influenza epidemic, the overcrowding of subway and elevated lines received immediate and serious consideration by the Commissioner, in order to minimize danger of the spread of disease due to close contact of persons in enclosed space of railroad cars. The problem of minimizing the crowding during rush hours of the traveling public into subway and elevated lines has, for many years, received most serious consideration and study by the Department, as well as other governmental agencies. With outbreak of the epidemic, the Commissioner determined that danger created and resulting from close packing of human beings, required and demanded that practical precautionary measures should be taken by the Department of Health. He, therefore, promulgated certain regulations by which, through assignment to large industries of different hours for beginning and ending the day's work, morning and evening rush hour traffic was divided, with result that overcrowding on transportation lines was lessened. Excellent results followed adoption of this simple and inexpensive device. The commercial interests affected co-operated to fullest extent, and the scheme of regulation was found to be of great public benefit. Very little opposition was experienced, and the so-called "emergency hours" obviously promoted general welfare and convenience of the public, without infliction of any serious hardship so that, while the need of such rules was greater during the epidemic than at normal times, they presented an argument for preserving these, or similar rules, permanently in an effort to minimize conditions which arise out of overcrowding, during rush hours, of transportation lines. The plan certainly prevented and diminished traffic congestion, and minimized danger of the transmission of contagious diseases.

It is regrettable that the legislature of the State, two years ago, passed a special statute which prohibited the Department of Health from exercising any jurisdiction to normal times to regulate crowding of human being on transportation lines of the City. It was only by virtue of extraordinary conditions caused by the epidemic of influenza, that the Commissioner was able to accomplish beneficial results mentioned above.

Prior to the enactment of this statute, the department had made a very careful investigation, and established beyond a reasonable doubt that crowding of persons in railroad cars provided a ready means of transmitting infectious diseases, particularly those affecting the respiratory organs such as, influenza, tuberculosis, etc., and constituted a menace to public health. Having established these facts, the Board proceeded to regulate and limit the number of persons permitted to ride on railroad cars, and established a standard consistent with public health and welfare which limited the number to one and one-half the seating capacity of the car. In other words, the standard established allowed one person to stand to every two persons

seated. These orders were enforced and were found practicable and reasonable from a legal standpoint, and sustainable in courts.

Since the legislature deprived the Board of Health of jurisdiction in the premises, the public health benefit derived from enforcement of these orders has been lost, and conditions prior thereto again prevail and, as a matter of fact, have steadily grown worse. It remained for the Commissioner to demonstrate to those vested with exclusive jurisdiction over the transportation of passengers on railways of the City of New York a practical illustration as to how overcrowding conditions could be minimized without resulting in any great inconvenience to the public, or jeopardizing commercial interests.

Regulation of Use of Saccharin.

During the shortage of sugar, full page advertisements appeared in many daily newspapers, in the form of what purported to be open letters to citizens of the City calling attention to shortage of sugar, and suggesting a remedy whereby inconvenience and alleged suffering resulting therefrom might be decreased by use of saccharin. The motives that actuated corporations in inserting these advertisements were clearly predicated upon financial profits to be derived from increased sales, taking advantage of abnormal conditions that temporarily existed as result of curtailment of the supply of sugar. The Commissioner immediately took steps to call the attention of the public to following facts regarding saccharin, to wit: (1) That saccharin is a coal-tar product and not a food; (2) That saccharin has no food value and if substituted in whole or in part for sugar in a food product, it reduces, lowers and injuriously affects the quality and strength of such food product; (3) Saccharin is inferior to and cheaper than sugar. The advertisers, evidently, in publishing broadcast their misleading statements, were of the opinion that they were protected by a decision rendered by the Appellate Division of the Supreme Court, First Department, in the case of the People against the Excelsior Bottling Works, New York (reported in 171 N. Y. S., 733), as certain extracts from said decision were quoted.

This case arose out of a prosecution instituted against a bottling concern for having in its possession and offering for sale a beverage which was adulterated in that it contained one-hundredth of one per cent. of saccharin, alleged to have been substituted for sugar. The court, in its decision, however, upheld provisions of the Sanitary Code under which prosecution was instituted, but held that the beverage "strawberry soda" was exempted, inasmuch as it was a mixture of compound known by its own distinctive name, and that label affixed to bottle met requirements of the Section. The court distinctly stated that "said water is not a natural food product but is a compound of food products," and was very careful

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not to include in its decision that its interpretation applied to standard articles of food, using the term in its ordinary accepted meaning as distinguished from the term "beverage." The decision, while in favor of the defendant, was of very limited scope and effect in its application to food laws and in no wise affects the power and authority of the Department to enforce the provisions of the Sanitary Code, insofar as they regulate and control sale and distribution of standard foods.

Dealers were warned that if saccharin were substituted in place of sugar in recognized or standard food products sold and offered for sale to the public for human consumption prosecution would result. The shortage of sugar was merely temporary, and proclamation issued by the Commissioner brought home to the people knowledge of harmful results that might accrue if saccharin were permanently used in the home as a substitute for sugar. As was stated in his proclamation, it is much more desirable to substitute molasses, syrups, or other sweetening food products having a distinctive food value, than to substitute an article which is not a food and totally without food value. The action taken had the desired results, and misleading advertising matter, which would undoubtedly have had a very definite effect upon wholesomeness and purity of food supply, immediately ceased.

Regulation of Undertakers.

An elderly lady was run down and killed by a taxicab while crossing a public thoroughfare. The taxicab company employed an undertaker to bury the deceased. Perfunctory efforts were made to locate relatives of the deceased. The day after burial, a daughter of the deceased called at her former home and found that her mother had been killed. Upon ascertaining these facts, the Department, acting in co-operation with the District Attorney's office, instituted an investigation which disclosed that the undertaker had made a false statement in his application to obtain a burial permit and had obtained the body from the morgue by making false statements in regard to his right to obtain possession. Criminal prosecutions were instituted which resulted in conviction of the undertaker for violating provisions of the Sanitary Code.

The investigation further disclosed that, while the provisions of the Sanitary Code fixed criminal responsibility of undertakers, apparently the law, regulating conditions under which an undertaker could obtain possession of a body at the morgue or hospitals was insufficient in scope and effect. After very careful and thorough investigation of the manner in which undertakers transacted business, it was decided that a more comprehensive system of control would have to be established. It appears that undertakers were required to obtain licenses from the State which

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were only issued after applicants submitted to examination to establish their qualifications. The State law further provided that no person could conduct the business of undertaking in any part of the State without having first obtained such a license. The State, however, had not adopted any rules or regulations governing the manner in which the undertaker should conduct his business, or which limited the place where he could maintain his establishment.

After very careful consideration of the existing law, the Board adopted a provision of the Sanitary Code, and supplemental regulations, which, in effect, prohibited any person conducting the business of undertaking in the City without a permit having first been issued therefor by the Board of Health, and required the business to be conducted in the manner and subject to restrictions prescribed in extensive regulations. In adoption of these regulations, the Board obtained cooperation of various undertaking associations, and results obtained had been such as to warrant the conclusion that abuses which existed have been practically eliminated. The control vested in the Board by virtue of these regulations is such that the applicant, before he can engage in business, must be of good moral character; must be licensed as to his qualifications by the State; and must assume personal responsibility for the manner in which he conducts his business.

The validity of this provision of the Sanitary Code and the regulations was contested by an undertaker who held a license from the State, but the Board held that his reputation was such that it would not issue a permit for him to continue in business. He appealed to the Supreme Court for a peremptory writ of mandamus to compel the Board of Health to issue a permit to him to engage in and carry on the business of undertaking. The court, in an opinion written by Justice Benedict, stated,

“the right of such a permit under Section 46 of the Sanitary Code and the Regulations thereunder is a matter within the discretion of the Board of Health, and in the absence of anything going to show that such discretion was exercised in an arbitrary or unreasonable manner, the Supreme Court ought not to interfere. In the present instance the Board acted upon the application, and by reason of the very bad record of the relator as contained in the police records mentioned in the answering affidavits, his application was denied; and I am of the opinion that such denial was fully justified. The business of an undertaker is inherently one which demands good character and no person should be permitted to follow it as a business who is under indictment and who, upon numerous occasions, has been arrested charged with various crimes, upon the trial of which he has on several occasions pleaded guilty and received sentence. The provisions of the Sanitary Code above mentioned are clearly within the limits of the Police Power of the City and ought so to be.”

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Under this decision and by virtue of the provisions of the Sanitary Code and regulations, the Department is now vested with that measure of jurisdiction and control essential and necessary in order to fully protect public health.

An important decision was rendered by the Supreme Court, Appellate Division, First Department, on an appeal from a conviction obtained in behalf of the Department against a large candy manufacturer, in the Court of Special Sessions, New York County, for violating the provisions of Section 163 of the Sanitary Code, a violation of which is a misdemeanor. The defendant contested the validity of said section of the Sanitary Code, which provides as follows:

“ Sec. 163. No meat, vegetables, or milk, not being then healthy, fresh, sound, wholesome, or safe for human food, or the meat of any animal that died by disease or accident, shall be brought into the City of New York or held, kept, offered for sale, or sold as such food, or kept or stored anywhere in said city. The term ‘meat’ as herein used shall include fish, birds, eggs and fowl; the term ‘vegetables’ shall include any product, substance or article used as and for human food, other than milk or meat; the term ‘not sound’ shall include any vegetable that is wormy. For the purpose of this section, any meat, vegetable or milk in the possession of, or held, kept, or offered for sale by, a dealer in food, shall, prima facie, be deemed to be held, kept and offered for sale as human food.”

The court, in sustaining its validity, held:

“(1) The provisions of the Sanitary Code have the same force and effect as though enacted by the Legislature of the State, and under the provisions of the New York Charter one who violates the same is guilty of a misdemeanor and punishable accordingly. The defendant-appellant asks reversal of the judgment of conviction herein on the ground that said judgment is against the weight of evidence. A careful examination of the evidence has convinced us that the trial court was amply justified in holding the defendant guilty of a violation of said section of the Sanitary Code, which has been duly made and constituted an ordinance of the City of New York.

(2) The defendant-appellant further contends that the sentence and judgment imposed upon it was erroneous, and insists that punishment for a violation of an ordinance of the city cannot exceed a fine of \$10 or ten days’ imprisonment, or both. I think such contention is without merit. * * *

(3,4) The defendant-appellant also assails the constitutionality of Section 163 of the Sanitary Code as unreasonable, and therefore objectionable and unconstitutional. It is the contention of the appel-

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lant that the Board of Health was without power to classify all human food as meat, vegetables, or milk, and the appellant insists that candy is neither meat, nor vegetables, nor milk, and that it is unreasonable for the ordinance to make anything a vegetable that is not naturally or reasonable such, and that the blanket provision of the section that 'the term "vegetable" shall include any product, substance or article used as and for human food, other than milk or meat,' was unreasonable. It seems to me that there is no force in defendant's contention. In the first place, the chief ingredient of candy is sugar, a substance derived from vegetable sources, and the flavors, nuts and other constituents of candy certainly have a like origin. The classification of goods provided by Section 163 is an entirely convenient and proper one. This provision of the Sanitary Code was in the interest of insuring proper and wholesome food, and its enactment was, I think, well within the police power of the enacting body. The facts of the case at bar seem fully to have justified its enactment. If offenders and violators of Section 163 could escape by the mere payment of a fine of \$10 or the service of a jail sentence of ten days it might not prove at all unprofitable to violate the law.

I think the fine imposed was, under the circumstances a lenient one and, for the reasons stated, that the judgment of conviction should be affirmed. All concur."

It might be mentioned that the vast bulk of prosecution instituted against persons who sell or offer for sale unwholesome, impure or deleterious food, are brought under and by virtue of the provisions of Section 163 of the Sanitary Code, and in sustaining the validity of Section in question, the court has further strengthened control of the Department over purity and wholesomeness of food supply of the city.

The Department opposed the enactment of a law embodied in a bill which passed the Legislature and went to the Governor for signature and which, in effect, would have permitted chiropractors to practise in the State of New York. Representatives of the Department appeared before the Governor in opposition to the measure which, in effect, would permit this class of individuals to practise their alleged profession without adequate education, training or experience. The Governor vetoed the bill.

During the year the Law Division reviewed every bill submitted to the Legislature, and all those which affected interests of the Department were commented on, approved or disapproved, after careful consideration by the officials. This procedure has had a most beneficial effect in that it has prevented the enactment of many laws which would seriously affect and limit the extraordinary powers, jurisdiction and authority of the Board of Health of the City of New York, in matters concerning preservation of human life and health. Year after year special interests submitted to the Legislature

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bills which would deprive the Department of jurisdiction in matters vital to public health and safety. Many times bills are presented to the Legislature which, on their face, are not apparently directed against activities of the Department, and it is only after very careful scrutiny and analysis that the purpose and effect are disclosed. The Department, therefore, must keep in close touch with Albany in order to safeguard its interests and that of the public.

During last year many measures were found objectionable, briefs prepared in opposition and transmitted to the Legislature, which undoubtedly had the desired effect, because no measure was enacted during the year which seriously affected the interests of the Department. Supplementing the submission of such briefs, it is often deemed advisable by the Commissioner to send representatives to Albany and in many instances he appears personally before the Legislature. This feature of the work of the Law Division has an important bearing upon activities of the Department of Health.

Under provisions of the Greater New York Charter the Commissioner of Health is empowered to file records of birth, which through neglect of medical attendant present at birth, were not filed with the Department provided the statutory evidence is submitted in support of such application. A record of birth is of vital importance to the child in after life inasmuch as it may establish his citizenship, legitimacy, property rights, etc. When a child enters school the authorities demand a record of birth; when a child reaches the age of fourteen a record of birth is essential before he can obtain an employment certificate and leave school; a record of birth is essential to a citizen applying to the Federal Government for a passport; a record of birth occurring in the City of New York is the only evidence that will be received in many of the European countries of legitimacy, and the right to inherit property located there. A birth record is one of the most important public records.

A physician or midwife, therefore, who neglects to report the birth of a child commits a serious offense. All applicants to record delayed records are reviewed by the Law Division and extreme care is exercised to prevent filing of false birth certificates. During the year 544 applications to record births were received by the Law Division. Of this number 449 had to be returned in order that corrections be made and additional evidence submitted before favorable action could be taken thereon. A total of 470 applications were finally approved and filed and five were denied because insufficient evidence was presented to support the application.

The number of applications received during the year was less than any prior year since the section in question was enacted. This was due undoubtedly to the large number of applications received during and immediately prior to the World War from persons who had to establish date and place

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of birth in order to comply with selective draft law. As indicated in last year's report, the Law Division co-operated with draft boards, and a number of persons attempting to file false records of birth, in order to evade the draft law, were discovered and subsequently prosecuted and forced to comply with duties and obligations imposed by Federal statutes to serve their country; therefore, there has been a reaction and the number of applications received has been less than during the previous year. This may be further explained by the fact that the Department has constantly instituted actions against physicians and midwives for failing to file records of birth.

This system has resulted in establishing the most complete system of birth records in the country, and a child born in the City of New York, at the present time, is reasonably assured that a record of birth can, at any time, be obtained from the Department of Health.

A number of new legal forms were prepared for use in various branches of the Department, which regulations required to be distributed to applicants for permits, as well as other matters and subjects where it was essential and necessary to fix legal responsibility of the individual person transacting official business with the Department.

In conclusion, it may be stated that the Law Division has, during the year, experienced the greatest activity in its history. The attached tables, in a measure, reflect the scope and effect of work performed. Many serious legal problems have been considered and solved, and although a number of appeals have been taken from decisions rendered by courts, and those rendered by the Board of Health, no reversal of judgment or opinion has been obtained by a contestant, and the jurisdiction, power and authority of the Board of Health remains unimpaired and, as a matter of fact, strengthened.

These results have been obtained because careful and conscientious consideration has been given to rights of the public, as distinguished from those of the private individual, and every effort has been made to prevent those who have been charged with a violation of law from charging the Department with persecution as distinguished from prosecution. The necessity of not submitting to the courts trivial and unnecessary prosecutions has been recognized, and obligations assumed by the Department in dealing fairly and justly with persons, firms and corporations, whose trades, businesses or occupations are subject to supervision, have been fully complied with, as evidenced by results disclosed in the attached tables.

WORK OF LAW DIVISION, 1920.

Birth certificates received for special filing.....	544
Returned for correction.....	449
Approved	470
Denied	5
Notices received	3,470
Counsel's notices sent.....	3,468
Criminal actions	64
Civil actions	3
Communications received	672

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CASES IN COURT OF SPECIAL SESSIONS—1920.

	MAN- HATTAN.	THE BRONX.	BROOK- LYN.	QUEENS.	RICH- MOND.	TOTAL.
Dismissed (nuisance abated or com- plaint withdrawn before trial)....	6	..	..	..	..	6
Acquitted	2	..	..	..	2	4
Jail sentence.....	1	..	..	..	..	1
Sentence suspended.....	1	1	1	..	4	7
Fined.....	9	3	4	..	18	34
Total prosecutions instituted....	19	4	5	..	24	52
Amount of fines imposed.....	\$800	\$300	\$302	....	\$1,010	\$2,412

CASES IN CITY MAGISTRATES' COURTS—1920.

To Special Session.....	35
Fined.....	12,193
Sentence suspended.....	1,889
Prison sentence.....	8
Acquittals.....	102
Dismissals.....	429
Total cases.....	14,656
Total amount of fines.....	\$39,373

CASES IN MUNICIPAL TERM COURT—1920.

	PART I. (MANHATTAN AND BONX)	PART II. (BROOKLYN).	TOTAL.
Held on bail.....	18	7	25
Jail sentence.....	1	..	1
Dismissed (nuisance abated or com- plaint withdrawn before trial).....	121	53	174
Acquitted.....	54	21	75
Sentence suspended.....	280	155	435
Fined.....	1,350	681	2,031
Total prosecutions instituted....	1,824	917	2,741
Amount of fines imposed.....	\$27,896	\$17,551	\$45,447

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The year 1920 was, for this Bureau, prolific in the initiation of new activities and the extension of old. The Bureau had a leading role in the prevention of entry into the City of epidemic diseases, such as plague and typhus.

Anti-rat Work.

Early in the year, a thorough study was made of the vulnerability of the city in relation to bubonic plague, and surveys were made of the waterfront, especially that portion along which ships from foreign ports docked, and of dumps, stables, and other places where rat breeding and rat harborage were likely to exist. As a result of these investigations, new and stricter regulations were adopted relative to the docking of vessels from infected and suspected ports—especially the fumigation requirements of such vessels, rat guarding of hawsers and gang planks, breasting off from the dock, and going into dry dock. As it was found impossible to properly rat guard these vessels in dry dock, the owners are now required to fumigate them before entry therein. A special squad of inspectors was maintained to compel compliance with these new regulations, and for catching rats along the waterfront. These rats were taken to our laboratory for examination, under the theory that plague will show in the rat population several months before appearing among the human population of the same district. These examinations all proved negative. Various rat poisons, and trapping devices were spread along docks, and at dumps to reduce the number of rats, and excellent results were soon apparent. Conferences were held with all dock owners or lessees of the city, warehousemen, steamship companies, stable owners, civic organizations, etc., and methods by which they could assist in the "Rout the Rat" campaign outlined. As a result, a large amount of poisoned bait and cyanide gas are being used for extirpation of the rat, and a greatly increased amount of concrete and heavy mesh for rat-proofing.

Closer co-operation has been obtained with quarantine officials, to the end that a daily list of fumigations, within the previous twenty-four hours, is telephoned to the Bureau, in addition to list of vessels coming into port. The Navy Department furnishes us with their Daily Shipping Bulletin containing all shipping news information, lists of consignees, docking piers, etc., which makes it possible for our inspectors to meet incoming vessels, and compel compliance with our regulations.

In order to familiarize the public with the danger from the rat, and to suggest best methods of extermination, the Department prepared several special bulletins on this subject, and, in addition, printed and distributed several hundred thousand circulars, entitled "Rout the Rat."

In connection with vermin extermination, cyanide fumigation received

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considerable attention. The necessity for care in the use of this gas, the ease with which it can pass from one apartment to another, in the same building, compelled the Department to formulate regulations governing its use, and requiring the operator to qualify before receiving a permit. A list of licensed operators was established and furnished to persons desiring to rid their premises of vermin, or against whom the Department had issued orders for this purpose. While, in general, fumigation of ships with cyanide is performed by the Health Officer of the Port, still there are several concerns which have private fumigators to clean out crews' and passengers' quarters, and sometimes holds of ships. Rats are almost unknown upon those ships which are regularly fumigated, and it would seem that those consigners who take advantage of such methods of rat eradication gain in the final analysis.

Eradication of Lice.

The presence of typhus in Europe, and the known method of its transmission impelled the Bureau to start a campaign to eradicate the louse. Conferences were held with all lodging house keepers, and with representatives of barber shop masters' and journeymens' organizations to outline measures to so clean their premises as to prevent transmission of vermin from patron to patron. The collection and handling of soiled clothes in laundries, the destruction of vermin in the washing or drying process, and the separation of clean from unclean clothes, became a subject of moment to our field forces. The result of these surveys has shown necessity for keeping close watch on methods of some laundries, especially in their handling of silk and woolen goods. The usual winter night inspections of lodging houses were carried on to correct any insanitary conditions found, and to observe the presence of vermin-infested lodgers. Recipes for soaps for use on these persons, and of insecticides to be used on beds and bedding were furnished to all keepers. In some instances, sulphur or steam rooms were placed in use for cleaning clothing of patrons.

Sanitation of Public Places.

During January and February, a recurrence of the influenza epidemic visited this city. Immediate attention was drawn to the danger from assemblagès of numbers of persons, and efforts made to protect our people in theatres, public conveyances, etc. Overcrowding in subway and elevated trains, having been found possible of elimination to a great extent by varying working hours of different business houses, a schedule of starting and stopping times of each business, factory, office or theatre, along their respective lines, was established. This worked so well in splitting up the crowds and extending the rush hour over several hours as to merit endorse-

ment of transit companies and the public, many of whom have accepted this procedure as the solution of passenger transportation problem.

Inspections were made of public conveyances to compel proper heating and ventilating thereof and to maintain cleanly conditions therein. Theatres, especially motion picture theatres, were examined at the matinee and evening performances. Standees, smoking, and dry sweeping, were prohibited, operation of ventilating fans and inlets compelled, and maintenance of suitable and sanitary accommodations required at all times. Any one coughing or sneezing during a performance was requested to leave, after his name and address had been procured in order to permit of a follow-up visit by physician or nurse of the Department. Through the courtesy of proprietors, warnings, *re* the covering of nose and mouth, during coughing or sneezing spells, were flashed upon the screens. The proprietors were furnished with a list of "dont's," which were used as basis of instructions to them, and our inspectors assisted in the enforcement of these.

Work to Relieve Fuel Shortage.

During the early part of October, it became apparent that an acute coal shortage faced the city, and approach of cold weather was viewed with alarm. It appeared possible to obtain buckwheat sizes of anthracite coal, but a survey of the coal pockets here showed very little domestic size coal in the market. New York City is dependent for its coal supply on the output of mines of nine counties in anthracite regions of Pennsylvania. From these mines come, yearly, about 11,000,000 tons of coal, the greater portion of which is dumped along the Jersey shore, from Perth Amboy to Undercliff, from which points it is ferried across in barges. The mine strikes, with the consequent reduction in production, and railroad strikes which had the same ultimate result, prevented accumulations of reserve stocks. Then came priority orders to the northwest which, while intended to compel shipment of large amounts of bituminous coal daily to that region, resulted in the use of a great portion of coal carrying cars, with a consequent reduction of shipment of anthracite to other sections.

With this dismal situation in view, a working agreement was entered into with coal merchants, through their associations. They agreed to join with this Department in relieving most pressing cases of coal shortage, giving preference to those instances in which this Department reported presence of sickness. A coal relief division was then organized to handle detail work connected with proposed plan. With announcement of the suggested aid, this division was literally deluged with pleas for help. The first day these requests were sent direct to dealers, but it was soon found that some persons were attempting to use this agency, not for relief of an immediate emergency, but as a means of securing their winter coal supply. As a result, it became necessary for sanitary inspectors and a police squad

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to investigate every complaint received to provide information for the borough head of the Bureau to pass upon merits of the request. Each application received was noted on a 5 x 8 card, and the following data obtained and verified by our inspector making the investigation: Address of premises, name and address of owner, number of families on premises, grade of coal and amount used weekly, smallest size that could be used, name of coal dealer, amount of coal on premises, presence of any sickness or emergency requirements. This information was sifted and emergency cases sent to the coal merchants' association. An Emergency Coal Relief Committee was organized consisting of representatives of the mine operators, of retail dealers and of this Bureau. The function of this body was to allocate coal received in New York harbor to the dealer in location most in need of coal. This coal was billed "emergency" and used, primarily, for the small lot trade requiring immediate delivery. While this small lot delivery entailed an added expense to the retail coal dealer, the exigencies of the situation, as set forth by this Department, merited their pocketing this loss to the end that a commandeering of coal supplies might not be enforced.

Regulation of Heat in Apartment Houses.

During the winter of 1919-1920, amendment of Section 225 of the Sanitary Code, extending the scope of the Department's authority in the enforcement of heating of living premises resulted in a tremendous increase in work of the Bureau. The Assistant Sanitary Superintendent of each Borough assigned every sanitary inspector and patrolman consonant with duties required of them in other branches of the Bureau's activities, to handling of these "lack of heat" complaints. This was done under the theory that comfort of the public is closely allied with its health, and that our experience during the influenza epidemic proved that damp, cold rooms exercised a considerable influence on the lowering of vital resistance with a consequent increased susceptibility of person concerned.

A new procedure for field investigations of these complaints was promulgated to meet requirements of the courts, and, with slight modifications commensurate with changed conditions in each borough, was placed in operation. In each instance where legal action became necessary to protect occupants of premises in question, value of this procedure, as recognized by courts in the amount of fines imposed, was patent.

Records were kept of those premises in which furnace or boiler equipment was inadequate or defective, but in which cases the arrival of spring weather defeated the possibility of successful legal action. During summer months owners of these premises were notified of repairs necessary. They were also notified, if there was no coal on premises, to place an order, as the Department would not consider lack of coal a reasonable excuse for failure to provide heat. This action was taken with a twofold object in

view, first, to notify the offending owner of conditions meriting his attention, and secondly, to lay a foundation to defeat a possible defense if necessity required the bringing of said owner to court.

It has been fortunate that the winter of 1920-21 was not severe. Notwithstanding this, the number of complaints received of lack of heat has been large. In a number of instances coal shortage was the excuse offered for a failure to comply with our heating regulations. Such defense was circumvented by an investigation of records of coal dealers to determine if an order for coal had been placed, and at what time. If no such order had been placed, or, as found in some instances, it had been placed simply to protect the landlord, enforcement consonant with gravity of the offense was had. Where defense was justified, the Department notified the coal relief committee and sufficient emergency coal was delivered to prevent a hardship.

The work of field forces was increased by policy of the courts in requiring this Bureau to investigate each complaint of lack of hot water brought to their attention, under Section 2040 of the Penal Law. The taking of room and water temperatures, and examination of heating and hot water plants, followed by attendance of the inspector in court giving testimony resulting from his investigation, represented a no small portion of the inspector's time. While the Bureau might readily have refused to make inspections relative to hot water, as requested by Magistrates, the apparent connection with health of an adequate hot water supply and excellent co-operation between these Magistrates and the Department, constrained the Sanitary Superintendent to order a compliance with these requests.

Standardization of Clinical Thermometers.

During the World War, the demand for clinical thermometers became so great as to actuate a number of new concerns to enter this field, without having requisite knowledge and experience to manufacture good instruments. The majority of these thermometers were sent abroad at that time, but the ending of war compelled these concerns to seek new fields for their markets, with the natural result that New York became the repository of a considerable number of defective thermometers. Further, it was found that thermometers in large quantities were being imported from Germany, after signing of the armistice, and that these were, undoubtedly, the rejects of that country. An investigation was made of clinical thermometer factories in this State, methods observed, and apparatus for testing accuracy of clinical thermometers procured and installed in the Department building. Thermometers were gathered from various physicians, nurses, and hospitals, and were publicly tested. It was found that over 50% of these thermometers were so unreliable as to warrant their rejection as dangerous aids in diagnosis or treatment.

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With the information gained from these investigations, a new section of the Sanitary Code was enacted defining clinical thermometers and necessary requirements therefor. Also regulations were adopted and published. Thermometers in open market were collected for examination, particular attention being directed to those imported. It was found that our surmise relative to dumping of defective foreign goods in this City had been correct, as evidenced by the fact that rejects in some of these lots ran as high as 90%.

A complete testing apparatus with necessary standards is now in use in this Bureau, and the Department is testing all clinical thermometers offered for such purpose, or seized from manufacturers, importers, jobbers or retailers. Our facilities have also been offered to hospitals, physicians, and nurses, to the end that accurate thermometers may be sold and used in this City. Although no legal actions have been commenced against offenders, up to this time, the Department has impounded defective and inaccurate instruments, returning only those which have successfully stood the required tests.

Housing Survey.

Realizing that overcrowded conditions of living could have but one result, a lowering of the moral and physical fibre of our people and their resistance to disease, the Department, early in the year, resolved upon a housing survey to determine actual conditions existing. It was recognized that it would be impossible, with facilities available, to survey the entire City, and so selected portions of the Boroughs of Manhattan, The Bronx, and Brooklyn, which would give a representative result, were taken. A plan of attack, information necessary for purpose intended, and cards on which this information could be tabulated, were prepared and survey started March 17th, to continue until March 29th. In this survey the Bureau obtained assistance of field forces of the Bureau of Preventable Diseases, Child Hygiene, and Industrial Hygiene.

The results of this survey, when tabulated, were made the subject of a report to State Legislature for use in the interest of laws to relieve housing shortage. However, building of homes did not follow the passage of these laws, and it was claimed that conditions had grown worse. Consequently, a fall survey was made under same conditions as the spring survey, except that an additional section in each of the Boroughs of Manhattan and Brooklyn was added in order to offset criticism that the better sections of these Boroughs were not visited. Full details were printed in the Department's "Monthly Bulletin" for February, 1921.

Throughout these surveys there were found a large number of houses occupied by two to seven times the number of families for which they were originally constructed. Few vacancies were found, and these were due, in general, either to the uninhabitable condition of premises in question, or to

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rentals charged, which ranged from \$720 to \$6,000 a year—beyond reach of the average citizen.

In order to obtain definite figures of a city block included in the survey, the following were selected, all rooms therein measured, a census of occupants taken, and sanitary conditions investigated. All of the premises were so insanitary as to necessitate departmental orders for correction.

Block A—East 112th to East 113th St., from 1st Ave. to 2d Ave.

Block B—Rivington St., Stanton St., Columbia St., Sheriff St.

The result of this survey may be summed up in the following table:

	BLOCK A.	BLOCK B.	TOTAL.
Houses surveyed.....	53	40	93
Families.....	930	564	1,494
Persons.....	4,716	2,453	7,169
Rooms.....	3,616	1,704	5,320
Sleeping in rooms additional to bedrooms.....	636	473	1,109
Average rooms per family.....	3.89	3.02	3.56
Persons per house.....	89	61.32	77
Persons per room.....	1.02	1.44	1.34
Persons per family.....	5.07	4.33	4.8

The conditions in these houses were made worse by the fact that a number of aliens were living, singly, in two to four room apartments awaiting the arrival of their families from Europe.

The findings of these surveys, conclusions drawn therefrom, and recommendations suggested were made the subject of special reports to the State Legislature and Committee on Reconstruction of the U. S. Senate.

Census of 1920.

In January the United States Census for 1920 was taken. It resulted in a showing of a decrease in population for the Borough of Manhattan of 47,439. This was opposed to the evidence deduced by this Department from the great number of births above deaths since the 1910 census, and increased school attendance, as drawn from figures of private, parochial and public schools during same period.

To determine whether a foundation existed for the Department's deductions, a canvass was made of 113 census districts out of approximately 1,522 and results compared with reported figures of the Census Bureau in these areas. It was found that a sufficient number of persons had, apparently, been missed on the Federal Census count to more than make up for the reported decrease in these districts. From this, it may reasonably be considered that, instead of decreasing as claimed, the population of the Borough of Manhattan had actually increased. In performing this work the Bureau was assisted by the Registrar of Records and Police Department.

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Disposal of Garbage and Refuse.

The lack of an adequate and suitable system for collection and disposal of ashes, garbage and rubbish caused considerable worry to this Department and annoyance to residents, especially of the Boroughs of Manhattan, Bronx and Brooklyn. The closing down of Staten Island garbage plant, as a public nuisance, left, as the only method of disposal, the dumping of this garbage at sea. This necessitated the use of bottom-dumping scows, as the deck scow was both impractical and too dangerous for this work. Only a small number were in use, necessitating holding them at docks longer than the time ordinarily permitted for this purpose. During their absence at the dumping grounds, flat-deck scows were provided for receiving garbage, which required the use of a digger for transference of material from scow to bottom-dumper. These loaded flat-deck scows accumulated faster than they could be emptied and soon became a nuisance to the public at large. Separation of garbage and ashes was not strictly maintained, and these materials mixed with street sweepings used for land fills caused serious complaints, and compelled the Department to direct discontinuance of the use of such materials for fill until better separation was had.

The heavy snow storms of January and February prevented proper garbage collection service. Tenants, through the east side of Manhattan, threw their refuse material upon snow piles in the street, adding to the labors of the Department of Street Cleaning. In preventing this condition at the dumps, attention was given to use of deodorants to counteract offensive odors escaping therefrom; insecticides for killing flies and prevention of fly breeding; poison baits and traps for extermination of rats. The burning of these dumps was prohibited and, where a dump was found on fire, either owner or Fire Department was called upon to extinguish it. The installation and operation of garbage incinerators in the Borough of Queens assisted materially in the solution of the garbage problem in that borough. With the new unit at Far Rockaway in use, the situation in the Rockaways will be adequately covered. The Bureau prepared a report for use of the Board of Estimate and Apportionment detailing known methods of garbage disposal, with a recommendation that early consideration be given to this subject as a basis for correcting antiquated, archaic, expensive systems now in use.

During the year, we had two troublesome conditions from natural causes. One was due to washing up on the beach, along the Rockaways, of countless numbers of skimmer clams; the other was depositing, along the shores of Borough of Richmond, of a large number of dead fish. This Bureau sent its mosquito squad to work at the Rockaways, and aided men from the Borough President's office and temporary men obtained by Park Department through an appropriation secured for that purpose. The men of the Park Department cleaned the beach owned by the city and used for park purposes, men from Borough President's office cleaned the beach at the end

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of street, while our Mosquito Squad cleaned where owners were unknown or without our jurisdiction. The owners of the balance of the beach front were compelled to take care of their own problem. Trenches were dug and clams thrown therein, and drift wood piled upon them. The burning of this wood calcined the shells and destroyed organic material within. The work took several weeks, as a stretch of beach about 13 miles in length, and about 50 feet in width, upon which was piled clams one foot to nine inches in depth, had to be cleaned. The same methods were used in the case of fish strewn along the shores of Richmond.

Sewage Disposal.

The Bureau has maintained its slogan relative to keeping sewage from the ground surface. Wherever possible, the installation of new sewers has been advocated, and where these have been installed, orders were issued on all owners of buildings abutting thereon to clean and abandon cesspools and privies, and make sewer connection. This work progressed favorably in all outlying boroughs, particularly in the Borough of Queens, where over 13½ miles of new sewers were installed. Where no sewers have been available, the Department has advocated abolition of the offensive privy and the substitution of water flushed, cesspool-connected waterclosets. The protection from fly carriage of disease makes work along this line valuable. The abolition of these vaults, also, does away with possibility of fly and mosquito breeding therein.

Overflowing cesspools have resulted in prompt action against owners thereof, even to the extent of vacating a premises where the owner was not within our jurisdiction, and failed to heed our warning notices. Action was taken, also, in the instance of tenement houses, since the Department feels justified in interfering in such cases in presence of so patent a health menace.

Manure Disposal and Prevention of Flies.

The accumulation of manure in stables, or farmlands, at dumps and transportation from stable to points outside the city, is supervised, since such material furnishes excellent breeding places for flies. All stables are required to procure permits from this Department for their operation, and to comply with certain regulations. Of these, the most important is that dealing with the care and disposal of manure. It is the policy of the Department to have all stable refuse removed from the City before flies develop therein. Where this is impossible the person responsible for this material is instructed in the use of borax thereon, which has been found to be an excellent insecticide. The most difficult problem in relation to this material has been on farms in suburban areas. The farmer views manure from a different angle than the health officer, and hesitates to treat it with

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anything as tending to destroy its value as a fertilizer. Convinced of the danger to public health, they have responded well, and now treat stored manure to prevent fly breeding.

The cleaning of vacant lots of organic material, provision of covered garbage cans, collection and final disposal of garbage, required supervision for the purpose of preventing fly breeding and the nuisance of bad odors.

Mosquito Prevention Work.

During the year, there was very little building in progress. Consequently filling in of swampy or sunken land was dependent almost entirely on the receipt of ashes. Progress was made in wiping out mosquito breeding areas by the deposition of ashes, collected by the City and by private agencies. These areas thus ceased to be a nuisance and became of value to the owner and to the City. These fills existed in all boroughs of the City, Queens Borough receiving the largest amount of city ashes.

Before mosquito breeding started the policy of the Bureau was to notify owners of sunken land of the possibility of mosquito breeding thereon, and the necessity for action toward filling or draining. In view of the impossibility of obtaining proper fill, periodic oiling of the surface of water in these lots, etc., was accepted as a temporary expediency. Notices were issued against these premises and stated inspections made to determine whether this oiling was properly performed and effective.

During the winter of 1919-1920 the Department was in receipt of several complaints relative to mosquitoes in apartment houses or dwellings. Investigations proved that these mosquitoes were breeding in water standing in sinks or pits in cellars, being maintained at a sufficiently high temperature by furnaces used for heating purposes. The removal of the water, correction of conditions causing its accumulation, and thorough airing of cellar, soon abated this nuisance.

A permanent mosquito squad, under supervision of the Sanitary Engineer, has been maintained in the Borough of Richmond, augmented for work in other boroughs by temporary laborers. This squad has done excellent work in the elimination of salt-water mosquito from this city, and has also been of great service in cleaning up or oiling inland breeding places.

The temporary squad has been charged with the maintenance of ditches installed in the vast marsh areas of Brooklyn, Queens, and The Bronx; has constructed a number of new canals for drainage of inland swamps such as those near St. Raymond's Cemetery in The Bronx, in and around Mill Creek, the outlet for Kissena Park lake in Borough of Queens, and near the Old Mill section of Brooklyn. They have inspected lowlands, basins, etc., in parks of the borough, and have assisted Park Commissioners in preventing and abating mosquito nuisances.

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A permanent squad has been maintained for work in the Borough of Richmond. These men are engaged in cleaning out old ditches, digging new ditches, installing and lowering culverts, building sluiceways, cleaning and dredging watercourses, installing drains, and cleaning ditches and drains on highway. In addition, a list of places of which oiling is necessary during mosquito breeding season is kept and a part of the force told off as an oiling squad. These men are provided with a list of premises to be oiled, and the island is so laid out as to permit of the spreading of oil upon each of the accumulations of water, once in ten days. In this way over 5,000 gallons of oil have been spread.

Following is a summary of the work performed by this squad in the swamp areas:

	BRONX.	BROOKLYN.	QUEENS.	RICHMOND.	TOTAL.
New ditches dug, inland.....				47,938	47,938
New ditches dug, salt marsh.....	22,315	13,413	9,460	90,386	136,574
Ditches cleaned, inland.....	32,875			76,123	108,998
Ditches cleaned, salt marsh.....	372,525	1,039,456	1,571,984	609,105	3,593,070
Totals.....	427,715	1,053,869	1,581,444	823,552	3,886,580

Public Comfort Stations.

The closing of saloons resulted in an increased use of comfort stations maintained by public service corporations. The condition of these stations was bad, and the Department maintained a daily inspection of them, over an extended period of time, to compel proper porter service and supervision on the part of transportation companies. The abuse of these stations, by a portion of our traveling public, is a sad commentary on decency of some people, and an example of their lack of consideration for rights of others. It would seem that the only method of controlling nuisances committed in these stations would be to plan and carry into operation a wholesale system of arrests of offenders. The amount of time required, places an unnecessarily severe strain on our small field force, and entails an excessive expenditure for maintenance by the operating companies.

Poor Quality of Gas Furnished in the City.

Investigations were made of quantity and quality of illuminating gas provided to houses used for dwelling purposes. These were made necessary by repeated complaints of gas escaping from fixtures which had been lighted, from which reduced pressure had caused supply to be cut off, gas escaping when pressure increased. Numerous conferences were held with representatives of the Department of Water Supply, Gas and Electricity, and the Public Service Commission, to arrive at a conclusion as to cause of this con-

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dition and best method of handling the situation. It appears that the increased cost of gas oil, the inferior grade furnished, necessity for installation and operation of additional gas manufacturing machinery, and the gumming up of house pipes, have all had the effect of producing the condition complained of—reduced pressure, lower candle power, and lower heat units. No drastic action has, as yet, been taken on this subject, since to compel the operating companies affected to comply with all new requirements for extensions and better service at once, would mean the cutting off of even this inadequate service with resultant hardship upon our people.

Beach and Bungalow Sanitation.

The finding of several cases of illuminating gas poisoning (carbon monoxide poisoning) among people using gas heaters in bungalows, led this Department to survey a considerable area abutting upon the ocean, and caused these gas heating fixtures to be provided with proper hoods and vents to carry unconsumed gases to the outer air. This condition appeared only in houses near the ocean.

Bungalow and camp life, generally in close proximity to our beaches, has become a large factor in the summer life of our citizens. Added to those establishing their summer homes here are the numberless persons spending their vacations, Sundays, and holidays, at beach resorts. It has become necessary to station sanitary inspectors and patrolmen, throughout the summer season, at these places to enforce compliance with regulations for safeguarding the life and health of these people. The necessity for these details is increased on Sundays and holidays, during the warm weather, at which time the beaches are generally overcrowded.

Bathing establishments are examined and required to comply with regulations relative to cleanliness, accommodations, apparatus for sterilizing bathing suits, and provision of life guards, life boats, and life lines, before they are permitted to open. Camp colonies are strictly supervised for the maintenance of cleanliness, suitable collection and disposal of garbage, provision of an adequate water supply, and proper watercloset accommodations. The installation of sewers for these areas and the substitution of water flushed sewer- or cesspool-connected waterclosets, in place of the vault or can privy, is strongly recommended.

There are a considerable number of pool-baths in operation in this city. These are regularly inspected, and samples of the water collected and examined. Suitable apparatus for treating the water entering these pools is required, and other regulations of the Department, relative to cleanliness accommodations, safeguards, etc., are enforced.

Sanitation of Watershed.

This Department has co-operated with the Department of Water Supply, in protection of the purity of water supply. Periodic inspections

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are made of the watershed to prevent pollution, and for observation of typhoid fever cases in the tributary area, and for proper care thereof. Sanitary surveys are also made of the areas in the outlying boroughs from which well water is provided. Samples of water are collected at regular intervals, and examined in our laboratory, as a check on the quality of the water provided. The abatement of all nuisances affecting or tending to affect the quality of water supply is required by summary action.

Spitting in Public Places and Dog Muzzling.

Periodic campaigns were carried on in an effort to correct spitting in public places, smoking in subways, and allowing of dogs on public thoroughfares unmuzzled. It has been, unfortunately, true that education, although having accomplished its measure of good along these lines is not adequate. The necessity of summoning offenders has been realized, and after suitable press publicity, thousands of arrests have been made.

Sanitation of Tenement Houses.

The Department was in receipt of many complaints relative to conditions existing in tenement houses. While the usual practice has been to consider the vesting of primary jurisdiction over these houses in the Tenement House Department, still the existence of so many insanitary conditions warranted issuance of orders for correction of conditions noted. This severely taxed our small field force, since this work totaled from 5 per cent. in the smaller boroughs to 20 per cent. of the entire work of the Bureau in Manhattan.

Sanitation of School Buildings.

The private schools were inspected at regular intervals to maintain sanitary conditions. Annexes offered for rent to the City for public school purposes were inspected, and reports thereon forwarded to be used as a basis of determining their suitability for the suggested purpose.

Sanitary Inspection and Typhoid.

Wherever a case of typhoid fever is reported, premises in which the patient is housed are inspected for insanitary conditions with particular reference to sewage disposal, water supply, and fly propagation. If premises be provided with a roof tank, a sample of water is taken for examination. All stables within a reasonable distance of premises in question are inspected, with fly breeding as the especial point of attack.

Smoke Nuisance Regulation.

During the war, the harbor, railroad, and mine strikes, the Department was compelled, of necessity, to relax somewhat its drastic ruling against

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the discharge of dense smoke. This year, however, the discharge of dense smoke from any apartment house or industrial plant received immediate attention. It is possibly true, that, in the instance of large, public service power houses, which are compelled, at times, by sudden changes in the weather or public demands, to change from banked fires to a peak load, the prevention of dense smoke discharge is difficult. The advance in furnace construction and operation, the provision of an adequate distance between grate surface and boilers, proper construction of the entire equipment, including the stack, reduces this discharge to a minimum. As a rule, any nuisance existing at plants in this City is due, primarily, to the human element, and it is with that angle of the problem that the Department is now attempting to cope.

The nuisance of dense smoke, formerly noticeable along all of our railroads, is gradually disappearing. When any locomotive is found discharging dense smoke, the superintendent of motor power is notified. He sends a traveling fireman to work with the crew of the locomotive, and our inspector observes operation until it is again satisfactory. This practice has resulted in a cleaning up of complaints, with the punishment falling where it actually belongs—either on the offending fireman, or upon the company, if the locomotive be not properly equipped for smokeless operation.

Common Drinking Glass and Toilet Articles.

This Bureau has developed an active interest in the elimination of the common towel, glass, comb and brush from public places. It has fostered installation, for supplying drinking water, of sanitary fountains, in most instances allowing use of bubbler faucet, installed with the additional safeguard of a shield or protection around mouthpiece. These fixtures are made to discharge at an angle, so that the person drinking cannot place his lips to the discharge outlet, or allow washings from his mouth to return to fixture, and have served as excellent substitutes for former insanitary fountains. In conferences with representatives of the Department of Education, Park Department, and other bodies, our ideas have been shown, and promises made that the coming year will show a passing of insanitary and dangerous fixtures now in use.

Routine Inspections.

Notwithstanding new activities and extensions, this Bureau has continued its routine inspections of a large variety of businesses, trades and matters under permit, and has investigated and disposed of a larger number of complaints than in former years. It is true that with the growth of the city and the varied assortment of additional duties imposed upon the Bureau, there are less inspectors provided for than ever before in its history. It would seem that, as the public has come to rely upon the Department for

correction of almost every ill of person or environment, a force adequate to services required would be provided. Unless this is done it is certain that the high standard heretofore attained cannot be maintained. The work of these men has been badly hampered, especially in the outlying boroughs, by lack of proper transit facilities and appointment of additional force is imperative.

Employees' Welfare Division.

The Welfare Division of the Department was organized for the benefit of all employees, under theory that conservation of the health of these employees is as important as that of the general public for whom they are caring. Its necessities and potentialities are receiving greater consideration as time advances in view of settled policy among employers, of requiring physical examination at entrance to employment, and re-examination at stated times thereafter. The opinion that a periodic physical examination of the individual is an important and essential part of preventive medicine has become almost universal. When incipient, morbid conditions are brought to the attention of the employee and steps taken to correct impairment before it is too late, the resulting improvement in physical health is an advantage to employer and employee.

The first examination made during the employee's probationary period should be of service in preventing would-be employees from assuming unsuitable work. It is unquestionably a mistake for a person with a heart so susceptible to external influence that a pulse of 120 or 130 is reached, through sheer excitement, to enter upon employment which will make heavy demands upon the physical strength, as, for instance, in the occupation of field work, which necessitates much climbing of stairs. Those who suffer from high blood pressure, weak or damaged kidneys or heart, should choose their occupation carefully, and it is no kindness to accept an employee for work which is certain, eventually, to prove injurious to him.

The aim of this Division has been to seek out, in the individual, defects which would militate against his health and employment, to correct these defects, either by medical or surgical advice, or by ordering of practical curative exercises. Failing of this, the employee has been recommended for a change of work consonant with his degree of physical impairment.

During morning office hours of the examiner sixty-five emergency cases were treated.

About 95 per cent. of those examined needed hygienic advice, or instruction in regard to their physical health. This was given, and, in addition, appropriate exercises for development of flat, narrow chests, strengthening of sagging arches of the feet, and for relief of dysmenorrhoea. These examinations have frequently disclosed disease or impairment where none was suspected. In one instance, a malignant tumor of the breast was discovered in its incipiency. Unsuspected cardiac and pulmonary disease, and

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cases of high blood pressure are quite usual. Fibroid tumors of the uterus have been diagnosed by external palpation of the abdomen, the diagnosis being subsequently confirmed by operation.

The summation of the work of the Division is given in the following table:

SUMMARY OF EMPLOYEES' WELFARE WORK, 1920.

	MEN.	WOMEN.
Total number of examinations.....	276	1,038
Examinations.....	106	225
Re-examinations.....	170	813
Cardiac impairment.....	2	8
Pulmonary impairment.....	1	3
Hypertension.....	4	9
Hypotension.....	6	23
Overweight and hypertension.....	0	5
Underweight and hypotension.....	1	11
Overweight.....	1	20
Underweight.....	2	18
Indigestion.....	0	4
Constipation.....	1	13
Nasal impairment.....	1	14
Pharyngeal impairment.....	1	8
Defective vision.....	6	32
Defective hearing.....	1	5
Defective teeth.....	11	23
Enlarged thyroid.....	0	7
Flat, weak or painful arches of feet.....	3	16
Hepatic tenderness.....	0	1
Hernia.....	0	3
Menstrual disorders.....	..	11
Minor skin affections.....	1	2
Atheroma.....	2	0
Unclassified affections.....	5	7
Enlarged lymph nodes.....	0	2
Headaches.....	1	4
Anemia.....	1	8
Defects found on examination.....	33	40
Re-examinations:		
Much improved.....	..	5
Improved.....	3	76
Referred for professional care.....	..	27
High blood pressure reduced by following advice.....	..	30
Required advice.....	..	770
New cardiac impairment.....	..	15
New pulmonary impairments.....	..	3

DIVISION OF INSTITUTIONAL INSPECTION

The Division of Institutional Inspection, of the Bureau of General Administration, was established January 1, 1916. It took over the Division of Institution Inspection of the Bureau of Preventable Diseases and the Division of Institution and Day Nursery Inspection of the Bureau of Child Hygiene, and now performs work previously done by them.

The Chief of Division is assisted in carrying on the work by a force of twenty-three medical inspectors, two clerks and a stenographer.

The following institutions are supervised.

NATURE OF INSTITUTION.	IN TOWN.	OUT OF TOWN.
Public hospitals	28	..
Semi-public hospitals.....	118	..
Private hospitals (Sanitaria).....	71	..
Dispensaries.....	109	..
Diagnostic laboratories.....	191	..
Day Nurseries.....	116	..
Homes for children.....	135	39
Homes for incurables.....	13	..
Homes for aged.....	51	..
Homes for adults.....	176	..
Reformatories and prisons.....	28	1
Miscellaneous.....	1	..
Totals.....	1,029	40

Functions of Inspectors—According to type of work performed by them, medical inspectors of the Division are divided into two general groups; one known as Institutional Diagnosticians; and the other as Inspectors of Subsidized Institutions.

The Diagnosticians, beside making diagnosis in institutions of all types, exercise sanitary supervision of premises, make physical examinations, and re-examinations, twice a year, of all children in non-subsidized institutions, administer sera and vaccines, apply the Schick test; collect cultures, smears, and blood for laboratory examination, examine food handlers in institutions, for certificates; investigate, when application is made for a permit to conduct day nurseries, child caring institutions, private hospitals, sanatoria and laboratories for diagnosis of communicable diseases. They verify monthly medical reports of those child caring institutions not receiving money from the City (as required under State Public Health Law). They diagnose illness of Health Department employees in institutions, and perform field work for the Chief Diagnostician, and various Bureaus of the Department, in so far as their work concerns institutions, and investigate all abortions occurring in institutions, and notify the Police Department whenever these

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appear to be of a criminal nature. The Inspectors of Subsidized Institutions visit institutions receiving, through the Department of Charities, pay from the City for care of inmates. Most of these institutions are located within City limits, but some are outside, in both New York State and New Jersey. The inspectors, at the beginning of each half year, make physical examination of all inmates, regardless of age; and, later in the half year, make a re-examination of those who were found defective when primary examination was made, to note whether defects have been corrected, and to urge and advise those in charge to make further effort to have uncorrected defects properly treated. In addition, these inspectors make regular sanitary inspections of grounds and buildings of institutions assigned to them, and on request, or by their own initiative, administer sera, vaccines, etc. As a rule, they do not undertake diagnosis of communicable disease. They also make examinations for physical defects, in institutions under jurisdiction of the Department of Correction.

Surveys: 1st—Training schools for nurses. This was made on instruction of the Commissioner.

2nd—Data concerning influenza in institutions. The result of this survey brought out the fact that, due to the enforcement of quarantine, in but two out of town institutions did influenza occur; and that in the homes for children located within the city limits, 56 remained entirely free of the epidemic.

3rd—To determine the presence or absence of rats in institutions; and, where present, to ascertain the method adopted to exterminate and prevent their entrance into the buildings.

4th—A complete survey of all diagnostic laboratories to ascertain the methods employed in reporting all communicable diseases.

5th—Second survey of training school for nurses.

6th—An investigation of all hospitals (whether public, semi-public or private) to determine the minimum and maximum isolation facilities, in the event of an emergency arising that would necessitate institutions caring for all contagion developing on their premises.

7th—Toward the end of the year, we commenced a most elaborate sanitary survey of all homes for children. The reports include photographs of all buildings, and sketches drawn to scale of every room, in every building. These reports have been most favorably commented upon by Commissioner Coler of the Department of Public Welfare and by various officers of the State Board of Charities.

Special Activities—Among the special activities of the Division, during the year, the following are worthy of note:

1st—In January, a special drive to have all inmates of institutions who were not immune, vaccinated against smallpox.

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2nd—Early in the year, an intensive campaign was inaugurated with the object in view of having institutions exclude children from visitation at any time. This was done to further lessen the incidence of contagion, a procedure which has proven so advantageous in the past.

3rd—We were most successful in having a large number of institutions adopt, as a routine measure prior to the admission of children as inmates, the culturing of all throats and the application of the Schick test.

4th—During the year, there was a continuation of the organization among children suffering from orthopedic defects, of classes for corrective exercises.

5th—During the summer months, special examinations to determine the presence or absence of contagious diseases were conducted in institutions desiring to send children away for a part or all of the summer.

6th—At the request of Mr. James E. West, Chief Scout Master of the Boy Scouts of America, inspectors of the division examined physically, and for evidence of contagion, over 300 United States representatives of Boy Scouts selected to attend the international jamboree of this organization in London. We were highly complimented on the performance of this work.

7th—During the year, a large number of institutions adopted as a routine measure, employment of the Wasserman test and inspectors of the Division collected blood specimens for these tests.

8th—Following a conference with representatives of the Bureau of Laboratories, we inaugurated the Schick testing of all children in day nurseries, and the immunization of all those found susceptible to diphtheria.

9th—In October, inspectors of the Division reported that a total of over 5,000 vaccinations had been performed by them in institutions, in the recent past; and over 1,600 additional, through their persuasive efforts.

10th—During the year 1,567 cases of abortion were investigated in institutions, and 72 of these were found to be criminal and turned over to the Police Department for appropriate action.

In 1919, there were 1,049 of these cases investigated, of which number 54 were criminal.

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SUMMARY OF MONTHLY MEDICAL REPORTS—1920.

DEATHS ACCORDING TO INSTITUTIONS.

	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Child Caring Institutions.....	7	8	10	9	8	4	5	2	6	2	5	3	69
Misericordia Hospital.....	0	0	1	2	0	0	0	0	0	0	0	0	3
N. Y. Foundling Hospital.....	29	57	63	49	34	31	18	16	24	21	20	20	382
N. Y. Nursery and Child's Hospital.....	0	29	16	21	0	0	10	27	15	17	19	10	164
	36	94	90	81	42	35	33	45	45	40	44	33	618

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DEATHS ACCORDING TO CAUSE.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Measles.....	4	18	0	10	0	0	0	0	0	0	0	0	32
Diphtheria and Croup.....	0	6	0	1	2	2	0	0	0	0	0	0	11
Whooping Cough.....	0	0	0	0	0	0	0	0	0	1	0	0	1
Influenza.....	0	5	1	0	0	0	0	0	0	0	0	0	6
Tuberculosis Pulmonalis.....	0	0	0	1	0	0	1	2	0	1	0	0	5
Tuberculosis Meningitis.....	1	1	1	0	0	0	2	0	0	4	0	0	9
Other forms of Tuberculosis.....	0	0	0	1	0	0	1	3	1	0	0	0	6
Simple Meningitis.....	0	0	1	3	0	0	0	0	0	0	1	1	6
Cerebro-Spinal Meningitis.....	0	1	0	1	0	0	0	0	0	0	0	0	2
Organic Heart Diseases.....	1	1	0	0	0	1	1	0	1	0	0	2	7
Acute Bronchitis.....	0	0	0	0	1	0	0	0	0	0	4	0	5
Lobar-Pneumonia.....	5	0	5	10	3	1	0	0	0	4	0	2	30
Broncho-Pneumonia.....	8	20	39	11	5	8	1	3	7	5	3	3	113
Other Respiratory Diseases.....	0	0	1	1	0	0	0	0	0	0	0	0	2
Diarrhoeal Diseases.....	5	12	7	23	12	13	20	23	32	22	19	13	201
Appendicitis and Typhlitis.....	0	0	0	0	0	1	1	0	0	0	0	0	2
Nephritis and Bright's Disease.....	0	0	1	0	0	0	0	0	0	1	0	0	2
Congenital Debility and Malformations.....	1	8	8	5	1	0	1	9	2	0	8	0	43
Other Accidents.....	0	0	0	0	1	0	1	1	0	0	0	0	3
All other causes.....	0	1	0	2	0	0	0	1	0	2	3	4	13
Ill-defined causes.....	11	19	25	12	17	9	4	3	2	0	6	8	116

CASES OF COMMUNICABLE AND OTHER DISEASES.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Diphtheria.....	65	7	19	24	53	13	3	2	5	2	5	2	200
Scarlet Fever.....	8	10	0	2	8	1	3	1	2	6	2	8	51
Measles.....	138	164	159	98	65	35	2	0	1	0	0	0	662
Pertussis.....	2	34	22	5	23	30	13	30	15	3	0	1	175
Eye Disease.....	3	57	39	24	10	30	18	12	29	8	24	47	301
Skin Disease.....	61	63	77	109	58	97	26	27	22	38	48	54	680
Chickenpox.....	20	76	17	30	14	28	0	7	0	4	26	3	175
Mumps.....	28	77	1	2	0	8	3	1	0	2	2	1	125
German Measles.....	0	0	4	0	0	0	11	0	0	0	0	0	21
Poliomyelitis.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Typhoid Fever.....	0	0	0	0	1	0	0	0	0	0	0	0	1
Tuberculosis.....	6	1	4	0	0	0	5	3	2	1	2	1	25
Pneumonia.....	36	65	26	36	30	17	4	9	15	11	20	24	293
Influenza.....	254	225	12	65	73	51	9	5	100	81	96	92	1,063
Tonsillitis.....	98	91	60	109	43	60	21	21	74	157	83	126	943
Injuries.....	86	89	32	84	2	3	0	19	5	7	1	0	328
Pleurisy.....	19	19	13	0	1	1	4	0	6	0	1	1	65
Bronchitis.....	184	166	33	32	27	15	26	14	18	19	26	26	586
Diarrhoea.....	0	0	0	0	0	0	0	0	1	7	1	0	9
Miscellaneous.....	494	414	549	497	488	465	637	558	367	604	522	561	6,156
	1,502	1,508	1,047	1,067	896	854	791	709	662	950	859	947	11,862

Deaths in Child Caring Institutions were 29.3 less than in 1919. Death Rate (all causes) was 19.9 less than in 1919. Communicable diseases were 27.4 less than in 1919; non-communicable diseases were 17.3 less than in 1919.

BUREAU OF PREVENTABLE DISEASES

For the benefit of those who are not familiar with the organization and scope of work of this Bureau a brief outline is given: The Bureau of Preventable Diseases is successor to what was formerly the Bureau of Infectious Diseases. In 1915, the Bureau was given its present name, so as to indicate its aim to respond to a new conception of public health work which had been gradually developing, and which received recognition. This conception held it to be the duty of a well organized Health Department not merely to record, follow up, and supervise, cases of communicable disease which came under official notice, but to make the Bureau responsible for new preventive functions in addition to these. The Bureau of Preventable Diseases was expected to help conserve child life, by establishing every safeguard known to modern public health medicine for the control, supervision, and prevention of communicable diseases and, at the same time, to add to these activities scientific methods of procedure to prevent occupational diseases, degenerative diseases, and other preventable diseases which might cause disability or shorten lives of adolescents and adults. It was to become the Bureau of Adolescent and Adult Hygiene, particularly. We tore down old fences which had confined the work of the Bureau of Infectious Diseases, and added to our holdings new and extensive estates, and set for ourselves additional duties and responsibilities; that is, we were not merely to follow communicable diseases, and attempt to confine and limit their spread, but we were to establish methods of work in our new domain, which would, if possible, prevent and insure against all diseases which modern medicine has taught us to believe can be eliminated or reduced in prevalence. And so, in addition to our Division of Infectious Diseases, which was concerned with the supervision and control of smallpox, typhoid fever, typhus, diphtheria, whooping-cough, scarlet fever, and infantile paralysis, etc., there was organized the Division of Tuberculosis, Division of Venereal Diseases, Division of Animal Diseases, and Division of Nursing. In addition, a clinic was established for periodic medical examination of presumably healthy individuals engaged in industry. The avenue through which we entered upon this new and larger service led through the field of industry. In 1915, shortly after the re-christening of the Bureau, the occupational clinic was established, as a part of the Division of Industrial Hygiene of this Bureau, and foodhandler examinations were made compulsory as a means of introducing the idea of periodic medical examinations to the public at large. It was attempted to gradually extend these examinations, not through legal coercion, as in the case of foodhandlers, but through persuasion, so as to reach children entering industry, and the multitudes engaged in various occupations. In this way it was hoped that active, as well as latent disease, might be brought to light and remedied. Above all, it is hoped that through

BUREAU OF PREVENTABLE DISEASES

periodic medical examination of large groups of apparently healthy people in all walks of life, occupational clinics of the Bureau of Preventable Diseases will be able to spread educational propaganda with respect to health preservation and detection of incipient diseases which will indeed justify our new and significant name, Bureau of Preventable Diseases.

The mere statement of these ambitious hopes and intentions is an obvious challenge to those who understand and endorse this newer vision of preventive functions of the Department, to rally to its support so as to hasten realization of these hopes. Through the awakening of popular understanding and sympathy, ways and means for achieving our purposes may be found. Citizen groups, medical profession, and public press in particular, must come to understand that this is not paternalistic medicine, but ultimately makes for social economy and community welfare. Even the richest and most exclusive of our citizens must be taught to appreciate that they and their children, guarded and isolated though they may be, in final analysis, depend for their freedom from the effects of certain communicable and contact diseases, upon the welfare of poorest members of the community whose lives may be spent in crowded tenements only a stone's throw from the rich man's mansion, or who may serve them in their homes. Until this is clearly understood, and a co-operative spirit is enlisted in the service of community welfare, there will continue to be a needless and preventable loss of lives among wage earners, of family supporters, and of self-sustaining citizens, to say nothing of the death toll among children. Does the general public, or even that part of the community which is alert and takes an active and intelligent interest in civic things, understand the role which the Bureau of Preventable Diseases may and does assume in relation to the welfare of the city as a whole? Do the members of the medical profession, or even the special public health committees of our medical societies, appreciate the nature of the work which the Bureau is supposed to perform? And have these committees done their share as good citizens, and as unofficial medical guides and advisers of the community to promote the work?

One must recognize and pay tribute to individuals, and small groups in the community who have watched our work with intelligence and interest, and who have been ready to assist, as far as possible. But it must be said that the general and medical public have manifested the traditional degree of apathy and lack of interest in some vital problems which affect lives of our five and three-quarter million inhabitants.

It is fair, however, to note that in the last two decades, there has been a marked awakening of many groups in this and other communities with respect to one phase of public health work, namely, the importance of protecting lives of infants and children. This awakening of interest has led to the establishment, in a number of states and cities, of well organized activities for the conservation of infant, child, and maternal welfare and

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life. The recent war, which resulted in loss of millions of lives, did not, as one might logically expect, heighten the general appreciation of the sanctity of *every* human life, infant as well as adult, but on the contrary, as in so many other fields of progress, it caused a temporary setback. The economic and political problems have been pressed to the fore, and have swept aside many lines of activity of a constructive social character. Even need for protection of children, which appeals to primitive instincts, to our higher sentiments, and to reason as well, has, with few exceptions, suffered on account of the universal policy of post-war retrenchment. Naturally, appreciation of the value of conserving lives not only of infants and children but of adolescents and adults, which, before the war, seemed near realization, has suffered a greater setback than efforts for protection of children. While a very few years ago, the slogans, "Safety First," and "Health First," had been popularized to a very considerable degree, one might term the present state of affairs in practically every civilized country as showing an attitude which may be characterized as indicating consent to permit a "Health Last" policy to govern. These observations are not irrelevant as a matter of stock-taking. This low ebb of interest in social welfare activities, which has been noted and commented upon by observers in realms of sociology, ethics, and civics, is reflected in the progress of public health activities. The trend of times makes evident the need for sane, aggressive leadership, in things that promote human welfare. The medical profession should furnish such leadership. It contains within its ranks some of commanding intelligence and social vision.

One who takes stock of public health work is inevitably led to these observations by the obstacles to progress which have been endured by governmental public health bodies in various communities throughout the country. The dislocations which have been caused by the shock of war have, by no means, left us morally or socially bankrupt, but voices of strong leaders, not only in the medical world, but of those interested in civic affairs, are needed to bring about a readjustment that will enable public health officers throughout the country to resume the march of progress which was halted by war. In this stocktaking it is aimed to sound a constructive rather than a pessimistic note. These observations, it is hoped, will be so interpreted. All these reflections are well compressed in the motto, "Public Health is purchasable. Within natural limitations a community can determine its own death rate." All this is especially applicable to needs of the Department for adequate means to further promote prevention of communicable diseases.

Most people have, in recent years, lost sight of the fact that the foundation upon which the Health Department is laid is its machinery for prevention, control, and supervision of communicable diseases. This fact has been taken for granted so long that it has come to be overlooked. It is not recog-

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nized, as it should be, that the Bureau of Preventable Diseases, in addition to its other varied functions, really serves as a most important child-welfare agency. Of the 209,996 cases of communicable diseases which came to notice of the Bureau of Preventable Diseases, during the year, great majority occurred in children. The total number of deaths from communicable diseases during 1920, among children under 15 years of age, was 7,778. It will thus be seen that the activities of this Bureau, in relation to children under 15 years of age, is one that is, in a very large measure, concerned with the supervision and control of communicable disease, so as to prevent the transmission of such disease. Until the Department can justly claim that it has reduced to an irreducible minimum, the incidence, not only of communicable disease, but of all other preventable diseases, we will not have done our full duty. If this be our program, our interest and relation to questions of housing, diet, personal, and industrial hygiene, etc., is a most intimate one. It would of course, be absurd to attempt to say just how many of the 22,627 deaths from communicable diseases, which occurred in the city during 1920 could have been prevented, but it may be safely affirmed that, given a larger staff to promptly and frequently visit homes where communicable diseases occurred, in order to carry out the educational and supervisory program which is such a significant part of the Bureau's work, we, very likely, could have prevented hundreds or possibly even thousands of deaths. If it is accepted that there were several hundred or thousand deaths which occurred in this city, and which were, in a large measure, due to the fact that we had not an adequate staff to enforce all practical preventive, educational, and necessary quarantine measures, has not the general public laid itself open to an indictment, if it fails to sanction and to demand more generous expenditures for this service.

If an accident should occur by which thirty or forty persons were killed, the newspapers would devote no end of space to the very smallest circumstance and detail of such occurrence. The dramatic and tragic significance of the many deaths from preventable diseases, which occur in every community, largely because public sentiment does not exist and express itself in favor of liberal support and extension of public health work, is unfortunately such a commonplace that it would be impossible, ordinarily, to secure even ten lines in the daily press to bring such needless deaths to the attention of the community. Yet they constitute a grave economic loss to the community, they may frequently cause disruption of the family; they may initiate poverty and add unnecessarily to the sum of human misery and suffering. Moreover, the thousands who acquire diseases which could be prevented, even though they do not lose their lives as a result, remain more or less permanently injured, and are made victims of disability or premature death, are also a standing reproach to the indifference of the public and "pennywise and pound foolish" policy that is responsible for

these needless sacrifices. This Bureau, in common with the Bureau of Child Hygiene, has a most powerful claim upon recognition and support of the public; their work is fundamental and basis of the Department's chief activities.

This is, perhaps, not a modest or conventional introduction to a report of the Bureau activities for last year, but it is most essential that our stock-taking should lead to constructive plans for greater effectiveness and service to the community, and that need for such plans be emphatically and unconventionally stated. This is more important than to record the humdrum, routine statistics, which are important principally to those having an intimate and technical interest or relationship to one or another field of the work illuminated by such statistics. In this attempt to put emphasis upon the handicaps, setbacks and deficiencies which this Bureau, in common with other Bureaus, and all public health agencies in the country at large, has suffered, it is not intended to ignore the invaluable services which have been and are being rendered by sincere, enthusiastic, and able public health servants. It is not aimed to decry the thought and effort which has gone into the planning of organization of much that is now being done. In taking stock of the Bureau's activities, it comes home forcibly to one that the limitations under which we labor can and should be overcome, and it is our responsibility and duty, in the interest of future progress, to dwell, not so much upon the worth of past and present achievements, but to sound a challenge and a summons for co-operative effort on the part of the public, press, medical profession, and of special groups, to place at our disposal larger means, and to build public support for health work.

In what follows, there will be presented with reference to each of the diseases, for whose control and prevention this Bureau is held responsible, a statistical statement showing the known prevalence of such diseases, the casualties they have caused, together with comments and recommendations which suggest themselves from a consideration of these facts.

Diphtheria.

Diphtheria has continued to engage our most serious consideration because, notwithstanding the continued use of antitoxin, we seem to have reached a stage where our means of prevention have been without effect in further reducing prevalence and mortality rate from diphtheria, despite the fact that when antitoxin was introduced in 1894, it was held out to be not only a remedy, but a means of prevention which would virtually eliminate diphtheria.

It is true, when one studies the mortality record, as well as the morbidity statistics of diphtheria, that a very striking reduction is found in both the mortality rate and the prevalence of diphtheria since the introduction of antitoxin. But we cannot be content to tolerate a disease which, in spite of

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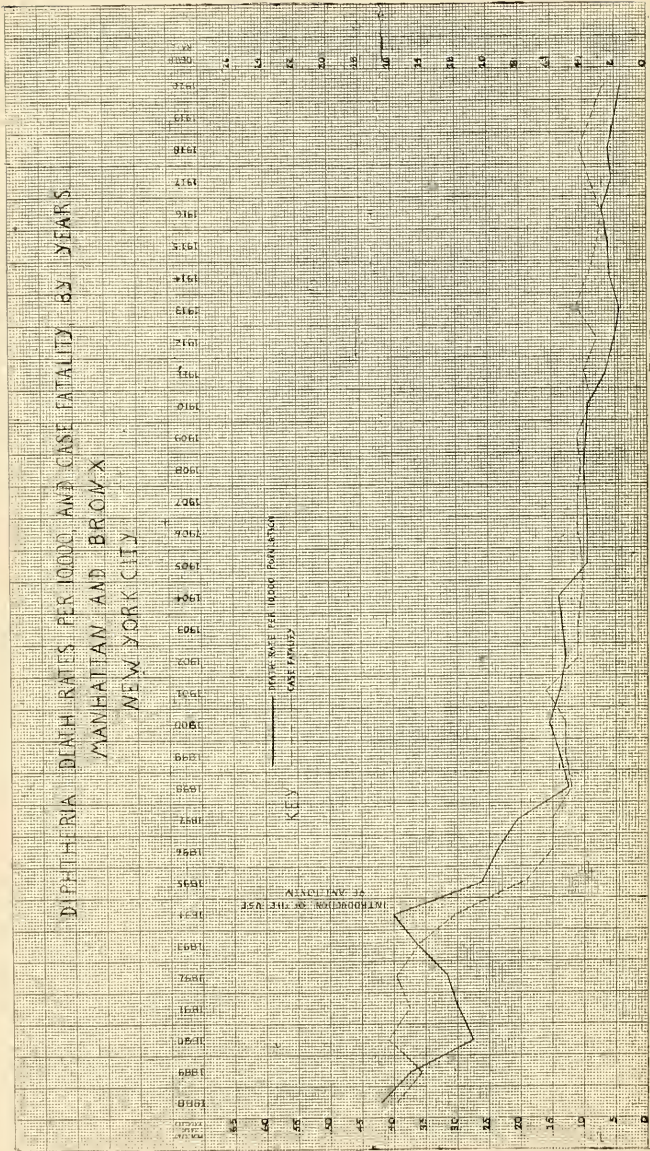
TABLE I.
DIPHTHERIA CASES REPORTED BY SEX AND AGE.

	MANHATTAN.			BRONX.			BROOKLYN.			QUEENS.			RICHMOND.			CITY.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
	Under 1 year.....	67	39	106	18	8	26	39	20	59	5	3	8	2	2	4	131	72	203
1 to 2.....	241	152	393	60	31	91	126	80	206	12	8	20	5	5	10	444	276	720
2 to 3.....	268	252	520	94	67	161	199	128	327	22	19	41	11	7	18	594	473	1,067
3 to 4.....	316	255	571	82	67	149	245	162	407	28	19	47	12	8	20	683	511	1,194
4 to 5.....	292	275	567	106	108	214	187	148	335	36	38	74	11	12	23	682	581	1,213
Total under 5 years.....	1,184	973	2,157	360	281	641	796	538	1,334	103	87	190	41	34	75	2,484	1,913	4,397
5.....	148	254	402	109	79	188	163	100	263	25	23	48	13	9	22	558	465	1,023
6.....	193	239	432	97	77	174	179	139	318	27	33	60	16	15	31	512	503	1,015
7.....	145	178	323	63	77	140	115	111	226	26	22	48	7	6	13	356	394	750
8.....	119	134	253	46	47	93	87	192	279	28	18	46	9	6	15	289	297	586
9.....	74	79	153	34	38	72	76	73	149	15	15	30	6	6	12	205	211	416
10.....	57	68	125	25	24	49	64	55	119	11	14	25	5	5	16	168	166	334
11.....	48	47	95	18	22	40	32	58	70	9	17	26	5	4	9	112	118	230
12.....	34	47	81	14	7	21	30	39	69	8	11	19	4	1	5	90	105	195
13.....	18	29	47	5	9	14	15	19	34	7	5	12	1	1	2	47	59	106
14.....	15	20	35	9	9	18	18	19	33	4	3	7	1	1	2	35	47	82
15.....	7	13	20	4	7	11	11	14	24	2	3	5	1	1	2	26	35	61
16.....	7	18	25	4	16	20	10	14	24	2	4	6	1	3	3	32	26	58
17.....	18	10	28	2	3	5	5	5	12	4	2	6	1	1	2	30	19	49
18.....	17	10	27	1	4	5	6	6	15	3	1	4	1	1	2	18	25	43
19.....	8	8	16	2	1	3	5	2	7	1	2	3	1	1	1	16	14	30
20 to 24.....	27	58	85	5	15	20	14	40	54	1	1	2	3	1	8	9	48	176
25 to 29.....	11	39	50	4	13	17	13	36	49	2	5	7	2	5	7	32	98	130
30 to 34.....	20	33	53	5	9	14	17	17	34	2	2	5	3	2	5	47	66	113
35 to 39.....	11	19	30	1	6	7	4	7	11	1	5	6	1	3	3	17	40	57
40 to 44.....	3	11	14	6	2	8	8	13	21	1	1	2	1	1	2	14	22	36
45 and over.....	6	16	22	2	5	7	3	9	27	1	1	2	1	1	2	11	25	36
Not stated.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total.....	2,271	2,294	4,624	813	738	1,551	1,662	1,372	3,061	286	275	561	127	116	243	5,159	4,795	*10,040

*59 Cases in Manhattan and 27 cases in Brooklyn are not included.

TABLE II.

DIPHTHERIA DEATH RATES PER 10000, AND CASE FATALITY, BY YEARS
MANHATTAN AND BROMOX
NEW YORK CITY



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TABLE III.
SCHICK TEST AND TOXIN-ANTITOXIN WORK IN NEW YORK CITY DURING 1920.
CASES TESTED.

	MANHATTAN.			BRONX.			BROOKLYN.			QUEENS.			RICHMOND.			CITY.		
	Pos.	Reg.	Total.	Pos.	Reg.	Total.	Pos.	Reg.	Total.	Pos.	Reg.	Total.	Pos.	Reg.	Total.	Pos.	Reg.	Total.
	Up to 1 year.....	15	34	49	0	5	5	1	7	6	7	0	7	0	0	0	23	44	67
2 to 2.....	37	79	116	3	6	9	6	19	25	0	0	0	0	0	0	37	76	113
3 to 3.....	34	77	111	3	3	6	16	20	34	0	1	5	0	0	0	53	97	150
4 to 5.....	22	75	97	4	3	7	23	34	4	2	0	1	0	0	0	49	92	136
5 to 6.....	25	66	91	4	3	7	19	30	7	4	2	4	0	1	1	75	85	160
6 to 7.....	28	84	112	11	9	20	35	42	15	6	9	19	0	2	2	77	122	199
7 to 8.....	23	76	99	8	5	13	52	68	10	3	13	13	0	0	0	93	100	193
8 to 9.....	20	46	66	1	7	8	61	40	101	1	5	6	1	0	1	84	98	182
9 to 10.....	23	31	54	0	5	5	71	20	91	8	8	16	1	0	1	103	64	167
10 and over.....	64	191	255	2	22	24	435	102	537	18	7	25	0	2	2	519	324	843
Totals.....	318	820	1,138	33	71	104	751	260	1,011	73	37	110	2	5	7	1,177	1,193	2,370

PREVIOUSLY IMMUNIZED WITH DIPHTHERIA ANTITOXIN.

	MANHATTAN.			BRONX.			BROOKLYN.			QUEENS.			RICHMOND.			CITY.		
	Pos.	Reg.	Total.	Pos.	Reg.	Total.	Pos.	Reg.	Total.	Pos.	Reg.	Total.	Pos.	Reg.	Total.	Pos.	Reg.	Total.
	Up to 1 year.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 to 2.....	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 to 3.....	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	2
4 to 4.....	2	2	4	0	0	0	0	0	0	4	1	1	0	0	0	2	3	5
5 to 6.....	2	0	2	1	2	3	0	0	0	0	0	0	0	0	0	3	1	4
6 to 7.....	1	3	4	0	1	1	2	0	2	1	7	7	0	0	0	3	5	8
7 to 8.....	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	3	1	4
8 to 9.....	0	0	0	3	1	4	2	0	2	2	2	2	0	0	0	7	1	8
9 to 10.....	0	5	5	0	0	0	1	0	1	2	0	2	0	0	0	3	5	8
10 and over.....	6	13	19	4	3	7	7	0	7	14	4	18	0	0	0	31	20	51
Totals.....	6	13	19	4	3	7	7	0	7	14	4	18	0	0	0	31	20	51

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TABLE III—Continued.
INJECTED WITH TOXIN-ANTITOXIN.

	MANHATTAN.				BRONX.				BROOKLYN.				QUEENS.				RICHMOND.				CITY.			
	Doses.			Total.	Doses.			Total.	Doses.			Total.	Doses.			Total.	Doses.			Total.	Doses.			Total.
	1.	2.	3.		1.	2.	3.		1.	2.	3.		1.	2.	3.		1.	2.	3.		1.	2.	3.	
Up to 1 year.....	26	3	0	29	4	1	1	6	1	1	3	5	3	4	12	0	0	0	0	36	8	6	50	
1 to 2.....	30	18	14	62	4	1	1	6	5	3	8	0	0	0	1	0	0	0	0	39	23	15	77	
2 to 3.....	46	19	13	78	3	3	0	6	13	1	6	0	0	0	0	0	0	0	0	62	33	19	114	
3 to 4.....	42	18	7	67	2	0	1	3	20	11	8	39	4	2	3	9	0	0	0	98	31	29	158	
4 to 5.....	39	18	4	61	7	4	3	14	23	11	12	46	17	3	2	16	0	0	0	96	46	44	188	
5 to 6.....	36	12	6	54	11	5	7	23	36	26	31	6	2	2	16	7	0	0	0	96	59	41	196	
6 to 7.....	36	12	4	52	13	10	11	34	41	34	35	112	7	0	0	17	0	0	0	102	78	30	210	
7 to 8.....	35	20	6	61	13	16	6	35	66	45	35	146	2	3	2	7	0	0	0	105	59	48	212	
8 to 9.....	29	5	5	39	13	8	4	22	55	63	32	150	5	2	5	7	0	0	0	102	78	43	223	
9 to 10.....	87	21	17	125	43	28	26	97	467	383	287	1,137	14	2	5	21	0	0	0	611	434	335	1,380	
10 and over.....	437	154	81	672	120	75	63	258	773	683	456	1,862	60	20	23	103	3	0	0	3	1,393	882	623	2,898
Totals.....	437	154	81	672	120	75	63	258	773	683	456	1,862	60	20	23	103	3	0	0	3	1,393	882	623	2,898

our methods of attack, still causes widespread disease and death among children.

It will be seen from the attached chart, Chart I, which gives a curve of the diphtheria rate and the case fatality rate, that there was a marked drop in the death rate per thousand, as well as in the percentage of cases which terminated fatally. From an average of 40 per cent. of fatal terminations in 1894, we dropped to a case fatality rate which, in the last ten years, has never exceeded 10 per cent. and has frequently been appreciably less. The mortality rate dropped from about 13 per ten thousand of population to one which, in the last ten years, has been little more than 2 per ten thousand. One may state these facts somewhat differently. The use of diphtheria antitoxin as a therapeutic measure reduced the fatal terminations in cases of diphtheria to one-third of what they formerly were; as a preventative measure it has helped reduce the number of deaths per ten thousand of population from this cause to about one-sixth of what they formerly were. In other words, if the same death rate had existed last year in the general population as before the introduction of antitoxin, at least 6,270 persons would have died in 1920 from this disease; furthermore, our experience has shown that deaths among persons who contracted the disease was three times greater when antitoxin was not available as a therapeutic measure. While these facts justify, in a measure, some of the optimistic predictions of 1894, they also show that we have failed to reduce diphtheria to a place of relative insignificance. This disease continues to affect a very large percentage of our child population. We knew of only 14,166 cases in 1920. It is safe to estimate there were many cases in which diagnosis was missed or not reported to us. Of the number that were reported, 1,045 died. Of the deaths, 558 were recorded among males and 487 among females. Eighty-eight deaths, or 8.4 per cent. of the total mortality, occurred in children under one year of age, the number of males and females being practically equal. The highest mortality, namely, 141 among males and 109 among females, occurred between ages of 1 and 2 years; 117 among males and 81 among females, from 2 to 3 years; 57 among males and 64 among females, between 3 and 4; 65 deaths among males and 45 among females, 4 and 5 years of age. The total number of deaths in children under 5 was, therefore, 767, —423 among males and 344 among females. Seventy-three per cent. of the deaths occurred in children under five. Twenty-one per cent. of all the deaths occurred in children from 5 to 9, inclusive. The deaths occurring in older age groups were extremely small in comparison. While we reported, during 1920, the largest number of cases of diphtheria which occurred since 1915, we had, however, the smallest percentage of case fatalities. Although the percentage of fatal cases was thus markedly reduced, diphtheria still ranks fifth among communicable diseases as a cause of death.

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Somewhat more than a year ago, the research activities which had been inaugurated in 1914 by Dr. William H. Park, Director of the Bureau of Laboratories, to confirm claims made for the Schick test and active immunization were made a routine and definitely recognized function of the Bureau of Child Hygiene and Preventable Diseases, in their respective fields of work, and thus made a formal part of the campaign in the prevention of diphtheria.

This is the most progressive and promising public health measure which the Department has, in many years, applied. The Directors of the three Bureaus named have been designated as a Schick Test Committee by the Commissioner under chairmanship of Director of the Bureau of Preventable Diseases, with a view to secure coördination and mutual assistance between the Bureaus in furthering this work. The various clinic physicians applied the Schick test to 2,370 persons during the course of the year; 1,138 of these tests were performed in the Borough of Manhattan, 1,011 in Brooklyn, 110 in Queens, 104 in The Bronx, and 7 in Richmond. Roughly speaking, 50 per cent. of all these were positive. The attached table (III) is of interest in that it shows the number who received the Schick test, and proportion in various groups who gave positive reactions. The Bureau began this work as a practical and formal preventive measure in May, 1918. The table also shows the number who received a single dose in 1919 and 1920, respectively, the numbers who received two and three doses. It is extremely difficult to persuade parents to continue the immunizing treatment until a sufficient number of injections of toxin-antitoxin has been administered. The figures presented give an indication of the rate of progress in administering the Schick test and active immunization which can be made under ordinary conditions. It must be evident that private physicians, to whose opinion parents and guardians most readily defer, owe it as a duty to families under their care, not merely to learn how to apply the Schick test and to correctly interpret its results, but to assume an active and aggressive part in instructing their patients as to the tremendous importance of these new preventive measures. The physicians have it in their power to popularize the use of these preventive procedures as nobody else can. Medical societies should not treat this as a subject of merely academic interest, but should rouse their members to an appreciation of their moral responsibilities and give publicity to the need for such measures, especially in children under ten years of age. If diphtheria prevention, through active immunization, could be made as popular as smallpox vaccination, we might look forward with confidence to a time when cases of diphtheria would be comparatively rare and deaths still rarer. When they did occur, they would brand the parent, physician, or whoever it might be who failed to urge or apply the Schick test and active immunization, as one guilty of wanton and criminal neglect.

During the year, a special study was made by the Division of Epidemi-

ology of families in which two or more cases of diphtheria occurred. There were 1,070 multiple cases, which occurred in 518 families included in this study. The facts which are brought out, in this connection, are of importance, and will be given in detail. It should be stated at this point that the terminating cultures were obtained by nurses of this Bureau in the great majority of all home cases. A large percentage of secondary cases, which were quarantined at home, occurred one week or more after quarantine of the primary case. To be exact, it was found that 132 cases, approximately 35 per cent. of those treated at home, occurred one week after quarantine had been established. Sixty-three cases (15 per cent.) occurred one month after quarantine had been instituted; fifty-seven cases (14 per cent.) occurred after the original case had been terminated, as the result of two negative cultures.

These figures do not indicate any relaxation in our methods of control and supervision of cases; the work has been conducted on same principles as in former years. The study was undertaken owing to observations made on previous occasions, that there seemed to be ground for belief that many carriers of virulent bacilli were set free, notwithstanding our insistence upon two successive negative cultures, taken twelve days after the onset. The questions which this study raises are significant.

Of the 1,070 cases, 453 were apparently primary cases having no ascertainable connection with preceding cases, while, in 92, there were factors which left doubt in the minds of investigators whether they were primary or secondary, but weight of evidence seemed to indicate that they were probably primary cases. This left, therefore, 525 cases which were definitely secondary. One may reasonably presume that if we could make intensive epidemiological investigations into every so-called primary case, it would be found that not merely 42 per cent., but probably the overwhelming majority of these cases were directly due to "missed cases" with whom patients had come into contact in schools, or elsewhere; also, to healthy carriers, to concealed cases, or to contact with persons who were in the incubation period. In other words, it seems reasonable, in the light of experience, to assume that the healthy carrier is not the only means of transmission of diphtheria. Persons already suffering from the disease, convalescent carriers, prematurely terminated cases, concealed and missed cases, naming them in their approximate order of importance, play a large, though undetermined part in the spread of this disease.

The occurrence of secondary cases is not limited to those instances in which patients are quarantined and cared for at home. There were 61 cases occurring in homes after removal of a primary case; there were 44 secondary cases occurring after return of primary case from hospital; of the total of 105 cases secondary to hospital cases, 28 cases (25 per cent.) occurred more than one week after removal of the primary case, and 44 cases (almost 50

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per cent.) occurred after return to home of the primary case. In Table V is shown the interval before or after quarantine of primary cases treated at home, when secondary cases developed. Table VI shows interval of time, before or after removal to hospital, when cases secondary to such hospital cases developed. Particular interest attaches to 44 secondary cases which developed after return from hospital of patients who had been released, quite properly, in accordance with our routine procedure upon two successive negative cultures, obtained twelve days after onset of the disease. It should be stated, however, in justification of hospitals caring for diphtheria cases, that, taking a larger group into account, while of a total number of 4,544 cases treated at home, 384 (8 per cent.) were secondary cases; of 2,017 cases treated in the hospital only 5 per cent. were secondary cases. The difference in case fatality rates between hospital and home cases is due to the fact that the most serious cases were removed to hospitals for treatment.

TABLE IV.
Diphtheria Cases and Deaths Classified as Primary and Secondary.

CASES.	TREATED AT HOME.		TREATED AT HOSPITALS.	
	Cases.	Deaths.	Cases.	Deaths.
Primary.....	354	18	99	11
Secondary to preceding.....	409	25	116*	11
Doubtful, probably primary.....	66	2	26	6
	829	45	241	28

*Of this number, 61 occurred after removal of primary case to hospital, and 44 occurred after return of terminated hospital case.

TABLE V.
Diphtheria Occurring Secondary to Cases Treated at Home.

51.....	Before quarantine.
13.....	1 day after quarantine.
11.....	2 days after quarantine.
12.....	3 days after quarantine.
8.....	4 days after quarantine.
14.....	5 days after quarantine.
12.....	6 days after quarantine.
11.....	7 days after quarantine.
132.....	More than 1 week after quarantine.
63.....	More than 1 month after quarantine.
57.....	After termination of quarantine.

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TABLE VI.

Diphtheria Occurring Secondary to Cases Where the Primary Case Was Removed to Hospital.

14.....	Before removal.
7.....	1 day after removal.
2.....	2 days after removal.
4.....	3 days after removal.
1.....	4 days after removal.
3.....	5 days after removal.
0.....	6 days after removal.
2.....	7 days after removal.
25.....	More than 1 week after removal.
3.....	More than 1 month after removal.
44.....	After return to home or primary case.

105

TABLE VII.

Diphtheria Occurring Secondary to Cases Discharged from Hospital.

Cases.	Time of Occurrence.
0.....	1 day.
1.....	2 days.
2.....	3 days.
1.....	4 days.
2.....	5 days.
1.....	6 days.
1.....	7 days.
25.....	Over 1 week.
11.....	Over 1 month.

44

TABLE VIII.

Family Distribution of Diphtheria Cases.

Number of Families.	Cases.
506.....	2
2.....	3
5.....	4
4.....	5
2.....	6

The questions which are raised by this inquiry are extremely important. First: Is our method of maintaining quarantine in the home adequate and effective? In a city like New York, with a population of nearly five and three-quarter millions, presenting all types and social conditions, and differences in housing and environment, with a density of population in some sections which is almost unparalleled, while other sections are sparsely settled—thus presenting characteristics familiar to a rural community—it is most difficult, with the small staff that is available, to maintain a constant and rigorous supervision of quarantine. If we were to insist upon severe scientific standards of isolation and quarantine, contagious hospitals would be inadequate to accommodate such diphtheria cases as we would have to remove thereto. The nurses who must supervise and maintain quarantine in all reported cases (14,166 in 1920) are not adequate in number to visit cases at sufficiently frequent intervals to insure absolute quarantine. If they

could be increased, visits could be made more frequently, which would limit many abuses and violations of our quarantine regulations and diminish the prevalence of communicable disease. But while an addition to our staff of nurses would increase the effectiveness of our quarantine, this, in itself, would not be sufficient to prevent secondary cases, because, manifestly, unless we station a health guard to do twenty-four hour duty in most homes where communicable disease occurs, there is likely to be a violation of quarantine the moment our representative has turned her back upon the premises. People are still most heedless of precautions which we urge upon them to prevent spread of disease, and they must be educated by persistent and patient methods, so that they will realize the importance of co-operating with the Department in maintaining proper isolation and quarantine. Second: It has been shown repeatedly that results which one obtains from cultures taken from throats of persons who are affected with diphtheria, are dependent, to a very considerable degree, upon the thoroughness, skill and care with which such cultures are taken. The doctor or nurse who applies the culture swab superficially, to the surface of the tonsil, may obtain a negative culture, despite presence of diphtheria bacilli. It requires care, not only to swab the surface but to enter larger crypts of the tonsil, in order that one may be sure that two or more successive negative cultures are reliable as an indication of the absence of diphtheria bacilli. Undoubtedly, a certain number of cases harbor diphtheria bacilli in the nose, nasal sinuses, and pharyngeal mucosa. These cases, if discharged from supervision upon the basis of two negative cultures obtained from the tonsil alone, are likely to cause development of secondary cases. Another point, which is extremely important in connection with the study of these secondary cases, is the fact that passive immunization by use of antitoxin, of children exposed to diphtheria, is frequently omitted by physicians in charge of cases. With each day that elapses from the time of onset in a given case without development of symptoms in exposed persons, physicians acquire a feeling of security, failing to realize that cases of diphtheria, as of other communicable diseases, may develop at a time subsequent to average incubation period. One of the reasons, apparently, why cases of diphtheria, and of other communicable disease, develop after the average incubation period, is because there is more strict isolation when the disease is first discovered. Other children in the family are more likely to be kept at a distance from the sick child, but as the temperature becomes normal and the patient appears to be in fairly good health, intimate contact is frequently allowed between patient and well children. Moreover, the exposed children may carry diphtheria bacilli in their nasal or oral cavities without harm until some factor unfavorably affects the powers of resistance, and gives the bacilli their opportunity for growth and attack. While it is by no means unusual to find many diphtheria carriers in a community, it is, nevertheless, of signal importance that con-

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valescent carriers, or those in contact with an actual case, should be singled out with more care than the casual healthy carriers, because they more frequently harbor virulent organisms. When one considers the thousands of cases which annually come to the notice of the Department, and thousands which are either unrecognized, or known to physicians and not reported; and how frequently these recovered cases may be active agents in transmitting virulent bacilli to children with whom they subsequently come in contact in schools, in the course of play on the street, in public vehicles, moving picture theatres or similar places of public assembly, it is no wonder that, in spite of all efforts, diphtheria continues to register a large morbidity and mortality rate.

The study lends further force, if any new arguments were needed, in support of widespread application of the Schick test and active immunization by toxin-antitoxin among children of the earlier age groups, in particular, as a routine protective measure. Private physicians have many opportunities and responsibilities in helping solve problems here suggested.

Morbidity statistics have been so few with reference to diphtheria, that it may be of service to present herewith a study which was made by the Division of Epidemiology of 10,040 cases out of the total number reported during the year. It will be seen from this study that the disease principally attacks the male sex up to the age of 10; thereafter conditions are reversed, and consistently the number of cases among females preponderates. While diphtheria is prevalent to a relatively considerable degree among children under one year of age, this disease shows a very marked increase in prevalence among children from one to two years. This increase in prevalence is progressive up to the fifth year of age, when there begins a slight diminution in prevalence. After the tenth year, the disease is relatively infrequent. The first ten years, therefore, are particularly dangerous. While it is commonly believed that adults rarely suffer from diphtheria, it is interesting to note that the number of persons over twenty years of age, reported as suffering from diphtheria, is by no means small. No doubt, too, many cases are missed among adults, because physicians are not so prone to look with suspicion upon nose and throat inflammation occurring in adults, as they are when dealing with children.

This Bureau has compiled charts showing the prevalence of cases reported in two hundred and twenty-four sanitary districts in which the Borough of Manhattan is divided, which enable us to see at a glance in which the greatest prevalence of diphtheria exists, and it enables us to concentrate our educational control measures in the latter districts.

Moreover, the Bureau has in the last year made it a point to localize cases of diphtheria, so as to show location of schools attended by such cases. When a relatively large number of cases are reported from any school, during a given week, prompt report of these is made to the Bureau of Child

Hygiene, so that the later Bureau may be on its guard in dealing with children attending such schools. And, particularly, classmates of affected children.

Measles.

The incidence of measles during 1920 was quite high, particularly as compared with that of the preceding year when measles reached the lowest point of incidence recorded since the greater city was formed. There were 35,083 cases reported during 1920, as contrasted with 8,194 cases during 1919. This leads one to conjecture whether, owing to the great volume of work in connection with secondary wave of influenza and pneumonia epidemic, which occurred in 1919, physicians, who were hard driven, did not frequently omit to report cases.

The percentage of case fatalities, notwithstanding this variation in prevalence, was about the same as in previous years, namely, 2.10 per cent. During the year, we re-established our practice of visiting homes of measles patients. This procedure added materially to the volume of work required of nurses in the control of communicable diseases and, in proportionate measure, it diminished the frequency of visits to cases of tuberculosis. But, all things considered, this was a necessary and proper function in connection with a disease which regularly attains a very high incidence among our child population, and which, if unrestrained in its progress, may have a large influence in development of tuberculosis, or cardiac sequelae, and of other diseases. Moreover, the fact that the number of cases reported annually is greater than that of any other communicable disease, gives our nurses excuse to visit many homes where instruction can be imparted as to methods of preventing communicable disease which may be of great value in preventing other, and even graver, diseases.

Scarlet Fever.

There was an increase of about 44 per cent. in the prevalence of scarlet fever, as contrasted with the two preceding years. There were 6,537 cases reported during 1920, as contrasted with about 4,500 in each of the two preceding years. While this increase is a relatively large one, it nevertheless leaves a great margin in our favor as compared with the prevalence of this disease in all the years prior to 1915. It was no unusual thing to have from 12,000 to 15,000 cases reported in a single year. In fact, in 1908, there were 24,426 cases. The death rate per hundred thousand of population was 29 in 1908, whereas in 1920 it was but 4. Recognizing, as we must, the importance of scarlet fever as a causative agent in development of cardiac and kidney affections, it will be seen that this reduction, which is, no doubt, due in appreciable measure to the effectiveness of our communicable disease supervision, has constituted a most encouraging and gratifying phase of child life conservation, as it undoubtedly has a decided influence upon the health and longevity of children affected with this disease.

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An interesting study of the incidence of secondary cases, occurring in the Borough of Manhattan during 1920, was prepared by the Division of Epidemiology. Out of a total of 1,899 cases treated at home, there occurred 133 secondary (7 per cent.). In connection with 580 primary cases removed to the hospital, there occurred 36 secondary cases (6.2 per cent.). A total of 169 secondary cases were studied; these occurred in 149 families—119 being families where cases were treated at home, and 30 families in which the primary case was treated in the hospital. The 133 secondary "at home" cases were divided as follows: 35 secondary developed before quarantine was established; 82 secondary developed after quarantine was established; and 16 secondary cases occurred after the termination of quarantine. The 36 secondary to hospital cases were divided as follows: 7 secondary occurred before removal to hospital; 16 secondary occurred after removal; and 13 secondary cases occurred after discharge of the primary case.

TABLE IX.

Cases of Scalet Fever Secondary to "At Home" Cases—Time of Onset in Relation to Establishment of Quarantine.

Before	35 cases
One day after.....	7 cases
Two days after.....	10 cases
Three days after.....	5 cases
Four days after.....	6 cases
Five days after.....	6 cases
Six days after.....	3 cases
Seven days after.....	4 cases
Over one week after.....	37 cases
Over one month after.....	4 cases
After termination of quarantine.....	16 cases
Total.....	133 cases

TABLE X.

Date of Illness of Primary "At Home" Cases of Scarlet Fever, When Quarantine Was Established.

Date of Illness.	Number of Primary Cases.
1st	4
2d	20
3d	15
4th	8
5th	14
6th	9
7th	16
8th to 14th, inclusive.....	16
15th to 21st, inclusive.....	9
22d to 28th, inclusive.....	6
Over 28 days.....	2
Total.....	119

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TABLE XI.

Scarlet Fever Cases Secondary to "Hospital Cases"—Time of Onset in Relation to Date of Establishment of Quarantine.

	Number of Secondary Cases.
Before	7
One day after.....	1
Two days after.....	1
Three days after.....	2
Four days after.....	1
Five days after.....	2
Six days after.....	1
Seven days after.....	1
Over one week after.....	6
Over one month after.....	1
After return home of primary case.....	13
Total.....	36

TABLE XII.

Day of Illness of Primary "Hospital Cases" of Scarlet Fever When Quarantine Was Established.

Day of Illness.	Number of Primary Cases
1st	1
2d	10
3d	5
4th	1
5th	1
6th	1
7th	1
Over one week.....	4
Over two weeks.....	5
Over three weeks.....	1
Total.....	30

It is fair to assume, as the result of this study, that, notwithstanding our intensive efforts to control this disease, there are a number of factors which tend to offset our activities, and favor the spread of the malady. Among these unfavorable factors the following are most important: Cases which present unusual difficulties in diagnosis; cases which are "missed" or unrecognized; cases which are not reported; and those which are so mild that a physician is not called in at all. In addition to these influences, this study would seem to show that failure to maintain proper isolation and quarantine plays a conspicuous role in causing secondary cases to develop. Moreover, it is difficult to say when the infectiousness of scarlet fever is at an end, and there are, very likely, a number of instances in which incubation is longer than that generally accepted as the rule. The fact that 41 per cent.

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or 30 per cent. of all secondary cases occurred more than a week after the primary case had been under quarantine would seem to justify the statement that isolation and quarantine were not properly maintained. From the fact that 16 secondary cases occurred after termination of the primary case, one may deduce that quarantine, despite the fact that it had lasted for the proper period, was not of adequate length, in these particular instances. Further, from the fact that 6 secondary cases occurred more than a week after removal of the primary case to a hospital, and that one secondary case occurred more than a month after removal of the primary case, we have reason to suspect that the infective agent may remain inactive for a relatively long period, until resistance is lowered, that the incubation period may be prolonged, or that a healthy carrier is responsible for such cases. It may be true, also, that missed cases serve as intermediaries or carriers. The difficulty of determining when infectious period is at an end, especially because we have no means of identifying carriers, is evidenced by the fact that 13 secondary cases occurred after the return of the primary case from hospital.

. Whooping-Cough.

The incidence of whooping-cough, which, like measles, was exceptionally low in 1919, reached the highest point yet recorded in 1920; there were 8,873 cases reported. The seriousness of whooping-cough, as a disease of childhood, is gaining greater recognition year by year. Knowing, as we do, that innumerable cases are not reported, and bearing in mind the fact that whooping-cough may cause a predisposition to tuberculosis, or may be complicated in many instances by pneumonia, we have reason to feel that this disease is a more serious menace to child life than some others which are particularly feared by the general public and medical profession. To even hazard a guess as to the number of deaths from pneumonia secondary to whooping-cough is impossible. If cases in which whooping-cough was a contributory cause of death could be definitely ascertained and included with the number of deaths directly due to this disease, we would, no doubt, find that whooping cough looms larger as a cause of death in childhood than any of the communicable diseases, with the exception of tuberculosis and diphtheria.

Whereas, during the year, there were reported 123 deaths from cerebrospinal meningitis, 40 from poliomyelitis, and 137 from typhoid fever, making a total of 300 deaths from diseases which usually inspire fear, there were 615 deaths from whooping-cough, per se. Owing to general indifference of the public, and especially because the disease is one which is of long duration, and is not, in the majority of instances, accompanied by a severe and disabling reaction, patients are allowed great liberty and may, at various seasons of the year, be seen, in considerable numbers, on the streets, in public conveyances, in parks, at seashore resorts, and on excursion vessels. The solicitude for the patient blinds parents to necessity of isolating the

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case. Also, because of the fact that the majority of cases are not reported to the Department (as we are warranted in believing on the basis of special investigations made from time to time), many of these children are in intimate contact with others, and thus actively spread the disease.

A variety of methods have been proposed and tried out, both in this city and in others, to prevent and treat whooping-cough, without much success. There can be little question but that this disease, even more than diphtheria, will cease to be a menace to child life only when a more efficient method of immunization is devised. The recent reports of successful results through immunization of children against whooping-cough, by use of freshly prepared vaccine, is a matter deserving most careful study, and is of greatest importance. Should further experience demonstrate the validity of claims made for this method of immunization, or for any other that may be devised, it would merit the most aggressive activity on the part of the Department of Health to secure its adoption, wherever the menace of whooping-cough is encountered.

Doubt has been cast upon correctness of our views with reference to period of infectivity in cases of this disease. It is important to establish, as accurately as may be possible, the average duration of infectiousness because error in this particular may be responsible for premature release from supervision and control of cases which have been reported to the Department of Health. We have established quarantine periods, in some diseases, in a purely arbitrary or empiric fashion, as is evidenced by the great variations which are to be found on comparing regulations of municipal and state health departments. Scientific study is needed in this field.

Typhoid Fever.

The prevalence of typhoid has been traditional index by which the effectiveness of measures for protection of a community are judged. There were but 969 cases of this disease reported during 1920. While this is an increase of 115 cases, as contrasted with the preceding year, it is, however, a striking reduction as contrasted with the number which occurred during several decades. Our record in this respect, not only as compared with large cities but with small cities, is exceeded by only two communities, namely, Chicago and Boston; Boston had 1.5 cases per hundred thousand of population, Chicago, 1.1, while we, in New York, had 2 per hundred thousand. Without wishing to cast aspersions on the method of health bookkeeping maintained by one of the communities which, in the last two years, has supplanted us in first place, in so far as concerns the record of relative freedom from this disease, our standard of recording typhoid fever is possibly more rigorous. In this City, we carry on our records every case in which the diagnosis of typhoid fever is made by a private physician or hospital, even though no laboratory confirmation is furnished.

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In 42 cases of typhoid fever out of a total of 969, suspicion was attached to oysters as source of infection. In a number of instances, the patient gave a history of having dug up clams at nearby seashore resorts; in other cases they had partaken of shellfish, but were unable to give precise details which would have enabled us to make accurate epidemiological studies. Where the source from which such oysters were obtained was given, investigations were made, but these failed to disclose the presence of infected foodhandlers, or of oysters coming from polluted beds. Nevertheless, we could not rule out the possibility of infection from this source.

As in previous years, we have tabulated the cases and deaths by age groups, allotting them to their respective boroughs of residence. This study, as in the two previous years, shows that the largest number of cases, namely 16 per cent. of the total, was reported in the age group from 10 to 14 years. The next largest occurred in children from 5 to 9 years of age—namely, 14.6 per cent. of the cases. All told, therefore, 30 per cent. of the cases occurred in the age group from 5 to 14 years of age. If we add to this number the cases occurring in children under 5, we have an additional 5 per cent., making a total of 35 per cent. of cases occurring in children up to 14 years of age. In view of this, the neglect of a parent to immunize children prior to the vacation season is a matter which ought to be brought home most emphatically to parents, so that we may reduce this almost entirely preventable cause of morbidity and mortality in our child population. The largest number of deaths occurred in the age group from 25 to 29 years, namely, 22 deaths, or 16 per cent. of the total number of fatalities from this cause. Eighteen per cent. of the total number of deaths occurred in children under 15 years of age.

Nearly 2 per cent. of the total number of cases of typhoid fever which occurred in the city give a history of previous immunization. To be exact, there were 20 such cases, 14 of whom were immunized in connection with military service. All of these immunizations were performed by agencies other than the Department of Health.

Eighty-five persons are recorded in the files of this Bureau as chronic typhoid carriers. Of the total number of such chronic typhoid carriers, 67 are females, most of them having been employed doing housework.

It is obvious that the list of known typhoid carriers is most inadequate. The studies made by various observers have definitely shown that from 1 to 3 per cent. of all persons affected with typhoid fever become chronic typhoid carriers. If only 1 per cent. of the 17,034 persons who survived typhoid fever during the last ten years had become chronic typhoid carriers, we should have 170 chronic typhoid carriers registered, assuming, however, that they have not since moved to other cities or died in the interval. The actual number of typhoid carriers in the city is much higher. Although the number of such chronic typhoid carriers, who have escaped

recognition, may be small, as compared to our total population, they constitute a serious menace to public health and constantly threaten epidemics. To them, probably, a considerable percentage of the cases of undiscovered origin may be traced.

It is apparent that our procedure in discharging cases of typhoid fever from further supervision, upon the evidence of two successive negative stools, obtained ten days after the temperature in any given case has become normal, is bound to result in our overlooking carriers, when, as is known to all clinicians, the discharge of typhoid bacilli in the stools is in a great number of cases intermittent and irregular. We have, on this account, during the year, made plans in the direction of exercising greater vigilance in the discovery of suspected chronic typhoid carriers, by requiring that, in addition to the negative stools which are necessary before a case is discharged, every terminated case of typhoid fever shall be required to submit two additional stool specimens, two months after termination of the case. It is hoped that this additional safeguard will eventually bring to our notice cases in which discharge of typhoid bacilli from intestines is intermittent.

In 51 of the cases which were reported during 1920, we obtained a history of typhoid fever in one or more of apparently well members of the family. However, limited as we were in our ability to obtain more than one or two specimens from suspected carriers, we were not able to fasten responsibility upon any such persons, even though there was fairly strong presumptive evidence that some of these persons had previously had typhoid and might, therefore, be responsible for cases under study.

It is interesting to note that a total of 2,008 persons were directly exposed to typhoid infection by reason of contact, in the home, with the 969 cases which were reported during 1920. Only 322 of this group could be prevailed upon to accept typhoid immunization. In addition, 428 persons who were not exposed to typhoid received immunization at the hands of the staff of the Bureau, making a total of 750 persons immunized, so far as officially known during 1920. This is, of course, an absurdly small number, as compared with the general population. The majority of those who were not exposed and who applied for immunization, were members of missionary and relief organizations contemplating travel abroad.

Of 614 cases in which the course of infection could not be traced, it was found that 23 per cent. habitually drank "loose" milk. An additional 10 per cent. used "loose" or bottled milk interchangeably. As recommended in previous years, it would seem that the sale of "loose" milk, always a potential source of danger, not only from the standpoint of typhoid fever infection, but of other communicable and of diarrhoeal diseases as well, should be prohibited.

The diagnosis of typhoid fever was confirmed by Widal test, or other laboratory method, in 77% of the total number of cases reported during the

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year. This was a decrease of only 3% as compared with the percentage of such confirmations in the preceding year. In 70%, the Widal test alone was relied upon to make the diagnosis. Special attention should be called to 242 cases which were apparently due to out of town sources of infection.

Of all cases reported 63% were treated in various hospitals of the city, as against 55% who received hospital care during the preceding year. Hospitalization of typhoid fever cases is a most important and valuable public health measure, because it removes a focus of infection from homes in which, frequently, intimate contact with the patient is unavoidable.

Paratyphoid Fever.

Twenty-seven cases of paratyphoid fever were reported during the year, divided as follows:

	MANHATTAN.	BRONX.	BROOKLYN.	QUEENS.	RICHMOND.	CITY.
Total reported	14	2	10	1	0	27
Confirmed by laboratory	9	1	6	0	0	16

Encephalitis Lethargica.

During the year, a total of 654 cases were reported. Of this number, we were able to obtain data with reference to age, sex, and clinical facts in only 549 cases. Our records classify cases and deaths according to age groups and sex, for the different boroughs and for the city as a whole. The 105 cases, in which data could not be obtained, were cared for in hospitals, and information came to us through indirect channels, after the termination of such cases.

The largest number of cases occurred in the age group from 20 to 24 years of age. In this group there occurred 71 cases, and 24 deaths; the next highest age group was from 25 to 29 years, in which group there occurred 56 cases, and 25 deaths. There is a striking correspondence in this particular with the morbidity and mortality rate by age groups in influenza and pneumonia, as noted during the last two years.

Poliomyelitis.

One hundred and fifty-four cases of poliomyelitis occurred during 1920, as compared with 41 during 1919. This marks a very substantial increase, but we have been able to note no factor which, so far as at present can be ascertained, would indicate any special source of danger from a recurrence of an epidemic of this disease. In order to satisfy ourselves that we were omitting no important clue as to the possible recurrence of an epidemic,

we made periodic door-to-door canvasses in certain districts, to ascertain whether we could discover any unreported or unrecognized cases. In the course of one such study, in October, 2,100 families were visited in the Boroughs of Manhattan, Bronx and Brooklyn, but not a single case of this disease was discovered. An analysis of one hundred and thirty-five of the total number of cases reported, revealed some interesting data. The great majority of cases were in children who were American born; not a single case was found among the colored population; only 1 case gave a history of definite exposure to the disease; in only three instances did we find 2 cases in the same family. Males predominated among these patients. The paralysees were comparatively severe. Of the 135 cases which were specially studied, we found 22.9% had terminated fatally. The period of greatest prevalence of the disease began in July and continued through the succeeding months up to the end of November.

Epidemic Cerebro-Spinal Meningitis.

Whereas the number of cases of epidemic cerebro-spinal meningitis reported in 1919 was 317; in 1920, we had only 244 cases—a very substantial decrease. One hundred and twenty-three, or slightly more than 50% of the cases reported, terminated fatally. This is a slightly lower case fatality rate than during 1919. About 45% reported as epidemic cerebro-spinal meningitis, were confirmed by examination of the spinal fluid. The greatest number of cases and deaths occurred in children under five years of age.

Notwithstanding the availability of a specific serum for treatment of this disease, there has been no substantial achievement in reduction of the case fatality rate. A very early diagnosis is, of course, most essential, if any measurable degree of success in this direction is to be expected.

Influenza and Pneumonia.

There were 69,824 cases of influenza, and 26,083 cases of pneumonia reported during 1920, as will be seen from the table. In this connection, attention should be called to a study by sex and age groups, in the various boroughs, including these and the other commoner communicable diseases.

Smallpox, Typhus Fever, Anthrax, Leprosy, Tetanus, Relapsing Fever, Rabies, Trichinosis, and Glanders.

The following is a report of the above enumerated diseases which came under the control of the Bureau of Preventable Diseases, as submitted by the Chief Diagnostician:

Smallpox—Twenty-five cases were reported. Eighteen in Manhattan; five in Brooklyn; two in The Bronx; fourteen males; eleven females; twelve

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colored; thirteen white; case incidence per 100,000 of colored population, 11; case incidence in white population per 100,000, 0.22.

Fourteen cases came to the city from outside of New York State, in either the incubation period, or in the prodromal or eruptive stage of the disease; four were clearly secondary to known cases; the source of contagion of the other seven is unknown. The patients had not been out of New York City for at least one month prior to onset, and there was no known exposure to any reported case.

The eruption, in every case, was discrete. There were no serious complications and no deaths. Secondary fever, during pustular stage, was the exception.

During the summer, a vaccination survey was made which embraced 526 possible exposures. Four hundred and sixty-seven (88%) had been vaccinated previous to last exposure; 115 (21%) had been vaccinated within the last five years.

Vaccinations to the number of 40,175 were performed during the year, by the Bureau of Preventable Diseases.

Typhus Fever—The incidence of typhus fever continued low, eleven cases in the city during the year; nine in Manhattan; two in Brooklyn. Of the Manhattan cases, eight were on the East Side, six below 14th Street.

Five Felix-Weil tests were made after the tenth day of the disease; four were negative; one positive. The positive reaction was obtained in a case showing the typhus syndrome and duration in a satisfactory manner; of the 4 negatives, two were from cases in every way characteristic, clinically.

Our cases of endemic typhus have a like duration, and a series of symptoms identical in kind with the typhus cases of 1892 and 1893. There is an entire absence of deaths or of any cases seriously ill. It is practically impossible to reconcile the occurrence of our cases with louse or other vermin transmission. In no instance was there shown any connection with recent immigrants. It may be borne in mind, further, that during many years, when these cases were called Brill's Disease and subjected to no restrictions whatsoever, there was no increase in either number or severity.

Anthrax—Previous to 1915, cases of anthrax were sporadic. The annual report of 1912 records one case; in 1915 there were nine cases; 1916, four; 1917, seventeen; 1918, fifteen, and 1919, seventeen.

During 1920, there were 24 cases of anthrax reported, of which 14 were in Manhattan, and 10 in Brooklyn. In many cases reported during 1920, the probable sources of contagion were new shaving brushes and raw hides; in a few cases there was no evident source. While the incidence has increased, the mortality rate has decreased; three deaths this year—12.5%; in 1917, 53.9%; in 1918, 26.6%; in 1919, 53.9%. There is every ground for belief that discontinuance of surgical intervention, and the more general use of anti-anthrax serum, locally and systemically, is responsible for the

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improved results. With two exceptions, all of the patients who recovered, in 1920, received serum, and in one of the recoveries the lesion was on the forearm. Of the patients who died, two received no serum, and the third was in extremis on arrival at hospital.

Leprosy—In January, 1920, we had on file 27 cases of leprosy. During the year, five new cases were recorded; one case absconded; one case died; and one was deported to the Philippines; leaving on file, January 1st, 1921, 29 cases. Fourteen of these are under municipal care. The remainder are at home in a condition which we believe to be non-contagious.

Leprosy is a disease of such slow development that no marked change may be looked for over a brief period. The consensus of opinion seems to be that leprosy, as a menace to humanity, is slowly lessening in importance. Cases are becoming fewer. There may be doubt about complete cures, but there is no doubt that marked and enduring benefit results from the administration of chaulmoogra oil or its derivatives.

Tetanus—Twenty-six cases of tetanus occurred; nine in Manhattan; sixteen in Brooklyn; and one in Queens.

One case is worthy of particular mention. A young man, nineteen years old, scratched the palm of his right hand, and went through a fourteen days incubation period without symptoms. The disease failed of recognition until the eighth day of symptoms, when the administration of anti-toxin was begun. Patient received, by the intramuscular, by the intravenous, and by the intrathecal routes, 322,000 units. He recovered.

Relapsing Fever—One case, eight days in the United States, was reported.

Rabies—One case, fatal. Adult male, residing in Brooklyn, who was bitten on the lip by a rabid dog. He had refused Pasteur treatment.

Trichinosis—One case, reported by death certificate.

Glanders—No cases of human glanders were reported in the city during 1920.

Tuberculosis.

New York City, in common with most other large communities in this country, has enjoyed a marked reduction both in the morbidity and mortality from tuberculosis. While this disease has been decreasing continuously during the past two decades, this has been much accelerated in the past three years. The number of new cases of tuberculosis reported in 1920, was 14,035, as contrasted with 14,570 new cases reported in 1919. This was a decrease of 535 cases, or 4 per cent., as compared with last year's registration. This decrease was limited to the Boroughs of Manhattan, Bronx, and Brooklyn. In the Borough of Queens, there were 340 more new cases than during the preceding year. This was an increase of 39 per cent. The situation in the Borough of Queens has been a difficult

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one, because it is the only borough which has stood out as an exception to the general decrease in morbidity and mortality rate from tuberculosis which was noted practically everywhere throughout the country. Upon analysis, it has been found that Queens has a larger percentage of so-called "at home" cases than in any other borough; also the number of patients of whom all trace has been lost is greater than in the other boroughs. These facts stand out very conspicuously and will be discussed subsequently in somewhat greater detail.

While, at the beginning of 1920, the number of registered cases was 30,036, at the end there were 27,919 cases so registered, a decrease of 2,117, a little more than 7 per cent. About 15,505 cases, or 55 per cent. of all the registered cases, lived in the Borough of Manhattan; 3,490 cases, or about 12 per cent., were residents of the Borough of The Bronx; 7,030, or about 25 per cent., were residents of Brooklyn; 1,576, or about $5\frac{1}{2}$ per cent., were residents of Queens; and the balance, 318 cases, or $2\frac{1}{2}$ per cent., lived in the Borough of Richmond.

The distribution of the 27,919 cases is of great interest. At the end of 1920, 2,299, or 8 per cent. of the total, were under the care of the Department's tuberculosis clinics; 1,186, or approximately 4 per cent., were under the care of the ten clinics operated by Bellevue and Allied Hospitals, and other private hospitals in the Borough of Manhattan; 3,193 cases, or 11 per cent. of the total registration, were under the care of private physicians in this city; 3,394, or 12 per cent. of the cases, were in city hospitals; 5,363, or 19 per cent., were homeless or not found cases; 3,035, or 11 per cent., were living in various country places or in out-of-town sanatoria; and 9,449 cases, or 34 per cent. of the total registered, were in the classification known as "at home" cases. These last cases are patients who are not under the care of private physicians or of clinics. They constitute one of the most important problems that the Department has to deal with. To a considerable degree, we measure the success of efforts of the Department nurses, and of those of the non-tuberculosis clinics, by their ability to reduce the number of "at home" cases and to persuade such individuals to place themselves under medical supervision, so that they may not go from bad to worse, and become a burden upon their own families and to the community at large, and increase the mortality of this disease by reason of their neglect to secure treatment. Further, if they can be persuaded to submit to medical examination, diagnosis of tuberculosis can frequently be ruled out, or they may be shown to have become arrested cases.

The remainder of the total number of registered cases, namely 5,363, or 19 per cent., represent a group who have moved to new addresses, and of whom all trace has been lost. This group constitutes, possibly, an even greater factor of danger to the community than the at home cases. Taken all in all, only 47 per cent. of the registered cases of tuberculosis were

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under some definite form of medical care. The largest percentage of cases without medical care occurred in the Borough of Queens, namely 58 per cent. The Borough of Richmond seems, on the surface, to present a very fair record, but this is due, in large part, to the fact that 23 per cent. of all reported cases in the Borough of Richmond were in hospitals. This number includes, to a considerable degree, the cases which reside more or less permanently in special institutions, such as Sailors' Snug Harbor.

In the Borough of Manhattan, there is a total of 17 tuberculosis clinics, seven of them Department Clinics, whereas in the Borough of Brooklyn, which has a population as great as that of the Borough of Manhattan, we have a registration only half as large, with only five regular tuberculosis clinics. Bearing in mind results of the Framingham demonstration, one may justly conclude that the number of cases of tuberculosis which are registered and discovered in any borough depends entirely upon the number of clinics established in such borough for detecting cases which might otherwise remain unrecognized.

The large number of cases which are designated as homeless or not found, namely 3,627, or 23 per cent. of the total of 15,505 registered in the Borough of Manhattan, is due to the fact that we have in this borough the largest lodging house population in the city. These cases are a group which constitutes a grave menace to public health because of their migrating habits, their impoverished social condition, lack of personal care, and their employment in a variety of occupations in which they come in direct contact with others, to a greater or lesser degree.

Allusion has been made to the fact that, at the end of 1920, there remained under the care of the Department's clinics 2,208 cases of tuberculosis. This, however, fails to take into account the volume of work which these 19 clinics performed during the course of the year; it is, so to speak, merely a bookkeeping balance at the end of the year. A total of 14,133 patients came to these clinics for diagnosis. In addition, there were 6,397 patients who discontinued attendance before a diagnosis could be arrived at in the preceding year, and who resumed attendance, making a total of 20,530 new admissions for examination and diagnosis.

In addition to this number, there were 2,710 diagnosed cases of tuberculosis which had been carried over from the preceding year, making a grand total of 23,240 patients who attended clinics of the Department for diagnosis and treatment. Of this number, 15,065 were discharged as non-tuberculous; 102 were transferred because they came within jurisdiction of non-departmental tuberculosis clinics; and 2,965 ceased coming before diagnosis or a proper disposition of their cases could be made. Twenty-one who were under the care of our tuberculosis clinics died during the year. Of 20,530 new cases, 2,618 were diagnosed as tuberculous; deducting 2,965 cases which discontinued attendance, it will be seen that the 19 clinics

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disposed, definitely, of 20,275 cases. In other words, the number of patients remaining at the end of the year represents only about 10 per cent. of the total that these clinics served during the year.

We must bear in mind that the clinic renders a very definite service, even when it examines cases which are subsequently found to be non-tuberculous. To ignore the value of examination of this large army of citizens would be to discount a most important function of the Bureau. To estimate the annual cost per patient, one must take into account the total number of cases examined, as well as the total number of visits made by cases of all types to the clinics. In appraising activities of these clinics, one should also take into account the fact that physicians, in addition to caring for 75,803 visitors also rendered service in making 3,517 visits to bed-ridden cases, or to patients who refused to come to our clinics. This volume of work was taken care of by 79 clinic physicians. It may be interesting to note that of the 2,208 cases which remained under our care, 1,014 were adults and 1,194 children. This is a very significant age group distribution and would seem to indicate that the Department is reaching out in increasing measure among the age group for whom preventive work is most needed—namely those under 15 years of age.

It is unfortunate that non-pulmonary forms of tuberculosis are not reportable. On this account we lose a valuable measure of the efficacy of the pasteurization of milk, and of the damage done by transmission of bovine tuberculosis through the use of unpasteurized butter and milk. The sale of "loose" milk which has frequently been shown to have a definite relationship to the incidence of typhoid fever as well as to bovine tuberculosis, has not been eliminated in this city. However, only 9 adult cases of bone and joint tuberculosis, and 10 cases in children, came to our notice during the year. This is, of course, an absurdly small fraction of the total number occurring in the city.

Tubercular Meningitis—The total number of cases reported was 460. These cases present a problem which is of great importance in that they may be due to contact with unrecognized adult cases of tuberculosis, or to other hitherto unrecognized sources of infection. No definite light has yet been thrown upon this subject by the epidemiological studies made by our own Bureau, or by others.

Tuberculosis Social Service Work—Thousands of patients come annually under the care of tuberculosis clinics. Our efforts to diagnose conditions from which these patients suffer and to place them, as promptly as possible, in appropriate institutions, where they will receive individual care, and at the same time be removed from home environment where their presence is a menace to others, is in itself a very big and indispensable undertaking; but these efforts, along medical lines, important as they are, fail to do justice to imperative social needs of these thousands of patients and their

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dependents. If our work was limited to medical service, our patients would suffer many deprivations. Several years ago, it was recognized that the Department could not obtain the comparatively large sums of money necessary to meet certain special and urgent social needs of our patients. Therefore the Society for Prevention and Relief of Tuberculosis was organized, and established three social service auxiliary organizations in connection with Chelsea, Jefferson and Stuyvesant Clinics, respectively. These auxiliaries undertook to provide money to meet needs for clothing, food supplies, and other necessities of patients and their families who were under the care of these clinics. The work of these auxiliaries has steadily developed, in both scope and quality of service which they render. Although these three auxiliaries had made very valuable and substantial contributions to social needs of patients at the three clinics with which they were connected, it became apparent, during the year, that their efforts could be further developed and organized so that, within a comparatively short time, everyone of our nineteen tuberculosis clinics, and our two day camps as well, would receive similar aid. The work has, therefore, been standardized and is constantly being modified so as to place it on a high scientific plane, and a number of new auxiliaries have been organized in clinics which were heretofore without the benefit of special auxiliaries. As a result of this reorganization, there has been formed a Central Committee which meets monthly under guidance of the Director of the Bureau of Preventable Diseases. This Committee consists of President of the Society for the Prevention and Relief of Tuberculosis, and the Chairman of each of the auxiliaries now in existence in connection with the respective clinics of the Bureau, and also representatives of each of the important relief organizations operating in the City. This has resulted in bringing to our aid experience and knowledge of persons who are intimately familiar with various phases of the problems of relief. The Central Committee deliberates upon problems that arise in the lives of tuberculosis patients, and which call urgently for sane, constructive, and humane treatment. The decision which is arrived at with reference to the method of meeting such problems becomes binding upon each and every auxiliary. In other words, it makes for uniformity of method, so far as that is practicable, in dealing with problems, and eliminates bizarre, individual, or peculiar methods of handling relief problems. Also, because of the presence of representatives of relief organizations, we are able to determine just what degree of responsibility each can and ought to assume in giving aid in any individual instance as in a group of cases. It prevents duplication of work. It also puts the Department in position of dealing on most friendly and constructive basis with relief organizations, directly, and will, undoubtedly, have a tendency to heighten the pride which each organization takes in meeting the needs which may exist in any given case. It is reasonable to expect this spirit to animate work, because the defects,

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as well, as virtues of the service rendered by each and all of the organizations participating in this Committee, are reviewed publicly in a friendly and co-operative spirit. It is no exaggeration to say that the present plan of organization which brings them into intimate contact with this Bureau, will greatly enhance the value of the services which each agency is rendering to the tuberculous poor of this city. Knowing thousands of instances in which patients have been helped to obtain necessities of life, which they would otherwise have been deprived of, the Bureau of Preventable Diseases cannot help but feel that these facts should be made known to citizens of New York generally, that they, may appreciate that the Department is not working as a mere automatic machine to turn out statistical array of figures relating to diagnoses that have been made, and of the number of bottles of medicine which have been doled out, and similar purely medical or administrative functions.

The auxiliaries do not, however, confine themselves to mere distribution of relief to those in need, but enable us to organize an educational program for prevention of tuberculosis among children who are exposed at home, as well as those who are undernourished or present evidence of a tendency toward tuberculosis.

A few facts showing the extent of contributions made by the Society for Prevention and Relief of Tuberculosis, are presented here. They conducted classes in domestic science to show parents and children how homes might be made clean and sanitary, and so arranged as to give the maximum of comfort, safety and health. The attendance at these classes, known as the "Home Makers' Clubs," was 2,465. Cooking classes were conducted, with the aid of dietitians whose salaries were paid by the Society, so that children and mothers as well, could be shown how to prepare the dietary of the sick, and also to inculcate correct dietetic habits in children and others for curative and preventive purposes. The total attendance at these classes was 1,080, during the year. Sewing classes were conducted for children, and 2,581 articles were manufactured and sold, the proceeds being used for benefit of the families. In the three auxiliaries connected with the Chelsea, Stuyvesant, and Jefferson clinics, respectively, there was a total of 251 families upon whom the auxiliaries concentrated their efforts, and in whose behalf they expended \$4,200; to provide groceries, milk, eggs, clothing, rent, bedside nursing, and dental care. There were, in addition to these 251 families, many individual cases to whom help was extended. In all, 3,111 patients received some manner of material benefit. The auxiliaries distributed 14,430 quarts of milk. Four hundred and eighty-two patients were provided with necessary clothing and equipment to enable them to withstand extreme cold of outdoor life in the sanatoria or preventoria to which they were sent. Two thousand and twenty-two articles of clothing were distributed. This account does not, by any means, pretend to be a

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comprehensive and detailed statement of their varied activities, but will indicate that the Department and the tuberculous patients as well, are indebted to the Society for substantial assistance.

In the Borough of Queens, a very considerable amount of social service work was done for the benefit of 65 families under care of the Queens Plaza Tuberculosis Clinic.

The following will give an idea of the scope of the work, and amounts expended by ladies working in the association:

Milk and Eggs.....	\$1,000.00
Groceries	500.00+
Bread	16.75
Clothing	97.00
Cash Relief	450.00
Christmas Baskets	150.00
Gas Bills, Rent and Insurance.....	78.50
Total.....	\$2,292.25

In the Borough of The Bronx, auxiliaries, which have not yet reached the stage of development attained by those in the Borough of Manhattan, have, nevertheless, already made very promising contributions to social service work. One of the auxiliaries gave employment to 32 women, whose sole means of support was derived from sewing garments for the tuberculous poor. The total number of these garments manufactured was 3,218.

In those clinics where auxiliaries have not, as yet, been organized to give relief to the tuberculous poor, there frequently come to the notice of nurses situations indicating great distress and suffering. In such cases, nurses of the Bureau have, in many instances, given of their own means to provide urgent and sorely needed necessities.

A similar statement to the above was asked from several of the largest relief organizations, so that we might give the amount of money expended by each to aid tuberculous patients and their immediate families. Lack of time did not permit of their furnishing statistical records that would do justice to their work.

The Association for Improvement of Conditions of the Poor submitted a statement of its activities in aiding families and individuals where tuberculosis created a relief problem. The statement showed that, for the year, \$102,842 was expended to furnish material relief to tuberculosis families, and that the total was \$121,902, exclusive of \$27,908, which this Association expended in maintaining the Victoria Apartments where they provide, in part or in whole, special care for families in which one or more members have tuberculosis.

The United Hebrew Charities submitted a statement showing that, during 1920, it took care of 396 families in which a case of tuberculosis existed and that the sum expended for the relief of such families was \$72,979.

The statement submitted by the Charity Organization Society shows that, for the fiscal year, from October, 1919, to September 30, 1920, they

individuals in this group of our community. As a matter of fact, the seven tuberculosis clinics of this Bureau reported 14 positive sputum cases among food-handlers examined in the course of their routine work during the year.

In Brooklyn 10 foodhandlers having positive sputum were excluded, giving a ratio of 16 per 10,000. In The Bronx, 4 positive sputum cases were found, giving a ratio of 14 per 10,000. In Manhattan, 123 foodhandlers of 4,780 examined were placed on probation, during 1920, because they were either suspected of having active tuberculosis, or because they showed signs of an apparently arrested tuberculosis; this is a ratio of 278 per 10,000 foodhandlers. If the same ratio obtained among all foodhandlers in the city, there would be 19,275. The results of the examinations by draft boards, and by tuberculosis specialists in the army, give support to the belief that this estimate is within reasonable limits. The Framingham Demonstration, as well as our own experience in previous years, would also indicate that results of the Manhattan Occupational Clinic service, as to prevalence of suspected or arrested cases of tuberculosis, were fairly accurate. In The Bronx, no cases were put on probation as arrested or suspected tuberculosis. In Brooklyn, where the number examined was at least 20% greater than in Manhattan, only 20 cases were placed on probation because of suspected or arrested cases, giving a ratio of 33 per 10,000 foodhandlers.

It has often been asked, "Does the expense of examining foodhandlers justify itself?" The facts just presented with reference to the probable prevalence of tuberculosis among this group should of itself be sufficient to vindicate the work, but there is still more than this work has proved, as will be shown.

With reference to the prevalence of syphilis among foodhandlers, some interesting facts present themselves from the study of our records. Ten persons were excluded in the Manhattan Clinic, that is, a ratio of 20 per 10,000 who showed an apparently actively infectious syphilitic condition. If the same ratio may be assumed to exist among food handlers as a class, we would find at least 1,500 who, for varying periods of time, show signs of syphilis in a form likely to be a source of infection to others. In The Bronx, one case was excluded because of active syphilis; in Brooklyn, 37 cases were excluded for this cause, making a ratio of 60 per 10,000 foodhandlers. In the Boroughs of Queens and Richmond not a single case was excluded because of syphilis. In the city as a whole, 104 cases of active syphilis were excluded, giving a ratio of 65 per 10,000 foodhandlers.

Manifestly, our examinations of foodhandlers, which are made and required but once a year, except for those who are found to be suffering from an arrested or suspected communicable disease, are insufficient in number for the protection of public health. Many infections occur in the intervals between examinations. It would be impracticable to consider, at present, making examinations more often than once a year, when, strive

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as we will, we cannot examine more than about 17,000 all told, per year, making but a single examination during the period.

The Manhattan Occupational Clinic placed on probation 66 cases of latent or inactive syphilis in the course of the year, giving a ratio of 138 cases per 10,000. If this ration prevailed among the three-quarter million foodhandlers estimated to be at work in the City of New York, we would find a total of 10,350 cases of this type among this vocational group. It is obvious that while these cases, as a rule, are not an active menace to the health of the community, it is necessary for this Bureau, however, in the interest of the welfare of the foodhandlers themselves, to make them "probation" cases, so that they will be compelled to come to our occupational clinics at comparatively frequent intervals for examination and advice which, it is our practice, to give in all probation cases. In making our probationary cases report at frequent intervals for medical observation, we are able to detect those cases which might, perchance, become active again, and become a source of danger to others.

The Clinic excluded 3 persons in the course of the year because of acute gonorrhoea. This number would be considerably augmented if we had facilities to examine the males more thoroughly and if we could examine the female foodhandlers as carefully for evidence of acute gonorrhoea. While the diagnosis of acute gonorrhoea in women is at best a difficult one to confirm by laboratory test, nevertheless we could do a great deal more if our relatively small staff of physicians were not under the necessity of taking care of comparatively large numbers of foodhandlers who apply to our clinics for examination. The 3 acute gonorrhoea cases found by the Manhattan Clinic gives a ratio of 6 cases per 10,000 foodhandlers. If the same ratio obtained for all we would find at least 450 male foodhandlers so affected, in the course of the year. Taking into account the necessarily superficial character of our examinations, we know that this is a very decided under-estimate.

There were 28 male foodhandlers in whom evidence of chronic gonorrhoea, with discharge of shreds, was found. If this ratio is assumed to represent the prevalence among foodhandlers as a group, we would expect to find 4,350 such cases.

The ratio of suspected typhoid carriers in the Clinic was 286 per 10,000. If this ratio may be assumed to hold good for all, we would have a total of 21,450 suspected typhoid carriers among the foodhandlers in the city. This is probably an excessive ratio, because special vigilance was demanded to discover suspicious typhoid carriers.

We cannot exclude these suspected typhoid carriers from their work, because the courts would not uphold us in the exercise of our police power unless we could assert that, in the course of our examinations, we had found that, in addition to giving a history of typhoid fever and the presence of a

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positive Widal test, we had discovered typhoid bacilli in the stools. The Manhattan Clinic found one foodhandler in whose stools the presence of typhoid bacilli could be demonstrated; this foodhandler was, of course, excluded at once. In the Borough of Queens two such active typhoid carriers were found, making a total of three active, chronic, typhoid carriers discovered by our clinic staff.

In addition, there were a variety of parasitic skin affections, such as scabies and pediculosis, trachoma, etc., which were found by the occupational clinics, which resulted in temporary exclusion and caused them to be subsequently placed upon probation; 10 such cases were found in The Bronx; 125 in Brooklyn; 3 in Queens; making a total of 522 foodhandlers who were placed on probation for miscellaneous communicable affections of the skin, or other parts of the body. In fact, one typical clinical case of tonsillar diphtheria, and one of scarlet fever were found among these miscellaneous conditions; also one case of tubercular affection of the skin.

Foodhandler Examinations by Private Physicians—Whereas the Occupational Clinics of the Department of Health examined a total of 16,848 general foodhandlers and bakers, private physicians, who obtained special authorization to do this work from the Bureau of Preventable Diseases, examined 55,673 persons—nearly three and one-half times as many as were examined by our five Occupational Clinics. The bulk of the work was done in Manhattan, where a total of 45,027 examinations were made, by 1,909 private physicians; 1,101 examinations were made by private physicians in The Bronx; 6,275, in Brooklyn; 2,838, in Queens; and 432, in Richmond.

Owing to inadequacy of our medical personnel, our own clinic staff has not been able to examine all the bakers in the City and, therefore, in the case of very largest bakeries, each of which employs several thousand workers, we have enrolled certain private physicians, designated by factory owners, as volunteer clinic physicians of the Department, and have permitted them to make examinations of such bakers, under the official direction and supervision of Department officers. These bakers are included in the 55,673 examinations by private physicians. The private physicians called attention to only three positive sputum cases of tuberculosis among the 45,027 examined in Manhattan; seven in the Bronx; and one in the Borough of Brooklyn; making 11 cases of active tuberculosis in all, or a rate of less than 2 positive sputum cases per 10,000 foodhandlers examined, as contrasted with a rate of 17 per 10,000 found in the Manhattan Clinic. The private physicians making examinations in Manhattan reported 10 apparently arrested cases of tuberculosis; and 13 active, and 14 latent cases of syphilis; 2 cases of acute, and one case of chronic gonorrhoea; 2 typhoid fever carriers, and four suspicious typhoid carriers. In the other Boroughs, no case of these diseases was reported by private physicians. Bearing in mind that this is the sum total of the contribution made by several thousand

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private physicians who shared, in small or great measure, in the examination of 55,673 foodhandlers, their assistance was virtually negligible, especially in view of the fact that, in many instances, they were examining foodhandlers, not as contract physicians, but as the private physician of such individuals, having a relatively intimate knowledge of their patients, and time to make a deliberate and comprehensive examination.

It will be seen that the delegation of authority to examine foodhandlers, to private physicians, has, apparently, given very unsatisfactory results, in spite of the fact that every physician had, prior to undertaking any examinations, received routine instructions of the purpose of these examinations and of methods to pursue in conducting them. Since the examination of foodhandlers has been demonstrated to be an activity of the Department which is of vital importance as a public health measure, it would seem to be necessary, in the interest of public welfare, to discontinue delegating this important function to private physicians. The unsatisfactory results of private physicians' examinations are not peculiar to 1920, but have been commented on each year since this work was begun, in 1915.

Veterinary Service.

The eleven veterinarians of the Bureau have, as in past years, concentrated their activity upon prevention of glanders and rabies. In connection with their work in the prevention of glanders, they applied the ophthalmic mallien test, and made other necessary tests and examinations of 51,017 horses. They found 72 glandered animals that were condemned. In addition to the work entailed in connection with the examination of these horses, they tagged 5,002 horses, and branded 261. The bulk of work in examination of horses was performed in Manhattan, where 31,016 horses were examined by veterinarians; and 56 condemnations occurred.

There were 3,049 persons bitten by dogs during 1920, and, in every one of these instances veterinarians made examination of the offending animal to discover whether it was suffering from rabies, or whether it was so decidedly vicious as to require condemnation. Of those examined, 44 were found to be suffering from rabies, which diagnosis was confirmed by autopsy. In addition, there were 114 persons bitten by cats. Forty-six cats had to be destroyed.

The 3,049 persons who were bitten made a total of 11,929 visits to anti-rabic clinics, maintained by this Bureau in the various Boroughs. Of these visits, 3,429 were made to the clinic in Manhattan, where all Staten Island cases were also treated; 3,488 were made to the Bronx Clinic; 4,996 to Brooklyn Clinic; and 8 visits to the clinic in Queens. The great majority of these visits was for the purpose of securing Pasteur treatment. A number of cases required dressing of wounds only, the history of each case being

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very carefully gone into to make certain that we were not overlooking any evidence that the bite had been inflicted by a rabid animal.

General Conclusions.

No account of activities of the Bureau of Preventable Diseases during the year would be complete if we failed to take into consideration difficulties under which we labored in our efforts to prevent spread of disease.

First, with respect to reporting of disease. A great deal of difficulty in control of the spread of communicable disease is caused by failure of private physicians and hospitals to report cases, so that we are handicapped in our efforts to take such prompt measures. The extent to which physicians and institutions fail to report cases may be judged by the following facts. In the Borough of Manhattan alone, hospitals failed to report 108 cases of acute lobar pneumonia and influenza, and 5 cases of typhoid fever, in the month of January. In the same period, 69 private physicians in Manhattan failed to report a variety of communicable disease cases which were under their care. We were able to ascertain these delinquencies through our system of checking up death certificates presented in the Bureau of Records. It is difficult to estimate how many cases of measles, whooping cough, scarlet fever, diphtheria, and other communicable diseases are either deliberately withheld from our knowledge or unrecognized. This is one of our greatest obstacles in the effort to prevent spread of communicable disease. There is hardly a month when we fail to discover dozens of delinquencies of the above character. It is greatly to be desired that these facts be brought home to the medical profession, through medical societies, and health bulletins, in order that a sense of obligation and responsibility may be felt by the group who persistently fail to obey rules, requiring the reporting of communicable disease.

Second, lack of a sufficiently large staff of nurses stands out as the most important handicap under which we labor. During summer months when contagious diseases run lightly, we are able to give a considerable degree of attention to home supervision and control of cases of pulmonary tuberculosis; although we are handicapped, even then, by absence on vacation leave of at least one-third of our nurses at any given time. As soon as school sessions are resumed, prevalence of the commoner communicable diseases is immediately and progressively increased, and within a few months we are confronted with a situation in which it is virtually impossible to visit more than a small fraction of our tuberculous patients, who require close supervision as to their manner of living. In fact, it is almost impossible to keep abreast of the requirements in connection with our supervision of acute communicable diseases. Despite utmost efforts on the part of the administrative staff, hundreds of cases are visited only at the beginning

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when they are reported, and again, when the time for terminating quarantine has arrived.

The nurses were required to take 46,648 cultures during the year, in connection with our diphtheria cases. Through their persuasive efforts, 3,428 exposed persons received passive immunization against diphtheria. In connection with home visits, the nurses rendered services which should not be overlooked. The following will give some idea of the added duties imposed upon the staff. A total of 2,311 calls for bedside nursing care for influenza and pneumonia patients was answered; 1,729 revisits were made. In 3,438 cases, nurses made a single visit for purposes of general instruction. In addition, the Superintendent of Nurses supplied 383 private graduate nurses to persons who would have otherwise been unable to secure service, establishing a registration bureau in the main office of the Department for the purpose. In 745 cases, this registration bureau supplied practical nurses to private families. Forty-two influenza and pneumonia cases, seen by our nurses, were sent into hospitals; 123 supplied with medical care, given by our diagnosticians. A total of 860 patients received bedside care, through a district nursing service which was organized from the nurses of the Bureau of Preventable Diseases. Thirty-three cases were referred for charitable help. Eight families found to be destitute were supplied with food, coal, clothing, etc. Ten families were supplied with domestic service, for from two to seven days' time. In many cases, the visiting bedside nursing service was not merely a casual visit, lasting for a period of half an hour, but required continuous duty for many hours during the day. In some cases, where patients were extremely ill, nurses were on duty for twenty-four hours at a stretch. We have received numerous letters from persons expressing gratitude for the care given them and in many cases nurses were responsible for the saving of lives.

The establishment of venereal disease service made inroads upon our general nursing staff, requiring that a number be taken from general work and assigned to assist in clinic work conducted in our special court and central office clinics. In the month of November, nurses were assigned to make a home-to-home canvass in certain districts where poliomyelitis showed an increase in prevalence, in order that we might not be taken unawares, by an epidemic of this disease. These are cited as random examples of activities for which nurses had to be assigned, thus depriving us of their services in the field in connection with commoner communicable diseases.

During the year, 18 nurses resigned; 7 obtained leave of absence; 8 were transferred to other bureaus; 1 was dismissed, and one was retired, making a total of 35 changes which we had to fill by taking on 24 temporary and 11 permanent nurses. These changes represented a handicap to our work.

All told, we had a staff of approximately 150 nurses for field duty.

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These nurses made 145,017 visits to cases of communicable diseases; and 122,446 visits to cases of tuberculosis; a total of 267,463. This meant an average of 1,800 visits per annum for each. It must be recorded, in this connection, that each nurse is required to attend tuberculosis clinic sessions in order that she may be in intimate relation with patients whose homes she must visit, and to assist in operation of clinics. Roughly speaking, nurses average about seven visits per day. This estimation does not do justice to some in certain districts, who average a large number of visits per day because of the closeness of the homes they may visit, and of others who work in the rural sections of the city where the distance between homes is very great; but we have not been able to obtain a larger average of visits per day by nurses.

Our staff of 19 diagnosticians made a total of 24,712 visits, aiding physicians in diagnosing cases and settling disputes as well as confirming diagnoses precedent to removal of cases to our contagious disease hospitals.

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General Summary.

The work of the Bureau of Laboratories has been carried on under seven broad divisions, namely: Administration, Media and Sterilization, Diagnosis, Microbial Sanitary Examinations, Production of Serums and Vaccines, Applied Therapy, Special Investigations.

The regular staff consists of 1 director, 5 assistant directors, 1 medical inspector, 1 pathologist, 1 inspector of foods, 21 bacteriologists, 1 chemist, 1 chief clerk, 1 librarian, 2 stenographers, 3 typewriting copyists, 11 clerks, 6 bacteriological diagnosticians, 62 laboratory assistants, 18 laborers, 75 helpers, and 1 messenger.

The complete volume of work, so far as it can be indicated by figures, is recorded in special forms and filed semi-monthly, quarterly, and yearly in the Division of Administration. A condensed report of these figures, as well as a statement of the progress of the work, is sent semi-monthly to the Commissioner.

The regular staff was temporarily increased during the summer by a force of 1 bacteriologist, 1 laboratory assistant and 4 helpers, who were appointed under the special appropriation granted the Commissioner to help prevent plague-like diseases which threatened this country through immigration. The work done by this additional force is reported under the Division of Diagnosis (examination of rats for bubonic plague infection) and the Division of Production of Serums and Vaccines (vaccine against smallpox).

The very important work of applying diphtheria immunization has made distinct progress during the year. The results are given under Special Investigations.

The investigations of acute respiratory infections, undertaken in conjunction with the United States Public Health Service, the Divisions of Preventive Medicine of Harvard and of Chicago Universities, and under a grant from the Metropolitan Life Insurance Company were continued. The results obtained thus far are given under Special Investigations.

The Division of Administration.

This division includes organization and executive control of all work, such as: (1) The standardization and apportionment of work and workers; (2) The ordering of supplies; (3) Bookkeeping for stores and production; (4) Other clerical work consisting chiefly of letters and official reports.

For purpose of direction, divisions, other than those of administration and special investigations, are divided into two groups. One consists of three divisions, namely, the Divisions of Media and Sterilization, of Diagnosis, and of Microbial Sanitary Examinations. This is placed under

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immediate charge of First Assistant Director. The second group consists of the Division of Production and of Applied Therapy and is under charge of Second Assistant Director. The Division of Special Investigations is made up as usual of the investigative work of all the divisions.

Changes in Staff. There have been many changes in staff owing to the impossibility of holding the lower salaried workers at the salaries given.

Glassware Returns. Just before close of 1919, the following letter was sent to all institutions receiving diagnostic outfits for use in their own laboratories.

"In view of the fact that it has been impressed upon the Department of Health that the budgetary request must be submitted for the least possible amount consistent with efficiency, every effort must be made to economize. Therefore the Diagnosis Laboratory must insist in the future that all institutions which receive diphtheria culture tubes and other supplies from the Department of Health, return all glassware *properly cleansed*. This will impose no great burden on the institutions and they will no doubt appreciate the reasonableness of the request."

The majority of institutions, as records of the Laboratory show, have given their fullest co-operation in this matter, with the result that 29,630 shell vials were returned to the Department during the year. A few institutions, however, have been slow to grasp the significance of this request, but it is reasonable to expect that as the importance of the innovation is impressed upon them, a still greater saving to the City will ensue.

Distribution of Living Organisms. All living microorganisms sent out by this Bureau (numbering 582 specimens during the year) are under close supervision of the First Assistant Director, and are sent out in accordance with requirements of the state law and State Board of Health regulations.

Division of Media and Sterilization.

The work of the Media Division continues to be carried on along same general lines as in other years. We are much hampered by lack of space for proper systematic handling of the volume of work.

In adjustment of reaction of culture media, extended use of colorimetric method for determination of hydrogen ion concentration or actual acidity, has resulted in a saving of materials and effort. This method is based on the use of a number of different indicators, each of which has a definite range of color change. These ranges supplement each other, as is shown when each indicator is added to a separate set of tubes of standard solutions. These are buffer solutions and consist generally of mixtures of some acid and its alkali salt. These mixtures have definite H-ion concentrations as determined electrometrically.

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The following table gives a summary of work of the Division:

REPORT FOR 1920, COMPARED WITH 1919, 1918, 1917, 1916, 1915, 1914.

YEAR.	LITERS PREPARED.			No. ORDERS FILLED.	SWABS.	STERILIZED.	
	Media.	Solu-tions.	Titra-tions.			Tubes, Bottles, Flasks Filled.	Pieces of Glassware Washed.
1920.....	9,568	3,203	4,637	2,505	27,943	168,349	915,129
1919.....	9,080	3,705	1,808	2,144	57,634	178,744	1,006,967
1918.....	10,078	3,860	2,451	1,896	70,946	220,488	1,018,823
1917.....	11,785	5,682	2,014	2,490	165,629	185,501	1,024,873
1916.....	10,593	4,934	1,649	2,627	64,627	299,528	1,036,388
1915.....	9,320	4,777	2,132	2,816	.....	275,706	871,275
1914.....	8,541	.....	1,820	850	.....	245,321	.....

Division of Diagnosis.

This division is divided chiefly for the sake of topographic convenience into two subdivisions, namely, Direct Diagnosis and Indirect Diagnosis. Direct diagnosis are those carried on in a routine way in laboratories at department headquarters, while indirect diagnoses include those requiring a more varied technic, best managed in the laboratories at 16th Street.

Direct Diagnosis—The activities included under direct diagnoses are confined almost entirely to routine work. The enormous volume of such work to be performed and its nature, calling for special hours for almost the entire staff, leaves but little time, if any, for devotion to any other activity.

For convenience in its regulation, the work is divided into two sections: Section "A" having to do with washing and sterilization of glassware, preparation of culture media and diagnostic outfits, inspection and supply of the 360 "stations" of the Department, and collection of specimens for diagnosis; section "B" dealing with administration, identification of specimens sent in by physicians and institutions for diagnosis, the preparation of these for examination, diagnosis of same and recording and reporting of results of examinations.

That part of the work described in section "A" is carried on entirely by Laboratory Helpers, Messengers, Chauffeurs, and Laborers, with the exception that one Laboratory Assistant is assigned to the direct supervision of media preparation and sterilization of glassware.

The technical work mentioned in section "B" is performed by a group of specially trained technicians: Bacteriologists, Bacteriological Diagnosticians, and Laboratory Assistants, the great majority of whom have had over eight years' experience at this type of work in the Department.

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Supply Stations—On December 31, 1920, the Department of Health records showed 360 supply stations, as compared with 363 on December 31, 1919. This decrease in the number of stations was due to the policy of the Bureau, to approve as few applications for establishment of new stations as were necessary for the needs of physicians and the public. When changes of ownership occurred, application for continuance of the station by the new proprietor was disapproved whenever such action was possible without seriously inconveniencing physicians in the locality.

The 360 stations now active are made up as follows: 79 stations where collections are made by employees of the Bureau daily; 105 stations where no collections are made on Sundays and holidays, the proprietors being under obligation to forward specimens, left after the collection hour on the day preceding a Sunday or holiday, to the nearest daily stop before a specified hour; 206 sub-stations, the proprietors of which have agreed to forward daily to the nearest station, in either of the above mentioned classes, all specimens deposited in time to connect with Department messenger at collecting point.

Principal Routine Diagnoses—The tables below show principal diagnoses made during the year. Where figures of preceding years are of interest, for the purpose of comparison, these are given also.

DIPHTHERIA CULTURES.

YEAR.	NO. OF EXAMINATIONS.	POSITIVE.	NEGATIVE.	UNSATISFACTORY.	PERCENT POSITIVE.	PERCENT UNSATISFACTORY.*
1920.....	119,673	18,707	96,770	4,196	15.6	3.5
1919.....	112,708	20,280	78,626	13,802	17.9	12.2
1918.....	119,462	23,270	80,216	15,976	19.4	13.3
1917.....	141,089	23,042	106,406	11,587	16.3	8.2

*Note the decided decrease in the percentage of unsatisfactory examinations for 1920 indicates that a considerably better grade of culture media was produced than during any of the preceding years.

We consider well-ripened alkaline methylene blue (Loeffler's) is the best all round stain in the diagnosis of diphtheria bacilli from routine cultures.

SPUTUM EXAMINED FOR TUBERCLE BACILLI.

YEAR.	TOTAL NO. OF EXAMINATIONS.	POSITIVE.	NEGATIVE.	PERCENT POSITIVE.
1920.....	37,761	7,288	30,473	19.3
1919.....	41,615	9,254	32,361	22.2

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We autoclave our jars of sputum, make one spread from each specimen, and use the carbol-fuchsin method of staining.

MALARIA, TYPHOID, GONORRHOEA.

	TOTAL NO. OF EXAMINATIONS.	POSITIVE.	NEGATIVE.	UNSATISFACTORY.	PERCENT POSITIVE.
Malaria (Blood Smears).....	1,130	53	1,077	.....	4.69
Typhoid (Widal Tests).....	6,570	530	5,755	285	8.06
Gonorrhoea (Smears).....	11,542	1,730	8,051	1,761**	15.0

**Some cases are classified as "doubtful" because of the morphological characteristics of the cocci present; or no diplococci being found, the number of pus corpuscles present suggest the possibility of gonococci being found in another specimen.

OUTFITS PREPARED.

Culture tubes	239,564
Swabs	280,475
Sputum jars	66,881
Widal outfits	10,506
Malaria outfits	2,082
Wassermann outfits	71,319
Gonorrhoea smear outfits.....	12,053
Blood tubes for clinics.....	30,146
Total.....	713,026

Indirect Diagnosis—Besides those given below, these diagnoses include all special examinations, such as cultures of blood, secretion and exudates from the Bureau of Hospitals, and from city physicians who cannot get their work done elsewhere.

Rabies—In order to make a satisfactory rapid diagnosis (spread method) the brains to be examined must be sent to the laboratory in a fresh condition.

ANIMALS SENT FOR RABIES DIAGNOSIS.

	MAN.		BKLYN.		BRONX.		QUEENS.		RICH.		OUT OF TOWN.		DOGS.		CATS.	
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
January.....	2	0	3	4	0	1	1	4	0	0	0	1	6	9	0	1
February.....	1	2	1	3	0	0	2	1	0	1	1	0	5	7	0	0
March.....	0	0	3	6	0	3	1	3	0	0	0	4	4	16	0	0
April.....	0	3	2	8	0	4	2	2	0	0	1	0	5	11	0	0
May.....	1	5	0	0	1	4	1	5	0	1	0	3	3	18	0	1
June.....	0	6	2	8	0	1	1	4	0	1	1	2	4	19	0	3
July.....	1	4	1	5	0	2	1	3	0	0	0	2	3	17	0	2
August.....	1	6	0	6	0	1	0	1	0	0	1	4	2	18	0	2
September.....	2	11	0	9	1	6	0	1	0	0	0	2	3	28	0	1
October.....	5	7	0	6	0	4	1	0	0	0	1	3	7	15	0	5
November.....	2	2	2	4	1	1	0	0	0	0	2	1	7	8	0	0
December.....	1	6	0	2	1	2	0	0	0	0	0	1	2	9	0	2
Total.....	16	52	14	61	4	29	10	24	0	3	7	23	51	175	0	17

Total examined, 1920..... 243
 Total examined, 1919..... 228

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There were no human cases of rabies reported during this year, whereas there were two during 1919. The number of positive cases among the biting animals is also slightly less, while the total number of specimens sent in is slightly greater. If the muzzling ordinance is not more strictly enforced, we may expect a gradual increase in the number of cases.

Pneumococcus Types—The samples of sputa submitted for determination of the type of pneumococcus have been relatively few. Two factors have contributed to this: First, atypical pneumonias have been very prevalent since the influenza epidemic, the frank typical lobar type being less frequent. Second, the incidence of the fixed types of pneumococci, especially Type 1, has been low and this has discouraged the submission of specimens. Sputa examined for pneumococcus type:

Type I	18
Type II	10
Type III	16
Above types not present	100
Unsatisfactory specimens	7
	<hr/>
Total	151

Examination of Anthrax Specimens—Anthrax is essentially a disease of animals and it is found in practically every country in the world. Anthrax of man is contracted directly from some domestic animal or, indirectly, from some commercial animal product—especially hides, hair, or wool.

Anthrax spores have been found to exist in virulent form outside of the animal body. Under suitable conditions these spores have been known to develop. The anthrax bacillus is recovered in dust from infected horse hair, bristle, hides, and even from hay.

The subject of anthrax infection through the medium of bristles, or shaving brushes is of special interest. Because of increase in number of clinical cases contracted from such sources, stringent methods were adopted by the Division of Industrial Hygiene to combat this disease, through adequate methods of sterilization and disinfection of bristles and hair.

Establishments of all dealers, handlers, manufacturers, and importers of hair, hair cloth, hair braid, bristles, and brushes were carefully inspected. Samples of various products in the different stages of manufacture were collected and sent to the laboratory for examination. More than three hundred samples were received to determine the presence of anthrax spores and 33 of these were found positive.

The samples of bristles and hair received were of foreign and also of domestic origin. They consisted of horse hair, goat's hair, badger, imitation badger hair and pig bristles. The imported bristles usually arrive from China, Siberia, France or Japan.

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Upon investigation, it was found that the most frequent cause of infection was the use of shaving brushes, with bristles of horse hair.

In collecting these samples, very little history as to the source of specimen, process or treatment it had undergone, or the animal it came from, was ever furnished. It was, therefore, impossible to tabulate, with exact details, examinations made.

The following procedures were carried out in examining brushes suspected of having caused anthrax in human beings.

About forty to fifty bristles were cut up with sterile instruments into a sterile mortar. With shaving brushes, portions of bristles near the cemented end were mostly used. A small volume of sterile saline solution was then added to the mortar, and bristles thoroughly ground up and macerated until a fairly dense emulsion was made. The amount of saline used depended upon the kind of sample to be examined. In those specimens where a large volume of saline was necessary, suspension was centrifuged, and the sediment used for mice inoculation and plate cultures. The sediment contained the washed-off spores, if any were present. The emulsion was then divided into two parts. One part was heated in a water bath at 75° C. for 15 minutes, to destroy vegetative forms, and the other part was used unheated. The emulsions were then cultured in agar pour-plates. Six dilutions being made of both the heated and unheated emulsion. The plates were incubated at 37° C. for 24 hours.

Portions of the emulsions were also injected into white mice, subcutaneously; the volume ranging between 0.5 to 1.0 cc., depending upon density of the emulsion. The mice were colored to distinguish between those receiving heated and unheated emulsion, and placed in fruit jars for observation during 5 days. All mice were autopsied immediately after death. Smears were made from the heart's blood, spleen, and liver. These smears were stained by the Gram method, the Hiss stain, and the M'Fadyean methylene blue stain. Cultures upon plain agar plates and slants were made from the heart's blood and spleen.

The smears from mice that died of anthrax showed large Gram-positive bacilli in pairs, or short chains and, in the majority of cases, encapsulated. The presence in the animals of oedema and enlarged spleen, and an invasion of tissue by the organisms, as demonstrated in smears and sections, was also noted.

From direct emulsion plates, suspicious colonies, especially the deep ones, which were examined under a low dry lens, were fished to agar slants and smears made to study the morphology of the bacilli. The typical colonies on the agar plates made from the mice were also fished to agar slants. Anthrax colonies are very hard to differentiate, at times, because of the numerous anthrax-like colonies that appear in many cultures.

After pure cultures were isolated from plates showing anthrax growth,

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transplants were made into veal-broth media. In this medium, the anthrax bacillus shows a stringy growth, which quickly settles to the bottom of the tube, leaving the medium clear and transparent. A hanging drop is then made from the broth culture and the growth is tested for motility. Anthrax bacilli are non-motile.

If the organism were typical and non-motile, then 0.2 cc. of the broth culture was inoculated into another mouse, and thus tested for virulence. If the culture was typical anthrax, the mouse usually died in 18 to 24 hours. The organism was recovered from the heart's blood, spleen, and liver. Cultures were then sealed with paraffine and stored away for reference.

If the mice inoculated with the bristle emulsions survived for five days, and cultures from the emulsions did not show any anthrax growth, the samples were reported negative.

A sample of bristles was reported positive for anthrax when it showed all of the summarized laboratory findings:

1. When the mice inoculated with the emulsions died within 24 hours.
2. The presence of encapsulated gram positive bacilli in the heart's blood, spleen and liver.
3. Pure cultures isolated having a characteristic appearance and a typical morphology, showing non motility on hanging drop.
4. 0.2 cc. of broth culture 24 hours old, killed a mouse in 18 to 24 hours.

No test was regarded as conclusive without obtaining a complete proof of cultural characteristics, morphology and virulence.

Out of the thirty-three cases reported during 1920, as positive for anthrax, eleven were definitely known to be horse hair. The others had no label or history when sent in. Five of the samples were labelled "imported." Two of the cases were isolated from the lesions of patients suffering from anthrax.

Owing to the great resistance of anthrax spores and dangers involved in handling such infected material too much emphasis cannot be placed on the needs for precautions and safeguards to be used in the laboratory.

All containers and utensils were plainly marked "Anthrax" and used only for this particular work. The glassware, jars, cultures, pipettes, and other material used, was autoclaved for one hour at 15 lbs. pressure, then washed separately from other glassware and finally sterilized in hot air oven. The mortars and pestles were autoclaved immediately after use, then washed and sterilized in hot air oven.

Old antitoxin syringes were used for this work; these were boiled in carbolic after use, then reboiled in water for a long time to remove the carbolic. Syringes used for inoculating pure cultures were thrown into the furnace after use.

Glass slides used for smears and hanging drops were autoclaved and

washed before being used again. The mice and boards used for autopsy were thrown into the furnace. Autopsy instruments were boiled in strong soda solution for several hours. Old bristles, cotton, paper, etc., in contact with infected material was burned.

Typhoid Stool Examinations.—No basic changes in methods were made except that a dropping bottle was devised to deliver the drops used in slide agglutinations. This has been found a time saving device.

In 1920, there were 1,854 stools examined for typhoid bacilli, as contrasted with 2,638 in 1919.

Rat Carriers of Bubonic Plague—From August 10, to December 31, 1920, 499 rats were examined for plague infection. Of this number, only two showed lesions at all suspicious of plague. Those on animals (guinea pig) inoculation gave negative results.

Stippling of Red Blood Cells in Lead Poisoning—There were 146 specimens examined for this; of these, 36 gave positive findings and 110 negative.

Typhus Diagnosis—The strain of *B. proteus* known as X19, used in the agglutination test with typhus bloods (Felix-Weil reaction), was obtained from abroad. The reaction has been used as a confirmatory diagnostic reaction in both the endemic and imported typhus cases with satisfactory results.

Division of Microbial Sanitary Examinations.

The work of this division includes routine bacteriological examinations of milk, water, food stuffs generally, of materials from trades, etc., and disinfection tests.

Milk Examinations—During 1920 the Milk Laboratory received and examined a total of 49,957 milk and cream samples, and 954 water samples, besides making 137 miscellaneous tests related to milk work. This represented work of 14 assistants and helpers working under guidance of a first and second Bacteriologist. The samples were obtained by 23 inspectors in course of their regular work. City Inspectors, numbering 7, brought their samples to the laboratory each morning. The 16 country inspectors obtained their samples at depots in the country where milk companies receive milk from the farmers. The latter samples, well iced, were put aboard milk trains consigned to a collector at the New York end. This collector met the trains as they arrived, the following night, and brought the samples to laboratory in time to be tested early the following morning. With sufficient icing throughout the 24 hours, results were reliable.

All samples were tested promptly by standard method of the American Public Health Association, and milks showing a colony count in excess of legal standard were reported promptly for official action to the bureau having charge of licensing of milk dealers.

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In addition to this work, the Department keeps a strict supervision of the water supplies of all depots and plants in the country where milk is handled. The Milk Laboratory received and examined, in 1920, 954 water samples. This inspection work and bacteriological analyses are the City's safeguards against spread of milk borne diseases. The routine work goes on constantly six days every week, in a specially equipped laboratory. Studies in improvement of routine work and the testing of new methods are always in progress.

The milk examinations are given in detail in a large table which is on file in this bureau and is available for reference. The following table is the summary of the bacterial contents for 1920.

BACTERIOLOGICAL COUNTS OF MILK SAMPLES.

1920. MONTH.	MILK.												CREAM.		
	GRADE A.						GRADE B.						GRADE B.		
	RAW.			PASTEURIZED.			RAW.			PASTEURIZED.			PASTEURIZED.		
	Within Grade.	In Excess of Grade.	No Report.	Within Grade.	In Excess of Grade.	No Report.	Within Grade.	In Excess of Grade.	No Report.	Within Grade.	In Excess of Grade.	No Report.	Within Grade.	In Excess of Grade.	No Report.
January.....	644	124	4	229	45	3	1,446	213	4	958	262	5	376	82	4
February.....	509	62	2	155	54	..	820	351	9	669	137	5	254	89	4
March.....	776	92	10	290	38	1	1,216	617	10	1,105	238	7	350	151	4
April.....	604	69	5	324	22	2	1,527	365	8	1,128	140	8	325	146	2
May.....	533	131	8	243	30	3	753	437	9	883	230	13	304	169	1
June.....	447	190	4	223	62	1	654	1,104	14	735	366	20	209	237	9
July.....	507	208	17	223	69	3	835	893	21	716	415	25	225	221	4
August.....	432	166	9	178	88	9	522	701	14	674	416	47	252	212	7
September.....	608	188	11	254	78	8	735	714	18	624	368	38	245	198	4
October.....	530	200	8	192	59	3	764	679	13	676	254	30	230	158	4
November.....	557	69	6	186	15	13	992	224	35	588	100	8	198	65	4
December.....	598	88	7	178	38	3	1,285	333	9	798	210	14	246	110	5
Totals, 1920.....	6,745	1,587	91	2,675	598	49	11,549	6,631	164	9,554	3,136	220	3,214	1,838	52
Totals, 1919.....	5,968	1,939	139	2,038	492	57	14,674	7,336	213	9,271	2,824	251	3,376	1,506	52

In the totals are included 28 samples of new cream, Grade A, 17 of which were within grade and 24 raw cream, Grade B, with no bacterial standard.

In addition to these regular samples the following were examined:

Milk from Departments of Public Welfare and Correction.....	1,796
Miscellaneous and special tests.....	137

The volume of work done, including water tests and controls may be indicated by the following figures:

	1920	1919
Specimens examined	51,044	52,204
Plates made.....	81,309	100,247
Fermentation tests.....	7,422	8,772

BACTERIOLOGICAL EXAMINATIONS OF WATER MADE DURING 1920.

SOURCE.	GOOD QUALITY.					FAIR QUALITY.					SUSPICIOUS.					POLLUTED.					
	Manhattan.	Bronx.	Brooklyn.	Queens.	Richmond.	Outside.	Total.	Manhattan.	Bronx.	Brooklyn.	Queens.	Richmond.	Outside.	Total.	Manhattan.	Bronx.	Brooklyn.	Queens.	Richmond.	Outside.	Total.
Regular supply.....	148	1	3	71	0	0	223	43	1	5	0	0	0	49	5	0	0	0	0	0	5
Wells.....	0	3	13	2	29	3	50	0	2	3	23	0	1	32	0	0	0	0	0	0	17
Springs.....	0	1	0	0	5	2	8	0	0	0	0	0	0	4	0	0	0	0	0	0	0
Lakes (ice).....	0	0	0	0	4	0	4	0	2	0	0	0	0	1	0	0	0	0	0	0	0
Tanks—cisterns.....	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottled waters.....	2	0	0	0	0	0	2	3	0	0	0	0	0	3	1	0	0	0	0	0	2
Baths—swimming pools.....	10	3	2	0	0	0	15	18	2	1	0	0	0	21	0	0	2	0	0	0	2
Bathing beaches and river baths.....	0	0	6	2	1	0	9	0	3	1	3	1	0	8	0	0	0	0	0	0	0
Total.....	160	8	24	76	36	..	309	66	9	8	11	24	3	121	6	0	5	3	12	1	27

309

121

27

43

Total number of examinations.....500

Drinking waters containing B. coli in amounts smaller than 10 c. c., or giving a total bacterial count much in excess of 100, are listed as suspicious or polluted. This rating applies only to the individual sample; repeated tests and a careful consideration of local conditions, etc., are necessary in order to judge the quality of a source of water supply. The standards for bathing pools using springs, wells, or regular city supply water permit the presence of not more than 10 B. coli per c. c. If river or harbor water is used, they must not contain more than 36 B. coli per c. c.

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Shellfish—During the year, there were received at the Research Laboratory, for bacteriological examination, 556 samples of shellfish, somewhat more than half of which were oysters. The great majority (80%) came from waters in the vicinity of New York City, 12% from Cape Cod Region; 77% from Chesapeake Bay and vicinity; 1% from Canada (clams) and France (oysters). Of these 494 samples had a *B. coli* score below 50, and 63 samples a score between 50 and 500. That is to say, 63 samples contained a sufficiently large number of colon bacilli (over 10 to the cubic centimeter of shell liquor of each of the oysters examined) to brand them as sewage contaminated and exclude them from sale. On the whole, the locally grown shellfish seemed a little more liable to contamination (1-10) than either the Chesapeake (1-11) or Cape Cod (1-35) varieties. The number or foreign specimens examined (8) is too small to permit one to draw conclusions. As expected, the number of high *B. coli* scores increased with warmer weather; thus during the third and fourth quarters of the year percentage was nearly twice as high as during first quarter, and a falling off was again noticed with approach of colder weather in December.

Food Poisoning With Bacillus Botulinus—There were a number of food poisoning cases in New York City in which symptoms suggested botulism. Many samples of food were received at the laboratory to determine the presence of *B. botulinus*. Among these were canned spinach, condensed milk, potted beef, jars of pickles, sausages, and many jars of ripe olives. Samples of vomitus and feces from two victims supposed to have died from eating canned spinach did not show the presence of *B. botulinus*. Unfortunately except in one case original samples, as partaken of by victims, were not received for examination. Those samples that were sent in to the laboratory were taken from seized lots which were similar to the suspected sample. All these specimens were found to be free from *B. botulinus*. But since there is a probability that only an occasional can of food in a certain lot may be infected with *B. botulinus*, the negative results would not necessarily have a bearing on the clinical aspects of the case.

Canned food which shows the slightest signs of spoilage, suspicious odor, or appearance, should be treated as unfit for consumption. Such foods should be destroyed, so that the material be not scattered or exposed to domestic animals.

During January, 1920, six members of one family living in the Bronx developed botulism from eating ripe olives, bottled in California. Four of these cases terminated in death. A portion of the olives and brine from the original sample eaten by the family was received at the laboratory for bacteriological examination. Smears made from the brine showed numerous Gram-positive bacilli with a varying morphology, some of which were spore formers. The odor of the sample was rather suspicious, being some-

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what rancid and putrid and resembling that of stale butter. The appearance of the sample was normal, indicating nothing suspicious.

To determine the toxicity, guinea pigs were fed with 0.5 c.c. and 1.0 c.c. of the brine by means of a pipette. Subcutaneous injections were also given to two other pigs, in volume of 0.5 c.c. and 1.0 c.c. All of the pigs died in 34 to 48 hours. Shake agar tubes and glucose broth cultures were made from samples of the brine. The cultures showed both an aerobic and an anaerobic growth. To get rid of the aerobic growth, the glucose broth cultures were heated. From this heated semi-solid tubes of agar were inoculated, and anaerobic plates were made. Pure cultures were thus finally isolated, showing a characteristic growth. Smears from the cultures showed a Gram-positive bacillus, with rounded ends, also numerous subterminal and oval spores. Broth cultures, 72 hours old, were tested for toxin production. Small amounts inoculated subcutaneously into guinea pigs killed them in 36 hours. A kitten inoculated with 0.3 c.c. of broth culture gave a typical picture of *B. botulinus* infection.

Later tests on broth cultures of this strain showed that it was possible to protect guinea pigs, by the use of *B. botulinus* antitoxin. From the morphology, toxin formation, protection experiments, and growth characteristics, with the symptoms and pathological lesions produced in animals, the organism isolated from the samples of olives was considered to be a strain of *B. botulinus*.

Division for the Production of Serums and Vaccines.

The following table gives the amount of the more important products:

TABLE OF PRODUCTS.

PRODUCT.	CUBIC CENTIMETERS.	
	1919.	1920.
Diphtheria Toxin*	1,288,000	1,470,000
Diphtheria Antitoxie Plasma*	2,302,000	1,137,400
Tetanus Toxin	440,535	245,520
Tetanus Antitoxin Plasma	1,133,500	314,900
Antimeningococcus Serum	558,500	465,050
Antipneumococcus Serum	475,100	296,450
Normal Horse Serum	396,630	283,450
Pertussis Vaccine	38,400	138,390
Streptococcus Vaccine	38,300	32,100
Pneumococcus Vaccine	21,400	73,130
Staphylococcus Vaccine	93,100	107,600
Gonococcus Vaccine	46,100	37,960
Typhoid Vaccine	41,900	104,641
Paratyphoid Vaccine	53,800	182,818
Tuberculin	1,950	2,625
Smallpox Vaccine	11,386	**50,819
Botulinus Antitoxie Serum		28,450

*Diphtheria toxin and antitoxin production include the toxin-antitoxin mixture produced.

**This includes 25,275 cc., the equivalent of 5055 gms. of crude pulp, which was sold.

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RULES AND REGULATIONS OF CITY DISTRIBUTION.

Antitoxin (except inspector's vials) and vaccine virus (except vials) shall constitute the regular charge products. Borough Offices shall have the same status and be under the same rulings as regards distribution and changes as are in force for other Consignment Stations.

Diphtheria antitoxin in inspector's vials, and vaccine virus in vials, as regards distribution from Borough Offices, shall be limited to disbursements for use by the Department, or by institutions or hospitals doing charitable work. These two products shall be distributed for City use only through the Borough Offices and the Central Laboratory, not by consignment stations. A record shall be kept of receipt and disbursements as specified above. Demands shall be referred to the Central Laboratory, which will fill the orders and make the appropriate charges. Orders for the two above mentioned products, for sale outside of the City, shall be accepted at the Central Laboratory.

All products other than specified above, until further notice, shall be given to hospitals, institutions, physicians or veterinarians without charge for use within the City. In so far as possible, such distribution shall be direct. Distribution of individual orders through druggists shall be allowed as convenient, but the records shall show, whenever possible, the physician for whom the product is obtained.

Full credit will be allowed for all returned products of a value of \$1 or more provided they are returned within a period of 14 days from date of shipment. This does not apply to the return of vaccine virus of a gross value of \$25 or more. In the latter case, a gross credit of only 75% will be allowed.

If any goods are returned later than 14 days after date of purchase, and not later than four months after the date of expiration of the product, exchange to be allowed the amount of 50%, or a gross credit of 50% of the returned goods.

No credit or exchange to be allowed for wholesale bulk shipments in containers of over 100cc, or on any vaccine virus in bulk, unless evidence is submitted proving that the product was defective.

Diphtheria Antitoxin—It should be noted that the production of diphtheria antitoxin in 1920 is lower than for 1919. This has been due to the inability to get sufficient horses. The demands for antitoxin have been materially increased, so that we have been forced to draw on our reserve. At present we are, therefore, reduced to a reserve supply which, if production should cease, would only cover the next four months. The reserve should be adequate for, at least, twelve months. Serum which has been aged is less liable to give serum reactions.

Vaccine Against Smallpox—There has been an increase in demand for this vaccine during the year, amounting to 38.5% over 1919, and 93.5% over the average for preceding six years. A campaign for vaccination of residents of the City during late summer and early fall was the chief cause of this increase.

Owing to poor results obtained in the vaccination of immigrants with virus produced abroad, steamship companies have been advised by Quarantine officials to use virus prepared by the Department of Health. Virus has been furnished to two companies as a result.

During the year, we were able to show an increase of about 27% in the average yield of virus per calf. This is due, in part, to use of large calves, ranging in weight up to 440 lbs. The results of vaccination of calves were in all cases satisfactory and the yields large. Since larger calves are, in most instances, "grass calves," costing about half as much per pound as "veal calves," the total cost is not exorbitant. It should also be noted

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that, through use of large calves, labor in preparation and care of calves is reduced. Also, owing to smaller number of lots produced, less apparatus is handled in the laboratory, fewer bacteriological and clinical tests are necessary, and less virus is used for test purposes. The largest collection produced 1,380 cc. of virus.

The pulp, 5,055 gms., collected from 40 of the 62 calves vaccinated, was sold to a commercial concern, whose vaccine stable had been destroyed by fire.

Owing to poor quality of corks available, it was found advisable to seal closed vials with melted paraffin. The paraffin, previous to use, is heated for one hour to 200 degrees C. to insure sterility. This method of closure has proved very satisfactory in preventing leakage and evaporation.

Antirabic Division.—During 1920 this division furnished rabies vaccine for 412 persons. Of these cases, 307 came from the City and the remainder (105) from out of town.

All New York City residents are treated free of charge. Those from out of the City, if treated through the mail, are charged \$25; if treated at our clinics, \$50.

A comparison of the above figures with those of 1919 shows an increase for the City of about 14%. The number of cases, 307, is greater by 37 than the number for 1919, and greater by 122 than the number for 1918.

The recorded number of cases bitten by rabid dogs in 1920 is three less than for 1919. These cases were located in the following boroughs:

1920—Manhattan, 22; Brooklyn, 30; Bronx, 7; Queens, 7; Richmond, 0.

1919—Manhattan, 8; Brooklyn, 58; Bronx, 0; Queens, 3; Richmond, 0.

Manhattan Borough shows an increase over last year of 14 cases; Bronx of 7 cases, and Queens of 4 cases, while Brooklyn shows a decrease of 28 cases, almost one-half.

There were no deaths from rabies reported in 1920.

Attached is a table showing statistics of patients treated during past seven years.

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STATISTICS OF PASTEUR TREATMENT.

Years.		Patients Treated.	Biting Animals Proved Rabid.	Percentage of Positive Cases.	MORTALITY.			
					GROSS.		CORRECTED.	
					Total Human Rabies Deaths Among Patients Treated.	Percentage of Cases in Which Biting Animal Was Rabid.	Deaths, 15 Days or More After End of Treatment.	Percentage of Cases in Which Biting Animal Was Rabid.
1920	In City.....	272	66	24.2	0	0.00	0	0.00
	Out of City.....	96	76	79.1	0	0.00	0	0.00
	Total.....	368	142	38.6	0	0.00	0	0.00
1919	In City.....	228	69	30.3	2	2.90	0	0.00
	Out of City.....	135	112	83.0	1	0.90	0	0.00
	Total.....	363	181	49.9	3	1.66	0	0.00
1918	In City.....	145	25	17.2	0	0.00	0	0.00
	Out of City.....	269	230	85.1	0	0.00	0	0.00
	Total.....	414	255	61.6	0	0.00	0	0.00
1917	In City.....	175	48	27.4	0	0.00	0	0.00
	Out of City.....	239	230	96.2	1	0.43	1	0.43
	Total.....	414	278	61.6	1	0.35	1	0.35
*1916	In City.....	115	40	34.8	11	2.50	1	2.50
	Out of City.....	131	114	87.8	0	0.00	0	0.00
	Total.....	246	154	63.0	1	0.65	1	0.65
1915	In City.....	220	124	56.2	0	0.00	0	0.00
	Out of City.....	206	164	79.6	1	0.60	0	0.00
	Total.....	426	288	67.6	1	0.34	0	0.00
†1914	In City.....	509	355	69.7	2	0.56	1	0.28
	Out of City.....	343	258	75.2	1	0.38	0	0.00
	Total.....	852	613	71.9	3	0.48	1	0.16

*Patients treated less than one week and treatment discontinued are included in 1916 statistics and before. †1914 muzzling ordinance adopted in July and put in operation in the autumn. In 1915, 1916, 1917, 1918, muzzling ordinance in force. Note reduction in the number of patients requiring Pasteur treatment. ‡Completed treatment September 1, 1916; died of rabies March 9, 1917. Mortality statistics are based on number of persons bitten by rabid animals.

Experiments on Aspiration Gland Virus, and on Rabies Immune Serum from rabbits and dogs were started. The work is still in progress.

Tetanus Toxin—During the year the 245,520 c. c. of tetanus toxin produced, ranged in potency from 1:5000 to 1:35000.

In compliance with Federal Regulations, the preparation of tetanus toxin was removed to a special building. The glassware, containers, etc., used for tetanus work are autoclaved separately, and all contact with glassware used by other workers has been eliminated.

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Botulinus Toxin and Anti-toxin. The following trains of *B.botulinus* were used for toxin production:

Type A. Orr No. 9—From Harvard University. Delbene—Isolated from California olives at Research Lab.

Type B. Nevin strain, isolated from cheese. N. Y. State Health Dept. Orr No. 11—Same as the Nevin strain.

Stock cultures of the above strains were kept in semi-solid agar, slightly alkaline, or neutral, to phenolphthalein. A 1% glucose added to semi-solid agar gave a more vigorous growth. For the production of toxin, Florence flasks, containing one liter of glucose broth, were inoculated with 20 c. c. of broth culture, by means of a pipette. The preliminary broth cultures were grown for three or four generations, at 37° C. The first generation being inoculated with 3 c. c. of the semi-solid stock culture. The stock cultures were never liquefied or heated. For making the transplants a ragged edge pipette was thrust into the medium, and the semi-solid culture drawn up. In making transplants from broth to broth, about 5 c. c. of culture was carried over into a tube containing 30 c. c. of media.

The incubation period for toxin production varied. It was found that 15 days incubation was too long a period, and different lots were planted, decreasing the incubation time. With the decrease in incubation, the toxicity seemed to increase. From the table it can be noticed that the optimum time of incubation for toxin production is between 7 and 10 days.

Toxin production of the *B.botulinus* depends a great deal upon suitable reaction of culture media. In all the toxin produced to date, reaction of the media was adjusted to 1% acid to phenolphthalein. But in our cultural experiments it was observed that media adjusted to Ph. 7.6 were the best suited for good toxin production.

For testing the potency of botulinus toxin, a 250 gm. guinea pig was inoculated subcutaneously with 1 c. c. of the diluted toxin, and observed daily. Death was looked for at the end of the fourth day. The symptoms usually observed were ptialism, loss of weight, flabbiness; hair usually became rough, and sometimes a paralysis was noticed.

The potency of the toxin decreased very rapidly and frequent tests were necessary. Usually after a definite period the toxin strength remained constant.

Production of Antitoxin. The inoculation of a horse was started on March 3d, 1920, using the type B. toxin, produced from the Nevin strain, Type B.

The first inoculation consisted of a 1/10 guinea pig M. L. D. Subsequent injections were given every 2nd day, increasing the amount of toxin from 50% to 100% the first month. The second month the increase

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was lowered to 50%, and, towards the last three months, an increase of 25% was maintained. The inoculations were made subcutaneously, great precautions being taken for proper disinfection of the skin, before and after the injection. The condition of the horse was noted carefully between inoculations. The temperatures, taken daily, were mostly normal. From time to time, the horse was bled, and approximately six liters of blood was drawn off at each bleeding. In all there were nine bleedings during the period of inoculation. The final bleeding was made after eight months, the horse being in a weakened condition.

A second horse was started on October 29th, 1920, using the Orr No. 9 strain toxin, corresponding to type A. The initial dose given was one guinea pig M. L. D. and subsequent inoculations of a 50% increase.

Division of Applied Therapy.

The report for the year shows an increase in total number of cases handled—being the greatest of any year with exception of 1916-1917, year of the epidemic of poliomyelitis. The number of cases of epidemic meningitis, however, is the smallest for some years. Several cases of purulent meningitis, not due to the meningococcus, have been of special interest. One case of pneumococcus meningitis had recovered from a severe attack of epidemic meningitis, about 18 months previously. A case of influenzal meningitis recovered—the first case of this kind in our experience to do so. This case was given vaccine intra-spinally—a method of administering vaccine that was, so far as we are able to learn, used first by the division. The patient, together with a study of influenzal meningitis, was presented at the November meeting of the Academy of Medicine, and the paper was published in January, 1921, Archives of Pediatrics. A case of epidemic meningitis, which had failed to respond to several doses of serum, but which cleared up promptly with the intraspinal administration of an autogenous vaccine, was studied at Bellevue recently and will be published in the near future. Another case of especial interest was that of a baby, three months old, suffering from *B. coli* meningitis. The fluid was so thick that it was necessary to resort to ventricular puncture to remove it. Although the baby's condition seemed desperate, when first seen, and the fluid removed was the thickest in consistency and the largest in quantity that has ever been withdrawn from any case of meningitis in our experience, the case finally cleared up, after 27 ventricular and six lumbar punctures. This received an autogenous vaccine in the ventricle.

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SUMMARY OF WORK OF MENINGITIS DIVISION.

TYPE OF CASE.	NEW CASES.	LUMBAR PUNCTURES.	INTRA-SPINAL INJECTIONS.	CONSULTATIONS.			
Epidemic cerebro-spinal meningitis . . .	29	207	207	207			
Pneumococcus meningitis	11	}	}	}			
Influenza bacillus meningitis	2						
Mixed infection meningitis	1						
Colon bacillus meningitis	1						
Friedlander bacillus meningitis	1						
Streptococcus meningitis	7						
Staphylococcus meningitis	1						
Tuberculous meningitis	58				52	0	58
Poliomyelitis	37				37	0	37
Encephalitis	112				}	}	}
Syphilis	18						
Other diseases	141						
Total	419	649	314	692			
Total spinal fluids examined	827						

Division of Special Investigation.

One of the most important investigations undertaken was "Microbial Studies on Acute Respiratory Infections with Especial Consideration of Immunological Types." The object was the demonstration of a common "Epidemic" or "outbreak" strain among microbes isolated from cases of respiratory infection.

The results of our studies indicate that of the different groups of microorganisms isolated by our procedure, all had the peculiarity that each group was an assemblage of many types. We obtained no evidence of the existence of any common causal type, either filterable or nonfilterable. More work could be done on pneumococci, green streptococci, indifferent streptococci and some of the minority groups with a high case incidence. The question of relationship between bacterial types used in vaccination and microbial strains obtained from throats of the vaccinated remained mostly unanswered. The specific strains of organisms used in the vaccines were not found to any extent in either normals or diseased.

The evidence of immunological response to the vaccine was, as might be expected from above findings, apparent only in the lessened incidence of pneumonia. The percentage of colds was as great among the vaccinated as unvaccinated. The pneumonia incidence was much less. The greater multiplicity of types of microbes, believed to be capable of exciting common colds over those usually exciting pneumonia, is possibly the explanation of apparent uselessness of vaccines employed in this series in preventing minor respiratory infections, while apparently affording considerable protection against pneumonia.

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Diphtheria Immunity—(a) *Institutions*—In twenty children's institutions and in others for adults the work of toxin-antitoxin immunization has been continued. One of these contained 4,000 insane. In these over 20,000 Schick tests have been performed. Those inmates giving positive reactions receive toxin-antitoxin injections.

We were able to demonstrate that active immunity conferred upon susceptible children by injections of toxin-antitoxin has continued unabated during five years of observation. The negative Schick reaction in the naturally immune has continued in many hundreds of children for a similar length of time.

In two institutions outbreaks of diphtheria among newly admitted children were controlled by means of the Schick test and passive immunization of susceptible children with antitoxin. The results showed in a striking way the great value of the test in relieving majority of children from necessity of having the injection of antitoxin.

(b) *Value of Refined Mixtures of Toxin-Antitoxin*—The attempt was made to isolate toxin-antitoxin from other substances in mixtures with the object of preventing annoying pseudo-reactions. We had considerable success by use of ammonium sulphate or of alcohol but the vaccine preparations lost considerable of their immunizing value. We were also able to demonstrate in a rather definite way that mixtures, which by standing had become absolutely non-toxic in 5 cc. doses for the guinea-pig, producing no late paralysis in this animal, had lost a considerable amount of their immunizing value for children.

(c) *Toxin-Antitoxin Immunization of the New Born*—About 200 children were retested with the Schick reaction from a group of 2,000 that had been injected with toxin-antitoxin within the first week after birth. The results indicate that there is little or no value in injecting toxin-antitoxin at such an early period in life, as fifty per cent. of the children were found to give positive Schick reactions at the retest made about twelve months after injections. It is probable that tissues at this early age do not respond readily to vaccine; also the antitoxin, which the infant derives from the mother and which protects it during the first 6-9 months of life, over-neutralizes toxin-antitoxin and so helps to prevent development of an active immunity. The results indicate that active immunization with toxin-antitoxin should not be started before the age of three to six months, but that all children after six months of age should be so immunized.

(d) *The Schools*—In the Boroughs of Brooklyn, Manhattan and The Bronx, teachers of many schools were addressed on the subject of Schick Test and active immunization. The principals in over 200 schools were interviewed. The work has been started and is being continued in these schools by a small force made up of laboratory workers together with a few school physicians and nurses.

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In some schools from 1,200 to 1,400 children were tested and susceptible children were injected with toxin-antitoxin. In some schools, the work was confined to incoming classes only. It is intended to extend the work during 1921 in various schools designated by the Department of Education and also to parochial schools.

(e) *Instruction of Physicians in the Schick Test*—Physicians connected with the Bureau of Child Hygiene and Bureau of Preventable Diseases were instructed in the Schick test and toxin-antitoxin immunization. These physicians in turn have been doing the work in milk stations, schools and in tuberculosis clinics. Addresses have been made before a number of local and outside medical societies and public health conferences.

(f) *Commercial Schick Outfits*—A study was made to determine the potency of Schick outfits supplied by commercial laboratories. The important fact was determined that solutions made from many of these outfits failed to give positive reactions in children who possessed no antitoxin and who did give such a reaction with a Research Laboratory preparation. The results were communicated to these laboratories and they are now making attempts to standardize their preparations more carefully.

(g) *Schick Tests in Tenement Houses*—Visits were made to tenement houses, in which a case of diphtheria had developed. Neighboring families were seen and children as well as some adults were tested. An attempt was thus made to popularize the Schick test among them and to study at the same time the test with the family as a unit. The work was limited, however, on account of difficulties inherent under these circumstances.

(h) *Toxin Suitable to Give Correct Schick Reaction*—The reaction was studied from point of view of determining whether an old toxin containing a considerable amount of toxoids gave a stronger reaction than one more recently prepared and containing but a small amount of toxoids. These studies were made by comparing the Schick reactions, when made on same children with two toxins diluted in one of two ways: (a) on basis of M.L.D. strength and (b) on basis of L plus strength. We found that we could disregard any action due to toxoids and that practically the entire local effect, as seen in positive reaction, was due to the action of toxin. A standardization of Schick outfits, based upon M.L.D. strength of toxin is therefore indicated.

(i) *Strength of Toxin Used in the Schick Test*—After close study of this question conclusion was arrived at that the amount of toxin used in the test when 0.2 cc. is used should be 1/40 M.L.D. This amount allows for slight deterioration and also gives somewhat better defined reactions than amount previously used, e.g. 1/50 M.L.D. in 0.2 cc. The strength of toxin dilution recommended by Schick—1/50 M.L.D. in 0.1 cc.—is quite satisfactory but gives severe local reactions with apparent superficial necrosis, especially when more than 0.1 cc. is used. The injection of a

larger amount than 0.1 cc. is apt to occur in hands of the general practitioner when he attempts to make the Schick test. The results of such practice will very likely discredit Schick reaction and interfere with popularization of the test.

(j) *Standardization and Preparation of the Diphtheria Toxin-Antitoxin Mixture*—The convenient standard dose of toxin-antitoxin mixture was set at one mil for each injection. It was imperative therefore to set a standard for the number of L-plus doses to each mil of the aged toxin that the immunizing value of all mixtures of like toxicity be the same. This standard was provisionally set at three L-plus doses to each mil and as each lot of aged toxin varies in the number of L-plus doses per mil, the toxin diluted with saline solution to comply with the foregoing standard.

The preparation of toxin-antitoxin is now adjusted by adding to each L-plus dose about one-half a unit of a properly aged antitoxin. When five mils of this freshly prepared mixture is injected into guinea-pigs, acute death occurs within four or five days. The mixture is then stored in a refrigerator for a month to six weeks for stabilizing. On reinjecting five mils, after storage, guinea-pigs die of late paralysis after twenty-five days. It is then properly balanced and safe for distribution. Prepared as stated it practically retains its balance for some months. Some preparations are very stable and retain practically full immunizing value at least a year. Whatever slight deterioration occurs takes place chiefly in the toxin and therefore there is no danger of the mixture becoming toxic.

(k) *Experimental Work on Aged Diphtheria Toxin of High Potency for Schick Tests*—The use of high potency toxin is desirable for the following reason:

The mixture injected contains a smaller amount of foreign protein (peptone, meat extractives and bacillary substances from autolyzed diphtheria bacilli), thereby tending to lessen the pseudo reactions and give a more clearly defined positive reaction.

Obstacles to the use of high potency toxin, the danger of error in accurately measuring the infinitesimal amount (0.005 to 0.0035 mils) in capillary tubes, and danger of this small amount drying in the tubes.

Experimental work on various dilutions has shown that aged diphtheria toxin can be diluted with physiological saline solution in proportion of one part toxin to one and a half parts saline and yet remain as constant in potency as undiluted aged toxin. In higher dilutions there is a progressively increased deterioration of the toxin.

The Schick toxin in use for three months has been diluted in the above-mentioned proportion. The pseudo reactions are considerably lessened with this product.

Tetanus Bacillus Agglutination—A study was made of different strains of tetanus bacillus present in the laboratory to determine their agglutination

properties. Rabbits were inoculated with vaccines and the various strains found in the laboratory were tested against the different sera. We determined that the three laboratory strains belonged to same type group.

Tetanus Toxin-Antitoxin Mixture for Active Immunization—The tetanus toxin-antitoxin mixture adjusted so as just not to be toxic was found to produce tetanus antitoxin when injected in guinea pigs.

The work on active immunity with tetanus toxin-antitoxin mixtures is being carried further.

Whooping Cough—The studies made in previous years to determine prophylactic and therapeutic value of pertussis vaccine were continued. A special vaccine was prepared, containing 10 billion bacteria per c.c., and was used for prevention and treatment in two institutions. In the first institution, whooping cough had already prevailed for over two months before we were called in; in the second the disease had broken out during preceding two weeks. The healthy children were divided in each institution into two groups, one receiving vaccine as a prophylactic in doses of 5, 10 and 20 billion at intervals of three days. The second group received no vaccine. In one institution four cases developed among the vaccinated, but these were already in catarrhal stage of the disease when vaccination was started. These results are not at all conclusive. The degree of immunity conferred by whooping cough vaccine is still so unsettled and the question is of such importance that a very extensive test was started in October. Some 2,000 children have been vaccinated and remain under observation along with an equal number of unvaccinated.

In the treatment of cases the vaccine seemed to have but little effect during the first seven days after primary infection. The coughing paroxysms after that seemed to abate rather suddenly and one noticed a distinct clinical improvement.

Besredka's Oral Method of Immunization Against Intestinal Infections—A series of experiments was carried out in vaccination of rabbits by means of bile and paratyphoid vaccine administered by the oral route through a small catheter. Only negative results were obtained—except for the fact that we were able to verify one of Besredka's findings—that the giving of bile reduced the dose of bacteria necessary to infect a rabbit by intravenous route to one-tenth of amount necessary when no bile was given. In spite of our negative results work is being continued along the line of immunization of rabbits against dysentery by giving vaccine by mouth.

Botulinus Toxin and Antitoxin—During the year special experimental work in production of botulinus toxin and antitoxin was undertaken. Details of this have been given under Division of Production of Serums and Vaccines.

New Method for Addition of Cresol to Antisera.—A mixture of equal parts of ether and cresol is presented as a new preservative for antitoxins

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and serums. This mixture is added in amounts necessary to give the required amounts of cresol. The addition of this mixture causes no precipitate. The mixture of cresol and ether is more strongly antiseptic than cresol alone. In therapeutic use, the ether is not a disadvantage when given subcutaneously, intramuscularly or intraspinally. Either may be added to the toxin-antitoxin mixture without disturbing its balance.

Milk—A critical study was begun of the practical value for routine work of the Frost "Little Plate" method of counting colonies in cultures from milks as compared with the standard plate method.

The results to date have compared so well with the standard plate method that it is safe to say that the Frost method is of practical value. The work is still in an experimental state and the extent of its value will be reported upon later.

Experiments with a Chlorine Solution on Anthrax Spores—A liquid chlorine solution was submitted to the laboratory by Dupont Co. as being a 1 per cent. solution. Upon titration here it was found to be an 0.08 per cent. solution.

A series of experiments were carried on by allowing the chlorine solution to act on a suspension of anthrax spores. The solution was kept in contact with spores for certain periods of time. At the end of these different periods, cultures were made of the mixtures.

The results obtained were as follows: It was found that 4 c. c. of this 0.08 per cent. chlorine solution added to 1 c. c. of spore suspension resulted in death of the spores in five minutes. A 0.008 per cent. chlorine solution using 4.9 c. c. and 0.1 c. c. spore suspension killed anthrax spores in forty-five minutes. While 4 c. c. of an 0.008 per cent. chlorine solution added to 1 c. c. of the spore suspension did not kill anthrax spores in two hours.

These experiments were corroborated with tests on positive anthrax bristles, exposed to this 0.08 per cent. chlorine solution for 30 minutes. Emulsions of the bristles were then inoculated into mice. They survived the injections. Control mice, inoculated with emulsions of bristles which had not been exposed to the chlorine solution, died of anthrax.

From results of these experiments it is noted that an 0.08 per cent. chlorine solution acting for 30 minutes on certain infected bristles will destroy anthrax spores. Hence a solution of 1 per cent. chlorine, such as is claimed to be used by the Dupont Co. in treatment of bristles, would probably destroy anthrax spores on any infected bristles.

Action of Dry Heat on Anthrax Spores—In this series of experiments emulsions of old anthrax cultures were made. Cotton threads which were previously washed and boiled were allowed to soak in the emulsion. The threads were dried in the incubator and stored away at room temperature until ready for use.

Several threads were sealed in test tubes and submerged in a calcium

chloride solution of such concentration that it boiled of 120° C. The loss by evaporation was replaced by means of an inverted bottle of water. This was so suspended that a continual drip by means of a long glass tube kept the calcium chloride solution at a constant level. The sealed tubes were kept at this temperature for three, four, and five hours. At the end of these periods, they were removed and several cultures made from the threads. The cultures were incubated for a week, and at the end of this time it was found that all the cultures were sterile, thus showing that dry heat at 120° C. for three, four and five hours would kill anthrax spores.

Dried anthrax infected threads were placed in a sealed tube and submerged in boiling water for five hours. Cultures were made at the end of this time, and incubated at 37° C. The cultures showed a typical anthrax growth in 24 hours, thus showing that dry heat at 100° C. for five hours will not kill anthrax spores.

Bovine Vaccine—Experiments with calf seed treated with brilliant green dye have been continued. Successful passages have been made through eleven calves and very good takes are still reported. The seed virus becomes sterile within ten to fourteen days.

Precipitin Test—Because of the difficulty of preparing stable agglutination antigens with certain types of bacteria, investigation of these types by agglutination and agglutin absorption was very difficult or impossible. The possible use of the precipitin reaction and its control by absorption technic was investigated. Surprising results were obtained which precluded the application of absorption technic with closely allied bacteria. It was found that absorption by a heterologous type not infrequently removed specific as well as group precipitins.

Spinal Fluids—Yellow spinal fluids are usually found, when they occur, in cases of tuberculous meningitis and poliomyelitis. The work has been quoted several times.

Meningitis—Our studies have shown the importance of emphasizing difference between the form of epidemic meningitis, ordinarily seen in civilian life, and the septic form, which was epidemic in some army camps. We question the value of intravenous injections of serum, except in septic type of the disease.

The Bacteriophage Reaction of D'Herelle—Towards the end of the year this work was started with several specimens of lytic fluid furnished by d'Herelle. The work is very interesting and indicates new phases in the method by which individuals gradually recover from intestinal infections of the typhoid-dysentery group. Work along prophylactic and therapeutic lines is being continued with this substance.

Convalescent Blood in the Treatment of Scarlet Fever—Several very toxic cases were treated at the Willard Parker Hospital with intramuscular

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injections of convalescent whole blood. The results indicate that the method has distinct value in selected early cases of toxic scarlet fever.

Chronic Gonorrhoea—The gonococcus complement fixation test is of undoubted value in chronic gonorrhoeal infections.

In acute and early subacute infections it is on a par with the Wassermann test in the initial lesion stage prior to development of the secondary.

A non-gonorrhoeic does not give a positive complement fixation test.

A gonorrhoeic may give a negative test in certain stages of the disease.

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Supervision of Midwives.

A community like New York City, which harbors a large proportion of alien population bound to the female attendant at birth, by custom, tradition, prejudice and socio-economic conditions, must, of necessity, make provision for supervision of midwives. This includes their instruction, education, and periodic follow-up, and efforts to elevate the standard of their calling. A properly trained, equipped and supervised midwife can, under existing conditions, become an adjuvant of great value in protection of maternity and infancy; left unsupervised, untrained and untaught, she can, through ignorance, carelessness and neglect, become an enemy to motherhood and babyhood—a community menace.

In the performance of her calling, the midwife bears a direct relation to two lives, and regulation of her right to practice, and of her supervision during the period of her license, has an important bearing upon the prevention of maternal and infant morbidity and mortality. The existence of midwives in any locality is largely a question of demand, and in this City there is a considerable demand, as shown by the fact that from 25 to 40 per cent. of the 130,000 to 140,000 children that are born in this city annually are brought into the world by midwives. This will be seen from the following tabulation:

STATISTICS OF MIDWIVES IN NEW YORK CITY.

YEAR.	NO. OF MIDWIVES REGISTERED.	NO. OF BIRTHS ATTENDED BY MIDWIVES.	PER CENT. OF TOTAL BIRTHS.
1909	3,131	49,616	40.35
1910	1,515	51,996	40.28
1911	1,488	51,756	38.48
1912	1,325	52,743	38.88
1913	1,488	50,364	37.27
1914	1,488	52,997	37.69
1915	1,469	49,915	35.34
1916	1,799	46,487	33.78
1917	1,656	47,525	33.60
1918	1,612	36,720	26.60
1919	1,695	41,876	32.10
1920	1,517	36,369	26.60

The present status and comparatively high standard of midwives in New York City has been the result of evolution in supervision and control. Prior to 1907, control of the practice of midwifery in New York City was very imperfect, and no rigid supervision was exercised, applicant being required only to appear in person at office of the Registrar of Records, register her signature, present certificates of good moral character and of experience in

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midwifery, countersigned by two physicians in good standing. On June 6, 1907, by legislative enactment, the Department was authorized to adopt ordinances, rules and regulations governing admission into, and exclusion from, the practice of midwifery, to define said practice, and to promulgate rules and regulations governing it. Although these rules, regulations and ordinances were a vast improvement upon conditions that existed prior to 1907, and effected a decided improvement in the practice of midwifery, nevertheless, the Department's Bureau of Child Hygiene was convinced that further control of the practice was necessary, particularly with reference to admission of applicants who desired to take up the calling. Accordingly, on March 30, 1915 (effective April 1, 1915), regulations governing the practice of midwifery were amplified and improved, not only for those who were practicing at the time, but, particularly, with reference to future applicants, in that permits were subsequently issued only to those who presented a diploma from a school of midwifery registered with the Department, and which maintained a satisfactory standard of preparation, conduct, instruction, and course of study. Regulations governing the conduct of schools for midwives were incorporated; diplomas were recognized from schools in other states and cities of the country, if under state or municipal control, and from foreign schools, if under governmental supervision, all of which provided for a minimum resident course of instruction of six months, and which fulfilled requirements and met the standard of schools under official rules and regulations.

In 1911 there was established the Bellevue Training School for Midwives, the first municipal midwifery school operated in this country.

As the result of this evolution, there has come about an improvement in character and standard of the midwife in this City, and, by a process of elimination through death, removal, old age, revocation of permits, limitation of licenses, the old type of midwife is fast disappearing and, in her place, there has come a cleaner, better educated, trained, and better equipped type of female birth attendant. It will be noted, by referring to the first table herewith, that during 1920 the number of registered midwives, the number and percentage of births attended by them, is lower than preceding three years, and that percentage of births attended by midwives is the lowest since 1909. This is due, in part, to aforementioned process of elimination and, in part, to education of a certain proportion of alien public to the use of properly qualified physicians or maternity institutions, at time of delivery. This is also particularly due to the fact that the midwife calls more frequently for assistance in cases—registration of births, in such instances, being recorded by the physician.

If all mothers delivered by midwives in New York City were to seek the services of maternity institutions or private practitioners, existing facilities in this city could not meet the demand, because of insufficient institutions and

outdoor maternity services to accommodate them, and an insufficient number of properly equipped private practitioners to perform the work adequately within financial means of the family. Apart from that, every expectant mother has the right to ask, if she so desires, that she be delivered at home. The cornerstone of American society is the home, the family unit, and effort should be made to maintain rather than disrupt it. It is because the midwife makes delivery at home possible, that the mother may remain with and supervise her family. She acts as accoucheur, attendant nurse, and confidant, occupies a unique position in cosmopolitan cities. In our supervision of midwives we aim essentially to provide as follows :

(a) To teach them to abide by rules and regulations governing their practice.

(b) To teach them their limitations before, during and after labor, especially with regard to instruction on pre-natal care, attendance at normal cases only (normal vertex presentation), and the need of immediate medical attention when any deviation from the normal in mother and child occurs at any time before, during or after labor.

(c) To conduct the labor so as to diminish the number of still-births, thus indirectly increasing the birth registration.

(d) To diminish the number of premature births and the number of deaths from congenital diseases, by the distribution of literature on pre-natal care, or by referring mothers about to be delivered by them to the Baby Health Stations of the Department of Health, maternity centres, or other maternity institutions, where such instruction is available.

(e) To refer to maternity centres, or maternity institutions, mothers in whom they found abnormal conditions during pregnancy.

(f) To diminish the number of accidents and deaths of mothers and infants as well as diseases before, during, and after birth, by seeking all essential medical care.

(g) To diminish the number of eye infections in the new-born, by the compulsory, prophylactic installation of silver nitrate solution, which is furnished them in wax ampules, gratis, by the Department.

(h) To diminish the number of cases of puerperal septicaemia, and other complications and diseases incident to pregnancy, by a rigid regard for cleanliness, and summons of medical aid, immediately, when indicated.

(i) To increase birth registration by prompt report of all births.

(j) To prevent the illegal practice of medicine, or criminal practice, by rigid supervision, and by institution of stringent measures when they are found to participate in acts of this kind.

This is accomplished by periodic visits of inspectors and nurses to homes for inspection of the personal and home appearance of midwives and equipment ; by individual instruction ; by personal interviews at the Borough offices of the Department, in the event of refraction of rules ; by group

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meetings arranged according to nationality, at which talks on various subjects bearing upon their practice, are held, in their own language; by having midwives keep record of all cases which they attend, and stubs of births and stillbirths reported by them; by stimulating them to register expectant mothers with the Department of Health, or, other co-operative agencies, as early in pregnancy as possible, in order that pre-natal instructions may be given; by assuring them that no effort will be made to interfere with their privileges under terms of their license; by distribution of educational pamphlets and booklets, on the care of mother and child; and by summary action in cases where it is found they are practicing medicine illegally, or, resorting to criminal practice. The aforementioned is accomplished by license, education and supervision, all of which is provided for in the Department's Regulations Governing Practice of Midwifery. The following tables will show results of the control of midwives, with special reference to suppurative eye diseases and puerperal sepsis:

SUPPURATIVE EYE DISEASES AMONG INFANTS.	1918.	1919.	1920.
Suppurative eye cases reported.....	35	57	57
Reported by midwives.....	25	27	28
Reported by physicians.....	4	9	6
Reported by institutions.....	2	7	15
Reported by other organizations.....	4	14	8
Cases cured.....	32	49	46
Cases blind.....	..	..	1
Cases partially blind.....	..	..	0
Moved and condition not known.....	3	8	10
TRUE OPHT ALMIA.			
Cases reported.....	17	27	28
By midwives.....	5	2	6
By physicians.....	5	7	13
By institutions.....	5	18	8
By other organizations.....	2	..	1
Cases cured.....	10	20	21
Cases blind.....	..	*2	0
Cases partially blind.....	..	..	..
Moved, condition unknown.....	7	5	15

* Died. ‡2 cases died.

PUERPERAL SEPSIS.

	ATTENDED BY MIDWIFE.		ATTENDED BY PHYSICIAN.		ATTENDED BY HOSPITAL.	
	Fatal.	Non-fatal.	Fatal.	Non-fatal.	Fatal.	Non-fatal.
1915.....	43	0	226	2	...	21
1916.....	50	0	195	16	...	135
1917.....	40	1	156	20	33	70
1918.....	15	1	61	18	84	114
1919.....	14	2	41	30	102	72
1920.....	17	4	35	48	89	116

The regulations governing practice of midwifery make it mandatory upon a midwife to use prophylactic installation of 1 per cent silver solution in the eyes of all new-born children. This regulation is rigidly enforced, and the number of cases in which it is not performed are few and, far between. Certain it is that there is a more general application of the Crede method of prevention of suppurative eye conditions in the new-born, among midwives, than among physicians. In the latter cases, use of silver solution is optional. The time is approaching, we feel, when, by legislative enactment it will be made mandatory for physicians to use silver solution in eyes of infants directly after birth.

Despite comparatively large number of infants brought into the world here by midwives during the past ten years, New York is one of the few large cities in which the maternal death rate from puerperal sepsis, and other conditions incident to pregnancy, has declined during the last decade. In other words, in prevention of suppurative eye conditions, in maternal mortality from sepsis, and other conditions incident to pregnancy, in the number of stillbirths, and deaths during the first month of life, and prompt reporting of births and stillbirths, the midwife in proportion to number of mothers delivered by her, stands on credit side of the ledger as compared with physicians in this city.

Of course, despite our rigid supervision, delinquencies on the part of midwives do, and will occur. These necessitate a call to respective Borough offices of the midwife concerned, and her interview by the Chief, directing attention to violations and warning that further and repeated acts of this kind will result in revocation of license. During the past year such delinquencies as unclean homes, equipment, and person, death of mother after delivery, delay and failure to report births and stillbirths, have been recorded and followed up.

In all our efforts to minimize maternal and infant morbidity and mortality, an endeavor is made to make an ally of the midwife as far as possible; to gain her confidence and co-operation; to educate her to the limitations of her calling; to increase her efficiency. All of these, so that she may become a useful supplement to the medical profession in cases for which there is a comparatively great demand for her services. We feel that, with our supervision, we have raised the tone and standards of the practice of midwifery in this city, and that, with better midwives, there have come better mothers, better babies, and a better infant mortality rate.

Supervision of Children Boarded Out in Private Homes.

In this city, several thousand infants and children are given annually in board and keep, by institutions and individuals, to women who take care of them for a consideration. These children are given out because of lack of institutional accommodations, or because they favor home care for certain

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types of cases; and, by individuals, because of illegitimacy, desertion, divorce, or death of fathers or mothers, or of both, which makes it necessary to so place children that adult relatives may engage in gainful occupations. The children given out to board are classified, in the Department's work, as "foundlings."

With relatively large number of infant- and child-caring institutions and with the very large and mixed population, it is to be expected that a demand for foster homes and mothers would exist. With this public demand, it becomes necessary to safeguard the well-being of these infants and children, which is provided for by Section 482, Sub-division 2, of the Consolidated Laws of the State of New York; and by Section 197 of the Sanitary Code of the Board of Health of The City of New York, which latter provides as follows:

Section 197. No person other than a superintendent of the poor, a superintendent of alms house, or an institution duly incorporated for the purpose, shall receive, board or keep, except under legal commitment, any nursing child, or any child under the age of twelve years, which is not a relative, pupil or ward or an apprentice of such person, without permit therefor issued by the Board of Health, or otherwise than in accordance with the terms of said permit, and with the regulations of said Board.

If a child cannot have a mother's care, the best substitute is a clean, careful, intelligent foster mother. The worth of a foster mother is largely dependent upon her love and desire for children, and this often transcends all other considerations.

With increased cost of food, living and other necessities, the compensation demanded by foster mothers has necessarily increased and many individuals have not been able to meet these demands. The desire of foster mothers to board and keep children is not so great as in former years, although the number of permits issued during 1920 was slightly in excess of that of 1919, as will be noted from following tabulation:

NUMBER OF PERMITS TO BOARD CHILDREN IN FORCE IN NEW YORK CITY.

Year.	No. of Permits.
1911.....	2,027
1912.....	2,835
1913.....	3,123
1914.....	4,234
1915.....	4,740
1916.....	5,330
1917.....	5,698
1918.....	3,238
1919.....	2,798
1920.....	2,961

At best, the compensation received is not very large, and usually is the minimum required to properly feed and care for children. Just as soon as a foster mother looks upon the board and keep of children as a business she becomes less valuable. Unfortunately, the compensation is comparatively small; not all foster mothers can be trusted; not all are clean, careful, in-

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telligent or domesticated; many look upon the board and keep of children as a commercial enterprise, and take the child or children to tide over a period of economic family stress. For these reasons, supervision, education, and careful periodic follow-up are necessary, and are carried out by a special corps of inspectors and nurses. Rules and regulations have been formulated relative to such board and keep, and a rigid inspection of the character of premises, the number of living rooms, cubic air-space, number in family including lodgers and boarders, condition of foster mother's own children, if any, ventilation, heating, lighting, hygiene and sanitation are carefully looked after.

Permits are issued for "wet" or "dry" nursing; in the former case, for exclusive breast-feeding by the foster mother; in the latter, for older children, where artificial feeding is necessary. These permits are issued for one or more children according to existing conditions. The policy of the Bureau of Child Hygiene, which directly supervises this work, is to issue permits for as few children as possible in any given home, and to seldom issue a permit for more than four children, unless conditions are particularly favorable as regards care, food, home surroundings, character, and intelligence of foster mother and family.

Whenever permits are requested for board and keep of more than four children, a rigid inspection is made by two inspectors, all facts relating to surroundings are carefully noted, and all circumstances carefully analyzed and weighed before such permits are granted as following tabulation shows:

ANALYSIS OF PERMITS TO BOARD CHILDREN IN NEW YORK CITY, 1920

CHILDREN ALLOWED.	NO. OF PERMITS IN FORCE.	NO. OF CHILDREN ALLOWED ON SAME.	NO. OF PERMITS INACTIVE.	NO. OF CHILDREN ACTUALLY IN BOARD.						
				1	2	3	4	5	6	TOTAL
1.....	928	9928	190	738	.....	.....	.....	.....	.....	738
2.....	1032	2064	200	445	1093	.....	.....	.....	.....	1538
3.....	733	2199	102	192	274	2189	.....	.....	.....	1755
4.....	175	700	31	23	56	102	361	.....	.....	542
5.....	73	365	6	2	10	30	60	207	.....	309
6.....	20	120	.....	.....	.....	2	.....	20	90	112
	2961	6376	529	1400	1433	1423	421	227	90	4994

Note: The number noted under total is the sum of the number listed under 1, 2, 3, etc.

It will be noted that the number actually in board, does not always correspond to the children allowed on the permit. In many instances where permits are granted for board and keep of two, three, or more children, the foster mother is unable to secure, or subsequently does not desire to accept as many children as her permit allows. It will also be noted that the number of permits in force, for more than four children, is relatively small, and that the largest number in force, allow two children.

Naturally, the ideal foster mother and home are the exception and most

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permits are sought by average women, living under average conditions. For purpose of administration, supervision and control, however, and for information of child-placing institutions and individuals, these foster homes and mothers have been graded as "A" excellent; "B," good; "C," poor; and, also as Group I, child, breast-fed; Group II, child (under two years of age), artificially fed; Group III, child (two to twelve years of age), table fed. Naturally, considerations and qualifications at different age groups and for different types of care and keep, vary, and provision is made for these facts, under respective groupings and ages.

For babies breast-fed exclusively, consideration is given to freedom of foster mothers from communicable diseases, especially syphilis, and tuberculosis; and, serious nervous disease, especially epilepsy, and also as regards other chronic diseases; to the quality and quantity of breast-milk; to period of lactation; age of foster mother; as to whether her own child is alive, etc. We feel that no child should be permitted to be wet-nursed by a foster mother, unless her child is dead, or, unless she has ample supply for both children. In the case of wet-nursing, social, and even sanitary conditions of the home and mother are of secondary importance as compared to those directly influencing nutrition, growth and development of the infant. Prime consideration is always given to results of Wassermann tests of both baby and intended wet-nurse.

In granting permits, careful investigation is made as to date of birth of applicant's child, in order to determine the period of lactation.

In the grading of homes for children under two years of age, and children two to twelve years of age, factors relating to foster mother, foster father, children of the family, boarders, home, food, neighborhood facilities, location, economics, condition of foster child, registration of complaints, etc., are noted in detail, as regards rating the home as "A," excellent; "B," good; "C," poor.

The number of class "A" homes is relatively few, and most homes are classified as "B." The "C" homes are undesirable, and no permits are issued in such cases unless conditions are so improved as to raise the standard to class "B."

Periodic visits are made to foster mothers by inspectors and nurses, whose aim it is to act as teachers and advisers rather than as agents who look for violations of regulations. The attention of the foster mother is called to any irregularities in care of the child, or condition of the home, and personal effort is always made to improve conditions before resorting to other means. Repeated violations of regulations or improper care of children, result in revocation of permits. The high standard of the work is shown by the fact that only 9 permits for board and care of children were revoked during 1920, as against 19 during 1919, and only 53 complaints, as against 250 during 1919, were registered.

In the supervision of these foster homes, the Bureau of Child Hygiene has received active co-operation of the Society for the Prevention of Cruelty to Children, Department of Public Welfare, Russell Sage Foundation, Committee on the Prevention of Blindness, and of many other child-caring agencies.

The care and feeding of many children has been improved through the action of foster parents in seeking advice and counsel from Baby Health Stations.

Other things being equal, it is the consensus of opinion of public health workers that care of infants and children in foster homes is less productive of infant and child morbidity and mortality than the care of these children in institutions. Each year shows an improvement in the care foster children are receiving in private homes, and, as a result of vigorous supervision and inspection, the old "baby farms" of former years have been practically eliminated.

Infant Morbidity and Mortality.

Supervision of Infancy and Early Childhood—Infancy and early childhood refer to the period of life from before birth until entrance of the child into school. For administrative purposes this period is divided as follows:

1. Pre-natal, or ante-natal period—before birth.
2. Infancy—birth to the end of the first year.
3. Babyhood—1 to 2 years.
4. Pre-school age—2 to 6 years.

It has been said that infant mortality rate is the most sensitive index of municipal housekeeping of a community. It is more than that; it is an index of civic interest, co-operation, consciousness and worth. It is, furthermore, an index of the community's infant morbidity situation. The same causes which kill infants make them sick, or maim and cripple them for life, incapacitate them physically, mentally and morally. Again, the same causes which prevent and control infant morbidity and mortality reflect themselves in an improved health, vitality and prolongation of life in later age groups.

Since many injuries suffered in infancy and early childhood—dietetic, hygienic, sanitary, psychic, etc.—exert their baneful influences in later childhood and adult life, it becomes important to surround the infant and young child with such safeguards as will preserve its health and prolong life. The future well-being of the school child and of man and woman depends, in large measure, upon the care exercised in infancy and early childhood. It is erroneous to suppose that each period of childhood is separate and apart from the succeeding period, and that ill effects of earlier periods are confined to that age alone. There is an inter-relation, and inter-dependence between earlier period and the succeeding one. Health and vigor of later childhood

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and adult life depend upon the well-being in earlier ages. The importance, therefore, of care and supervision during each and every period is self-evident.

The function of baby welfare activities of the Bureau of Child Hygiene is to safeguard the health and lives of infants and children from the pre-natal period until their entrance into school. This responsibility was discharged during 1920, for the greater part, through the Baby Health Stations, of which sixty were maintained and operated for three-quarters of the year, and to which were added, in the fall, eight stations formerly operated and maintained by Nathan Straus, and tendered by him to the Municipality. During the latter part of 1920, sixty-eight stations in all were in operation.

The popularity and need of this Baby Health Station service is shown by the gradual increase in number of stations, from 15 in 1911 to 55 in 1912; 56 in 1913-1914; 59 in 1915-1918; 60 in 1919, and 68 in 1920. These stations are essentially educational preventoria or prophylactic centres, dedicated to policy of keeping well babies and children well, and emphasizing the preventive rather than the curative side of child hygiene work. Although originally established for care of infants and babies under two years of age, other important child-caring activities have, in the course of time, developed around them, so that they have become centres for preservation and control of child health and life, and local community centres for advising neighborhood clientele. The more important functions of child hygiene which clear through them are as follows:

1. Instruction and supervision of expectant mothers, during pregnancy, labor and for, at least, one month after delivery.
2. Supervision of the care and feeding of babies under two years of age, and the distribution, and sale, at below market price, of a high grade of pasteurized milk to infants who must be artificially fed, and to deserving older children and adults.
3. District or home visiting by a corps of nurses, throughout the year, and particularly during the summer months, to infants in selected sections of the City, where the morbidity and mortality are known to be high.
4. Physical examination of children of the pre-school age, 2 to 6, years, together with home visitation for advising and instructing parents as to the ill effects of the physical defects found, and ways and means for effecting a remedy or cure of the same.
5. Centres for various other departmental activities and social service work of the Bureau, and for the co-operation of allied child-caring agencies.
6. Local community health centres, which offer advice and instruction to the neighborhood citizenry in matters relating to families as a unit.

Instruction and Supervision of Expectant Mothers.—In the efforts of the Bureau of Child Hygiene to affect a reduction in infant mortality, it has become increasingly apparent that a further material impression upon infant

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mortality must be secured, in the main, through control of congenital diseases. For several years past, the Bureau has called attention to the fact that the number of infant deaths from congenital diseases has been so great as to practically control the curve of infant mortality. It would seem that the number of infant deaths from congenital diseases alone, during the past three years, is in excess of those from diarrhoeal and respiratory diseases combined, offers sufficient argument for institution of a special service, to properly instruct and supervise expectant mothers. This will be shown in the following tabulation:

INFANT DEATHS—CITY OF NEW YORK.

YEAR.	CONGENITAL DISEASES.	DIARRHOEAL DISEASES.	RESPIRATORY DISEASES.
1918.....	5,342	2,032	2,993
1919.....	4,852	2,067	2,114
1920.....	4,690	2,174	2,474

Other data in support of the need of pre-natal supervision have been advanced by the Bureau of Child Hygiene for many years, among which may be mentioned a decided reduction in the infant mortality rate from respiratory and diarrhoeal diseases and a practically stationary rate for congenital diseases; a decided reduction in the infant mortality rate, from second to twelfth month of life, and a stationary rate during the first month of life; over 40 per cent. of all deaths under one year of age are due to congenital diseases; approximately 75 per cent. during the first month of life are due to congenital diseases; congenital diseases occupy first place in the list of baby-killing diseases, with respiratory diseases second, and diarrhoeal diseases third. More women die from conditions incident to pregnancy than from any other causes, except tuberculosis. Certainly, these facts indicate that the most pressing and direct need along the lines of infant and maternal conservation is control of congenital diseases through an intensive supervision of expectant mothers.

Deaths from congenital diseases bear no relation to hygiene and diet, but are dependent, in great measure, upon care and supervision given to the expectant mother. It is no exaggeration to say that with an annual birth registration in New York City of over 130,000 the number of expectant mothers who, because of financial, social, and other considerations, stand in need of pre-natal care, approximates 75,000. Since 1913, the Bureau of Child Hygiene has realized the great need of proper supervision of these mothers but, unfortunately, because of budgetary limitations, it has been unable to place at disposal of the public the type of care and instruction that is so urgently needed by pregnant women.

Through funds appropriated for regular nursing service, the Bureau made it possible to so adjust its force, that 6 to 8 nurses (number varying

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according to conditions), gave intensive effort to a limited number of expectant mothers. In addition to this special corps, nurses regularly assigned to Baby Health Stations, have, throughout the year, given such instruction as was possible in connection with their other work, to such expectant mothers as they met in the stations or in the homes. Furthermore, all requests received from outside sources for supervision of expectant mothers, or for literature on the subject, have been met.

In our efforts to safeguard health of pregnant women and future babies, nurses strive at securing registration as early in pregnancy as possible; make periodic visits, before, during and after birth; give advice and instruction in diet, hygiene, clothing, fresh air, exercise, rest, care of the breasts, skin and teeth; distribute incidental literature; urge importance of breast-feeding; make urinary examinations; arrange for visits to private physicians, hospitals, maternity institutions, and for examination for tuberculosis and social diseases; afford social service assistance in form of material relief—clothing, employment, etc; conduct cooking and sewing classes for these mothers; demonstrate the preparation of room and articles for confinement and for the baby; provide for early admission to, and examination at maternity centres and hospitals for cases presenting suspicious signs and symptoms, or, history of previous prolonged or complicated labor. In a word, they arrange for all details which are conducive to making pregnancy comfortable, labor safe, and the puerperium uneventful.

Owing to many interruptions in the service during the year, the number of expectant mothers given intensive instruction was very limited, namely, 3,517.

We are convinced, however, from analysis of this intensive supervision during the years 1914-1918, (for which figures are available,) that if the same supervision of expectant mothers that has been afforded by our special corps of pre-natal nurses, could be extended to pregnant women of the City as a whole, that a very marked and decided reduction in infant mortality rate, particularly, during the first month of life, would ensue. This statement finds corroboration in tabulation herewith.

In other words, during these five years, the average mortality rate of supervised infants, under one month of age, was 17.7, whereas for the City as a whole, under one month of age, per thousand children born, was 36.4. It will also be seen that if mortality rate, under one month of age, secured through intensive pre-natal supervision during these five years, was applied to the City as a whole, the number of infants under one month of age saved, during that period, would have been 13,089.

This experience of the Bureau of Child Hygiene, has been duplicated wherever intensive pre-natal supervision has been conducted—by the Maternity Center Association, Henry Street Settlement, Metropolitan Life In-

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urance Company, and by child hygiene divisions in Boston, Philadelphia and Cleveland.

For several years practically all intensive pre-natal work for the Greater City was conducted in Manhattan, not only through the Department, but other agencies interested in this phase of infant mortality control, namely, Maternity Center Association, New York Diet Kitchen Association, Berwind Maternity Clinic, and other maternity institutions. During these years, the Borough of Manhattan alone, showed a substantial reduction in infant mortality rate from congenital diseases.

During 1920, civic consciousness as to importance and need of care of expectant mothers was aroused in Brooklyn and pre-natal supervision was conducted on a larger scale. This co-operation was, in the main, secured from American Frugality League which equipped a maternity center in each of the twenty-four Baby Health Stations, providing examination tables, pelvimeters, sphygmomonometers, rubber gloves, racks and urinary reagents, urinometers, etc., the Bureau of Child Hygiene providing necessary office space, medical and nursing assistance. The results obtained from this intensive work further exemplify the possibilities of pre-natal care on an extended scale in reduction of infant deaths from congenital diseases and, during 1920, Brooklyn showed the lowest infant mortality rate in its history, and a substantial reduction from previous years, as follows:

INFANT DEATH RATE FROM CONGENITAL DISEASES
CITY OF NEW YORK.

	1916.	1917.	1918.	1919.	1920.
City of New York.....	37.98	36.49	38.7	37.2	35.3
Manhattan.....	34.45	36.50	38.6	37.8	35.6
Brooklyn.....	34.38	34.77	37.1	35.3	32.8
The Bronx.....	37.66	37.75	39.2	38.5	37.8
Queens.....	45.70	41.99	42.8	39.3	40.8
Richmond.....	45.78	40.29	52.2	44.3	44.0

With a more extended and, if possible, a general application of pre-natal instruction to mothers of the City, who stand in need of such care, the Bureau of Child Hygiene is convinced that there would result a lower infant mortality rate, especially during the first month of life, fewer deaths from congenital diseases, fewer premature and stillbirths, fewer accidents to mother and child, fewer deaths of mothers, fewer cases of sore eyes, better home conditions, increased maternal nursing, fewer deliveries by midwives, increased birth registration, better care of babies, or, to summarize—better mothers, better babies and better homes.

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SPECIAL PRE-NATAL SUPERVISION—CITY OF NEW YORK.

PERIOD.	Births Registered.	Deaths Under 1 Yr.	Deaths Under 1 Mo.	Death Rate Under 1 Mo. per 1,000 Children Born.	Number of Infants Born Under Supervision.	Number of Deaths of Supervised Infants Under 1 Mo.	Rate Under 1 Mo. Supervised Infants.	Number of Infants Saved if Rate in Supervised Infants Applied to the City Deaths Under 1 Mo.
1914.....	140,647	13,312	5,122	36.6	869	17	19.5	2,350
1915.....	141,256	13,866	5,067	35.9	1,385	37	26.0	1,395
1916.....	137,614	12,818	5,061	36.7	1,746	24	13.7	3,176
1917.....	141,564	12,568	5,115	35.3	1,501	22	14.6	3,049
1918.....	138,042	12,657	5,118	37.0	882	13	14.7	3,089
Five-year average.	139,830	13,044	5,096	36.3	1,276	22	17.7	13,089

Control of Morbidity and Mortality, Under Five Years of Age—In discussing the control of infancy and early childhood, it is natural to approach the subject, first of all, from the infant mortality standpoint, since same conditions which make for high or low infant morbidity and mortality reflect themselves in morbidity and mortality of later childhood.

Despite unusual prevalence of contagious diseases among infants, in early months of the year—particularly measles, whooping cough, and influenza—and the increase in respiratory involvement which followed in their wake, uncertain and stressed economic conditions; high cost of milk and other essentials; deplorable housing conditions, which resulted in overcrowding; the inclement weather; difficulty in securing coal and ice; the increased prevalence of respiratory diseases among adult members of the family, which resulted in contact infection; and, despite many other disturbing factors, infant mortality rate for 1920, was 85.4 per thousand children born, as against 81.6, for 1919. This rate of 85.4 is second lowest in the history of the City and, in view of trying conditions prevailing the result should be considered gratifying. It must be remembered that 1919 was an unusually favorable and exceptional year as regards infant mortality, not only for New York City but for the entire country. In fact, the infant mortality rate during 1919, within the registration area of the United States, was 87 per thousand children born, lowest rate in the history of the country. If we compare the rate of 1920, 85.4 with those for years other than 1919, it will be found this is considerably lower and some 3.6 points lower than in 1917; when 88.8 was the lowest infant mortality rate which had been recorded up to that time. Certain it is that rate of 85.4 for so cosmopolitan a city is a worthy accomplishment when one considers the rate in 1907, (year before organization of the Bureau of Child Hygiene) was 144 per thousand children born, and, in 1902, 181 per thousand children. A comparative table for the seven-year period is shown below:

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DEATHS AND DEATH RATE UNDER ONE YEAR PER 1,000 BIRTHS REPORTED,
CITY OF NEW YORK.

YEAR.	TOTAL BIRTHS REPORTED.	DEATHS UNDER ONE YEAR.	DEATH RATE PER 1,000 BIRTHS REPORTED.
1914.....	140,647	13,312	95
1915.....	141,256	13,866	98
1916.....	137,644	12,818	93
1917.....	141,564	12,568	89
1918.....	138,042	12,657	92
1919.....	130,377	10,639	81.6
1920.....	132,856	11,340	85.4

INFANT MORTALITY, BY BOROUGH, CITY OF NEW YORK,
FOR THE PAST FIVE-YEAR PERIOD.

YEAR.	MAN-HATTAN.	BRONX.	BROOKLYN.	QUEENS.	RICHMOND.	CITY, TOTAL.
1916.....	102.2	74.1	87.9	93.6	93.6	93.1
1917.....	94.0	79.4	84.9	91.5	91.2	88.8
1918.....	96.1	77.3	90.4	92.9	105.0	91.7
1919.....	87.2	73.9	77.4	79.7	87.8	81.6
1920.....	91.7	77.6	80.5	82.1	94.2	85.4

In analyzing morbidity and mortality of infancy and early childhood, reference will be made to tables above recorded, and to the more detailed tables which will follow, namely, Tables I, II, III, IV, V, VI, and VII. The outstanding features of the infant mortality situation, during 1920, will be found upon reference to these tables, as follows:

1. There was an increase of 2,479 births in the Greater City, over 1919. This increase was common to all boroughs, with exception of The Bronx, which showed a slight decrease. This was unusual since The Bronx, in former years, showed a higher birth rate than that of the other boroughs.

2. There was an increase in infant mortality rate, of 3.8 points per thousand children born over 1919. This applied to all the boroughs, the greatest increase being in the Borough of Richmond. As in former years, The Bronx showed the lowest infant mortality rate.

3. The increase in the City infant mortality rate was due, in the main, to increase in deaths from contagious and respiratory diseases. The increase in diarrhoeal diseases was comparatively small. The increase, over 1919, was 2.8 points for contagious diseases; 1.6 points for respiratory diseases; 0.5 of a point for diarrhoeal diseases. Contrary to experience of former years, there was decrease in the death rate from congenital diseases: 37.2, for 1919; 35.3, for 1920—a decrease of 1.9. It will be noted that Richmond

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showed the highest increase, from contagious and respiratory diseases, of all the boroughs.

4. In analyzing the situation from the standpoint of boroughs, the following will be noted:

(a) All show a fairly large increase in infant death rate from contagious diseases.

(b) With exception of the Bronx, rate being stationary, all boroughs show an increase in death rate from respiratory diseases, the largest increase being in Richmond.

(c) All boroughs, excepting Richmond and Queens, show an increase in the death rate from diarrhoeal diseases.

(d) The City as a whole and boroughs excepting Queens, show a decrease in the death rate from congenital diseases.

5. There was a very slight decrease in the infant mortality rate from all other diseases for the City as a whole. Manhattan and The Bronx show a decrease; Brooklyn, Queens, and Richmond, an increase.

The infant mortality situation took a peculiar trend during 1920. During the first seven weeks the rate was lower than for the corresponding period of 1919. Toward the end of the second month, however, we began to feel the prevalence of measles, whooping cough, and influenza, and their aftermath, in the form of respiratory complications. For a period of six months, infant mortality continued on the increase—the differential between 1920 and corresponding period of 1919 being from 10 to 15 points higher. During July, some improvement was noted, the differential falling to 7 or 8 point, and from September to the end of the year, a differential of from 2 to 4 points was reached. In other words, the infant mortality situation, during 1920, may be divided into three periods—(1) an early period of a few weeks in which the rate was lower than during 1919; (2) a period of six months during which there was a decided increase over 1919; (3) a period of decline of about four months, during which we “caught up,” so to say, sufficiently with the rate of 1919 to conclude the year with a differential of approximately 4 points. That is an increase of 3.8 points over 1919, or an infant mortality rate of 85.4 for 1920; as against 81.6, for 1919.

There is an interesting comparison to be made between the infant mortality of 1919 and 1920, to the effect that the low rate, during 1919, was largely due to the fact that incidence of contagious and respiratory diseases in infancy, during that year, was unusually low, while the increase in these diseases during, 1920 over 1919, was comparatively large.

The predominant cause of increased mortality, during 1920, may be stated to be the increased prevalence of contagious and respiratory diseases. While it is true that, in former years, we have had increases in infant mortality due to these group diseases, one cannot escape conviction that prevalence of these diseases during 1920 was due, in a large measure, to housing conditions. Respiratory and contagious diseases, in infancy and early

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childhood, are largely the result of close and indiscriminate contact, and the housing situation which prevailed necessitated not only doubling up of families, but housing of large families in a smaller number of rooms than was the case in pre-war times, afforded that close contact and inability of proper isolation which make for the spread of these diseases.

Infants and young children are most sensitive to unfavorable environment, and are first to suffer when such conditions arise. It is thus seen that the housing situation bore a distinct relationship not only to the health, well-being, comfort and happiness of the adult population but, also, to the health and lives of infants and young children.

The relation of housing conditions to prevalence of respiratory diseases, found substantiation in the survey, which was instituted by the Commissioner and it was found that between March, 1920, and January, 1921, overcrowding among the tenement population had increased 7 per cent. When it is remembered that of the 130,000 babies born in New York City, approximately 100,000 are born in crowded tenements, the import of this situation is self-evident.

Mortality Among Colored Infants—The experience of the Bureau has shown that localities which harbor a large colored infant population, are hazard zones of infant mortality. The existence of a large colored population in any locality, helps to raise infant mortality rate, just, as on the other hand, the presence of a large number of Russians and Austro-Hungarians (mostly Jews) in any locality, helps to keep down infant mortality rate.

For several years, the Bureau of Child Hygiene has made a special and intensive effort to keep in check or to reduce the inordinately high infant mortality which exists among colored children, a rate which in some former years was 100% more than among the white. The recent census has emphasized the need of infant mortality control among the City's colored population, since this has been shown to be 153,088, an increase of 66.0% since the census of 1910.

During 1920, 4,129 births of colored children were registered as against 3,604 for 1919. The number of deaths during 1920 was 677; as against 545, for 1919, and infant mortality rate among colored children, for 1920, was 164; as against 151 for 1919.

WHITE AND COLORED INFANT DEATH RATE PER 1,000 BIRTHS.

YEAR.	CITY RATE.	WHITE.	COLORED.
1915.....	98.2	96.2	202
1916.....	93.1	90.7	193
1917.....	88.8	87.1	168.9
1918.....	91.7	89.7	170.8
1919.....	81.6	79.6	151
1920.....	85.4	83.0	164

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It will be noted that, while the increase in infant mortality among white infants was 3.4 per thousand children born, the increase among the colored was 13. This increase was more or less to be anticipated, owing to large influx of colored population from the South, and unusual amount of doubling up among colored families which followed.

Stillbirths—There was nothing unusual in the stillbirth situation during the year. The number approximated that of other years.

Stillbirths.

1915.....	6,413
1916.....	6,253
1917.....	6,117
1918.....	6,793
1919.....	5,984
1920.....	6,234

The slight increase over 1919, is accounted for, partly, by the increased birth registration. The large number of stillbirths during 1918 was due, of course, to the influenza wave, which, when it did not kill by way of pneumonia, sepsis, or hemorrhage, not infrequently resulted in stillbirths.

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TABLE No. 1.
DEATHS OF CHILDREN UNDER ONE YEAR FROM CERTAIN CAUSES—DEATH RATES PER 1,000 BIRTHS REPORTED, 1918-1919

	TOTAL DEATHS.												RESPIRATORY.																	
	CONGENITAL.						DIARRHOEAL.						ALL OTHER CAUSES.						CONTAGIOUS.						RESPIRATORY.					
	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.						
1918—Deaths.....	12,657	5,710	1,302	4,479	884	282	596	302	60	163	60	11	2,993	1,400	249	1,121	182	41						
Death Rate.....	91.7	96.1	77.3	90.4	92.9	105.1	4.3	5.1	3.6	3.3	6.3	4.1	21.7	23.6	14.8	22.6	19.1	15.3	.....	.....	.....	.....	.....		
1919—Deaths.....	10,639	4,928	1,093	3,679	715	224	248	126	25	75	16	6	2,114	989	209	754	132	30	.....	.....	.....	.....	.....		
Death Rate.....	81.6	87.2	73.9	77.4	79.7	87.8	1.9	2.2	1.7	1.6	1.8	2.3	16.2	17.5	14.9	15.9	14.7	12.2	.....	.....	.....	.....	.....		
1920—Deaths.....	11,340	5,211	1,133	3,956	779	261	629	318	57	198	37	19	2,474	1,167	217	890	149	51							
Death Rate.....	85.4	91.7	77.6	80.5	82.1	94.2	4.7	5.6	3.9	4.0	3.9	6.9	18.6	20.5	14.9	18.1	15.7	18.4							

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TABLE No. 2.
DEATHS UNDER TWO YEARS—DEATH RATE PER 1,000 ESTIMATED POPULATION UNDER TWO YEARS.

	TOTAL DEATHS.												RESPIRATORY.											
	CONGENITAL.						DIARRHOEAL.						ALL OTHER CAUSES.											
	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.						
1918—Deaths	16,959	7,663	1,685	6,094	1,149	368	1,465	750	137	444	113	21	4,963	2,254	413	1,922	302	72						
Death Rate	68.9	67.8	56.7	68.9	68.1	80.8	5.7	6.6	4.6	4.8	6.4	4.6	19.3	19.9	13.9	20.8	17.1	15.8						
1919—Deaths	13,092	6,137	1,330	4,515	848	262	671	355	74	196	34	12	3,126	1,491	309	1,105	180	41						
Death Rate	51.9	55.3	47.3	49.4	48.8	58.8	2.7	3.2	2.6	2.1	1.9	2.7	12.4	13.4	11.0	12.1	10.4	9.2						
1920—Deaths	14,545	6,796	1,381	5,102	953	313	1,404	732	126	440	73	33	3,820	1,851	306	1,376	222	65						
Death Rate	56.5	60.5	48.6	54.2	52.5	66.4	5.4	6.5	4.4	4.7	4.0	7.0	14.8	16.5	10.8	14.6	12.2	13.8						

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TABLE No. 3.
DEATHS, 2-5 YEARS—DEATH RATE PER 1,000 ESTIMATED POPULATION, 2-5 YEARS.

	TOTAL DEATHS.												RESPIRATORY.																									
	CONGENITAL.						DIARRHOEAL.						ALL OTHER CAUSES.						CONTAGIOUS.						RESPIRATORY.													
	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.														
1918—Deaths	4,050	1,740	384	1,552	296	88	860	400	85	298	66	11	1,384	556	120	577	101	30	11.1	10.7	10.2	11.6	11.2	14.9	2.34	2.46	2.26	2.22	2.51	1.86	3.77	3.41	3.20	4.30	3.84	5.07		
Death Rate																																						
1919—Deaths	2,652	1,174	301	938	187	52	665	300	89	225	41	10	678	291	75	269	30	12	6.9	6.9	7.6	6.7	6.6	8.4	1.73	1.77	2.23	1.60	1.46	1.61	1.71	1.92	1.92	1.07	1.93			
Death Rate																																						
1920—Deaths	2,743	1,184	278	1,022	210	49	772	333	80	279	62	18	708	300	70	273	58	7	7.1	7.1	6.4	7.2	7.3	7.2	1.99	2.01	1.83	1.95	2.17	2.66	1.83	1.81	1.60	1.91	2.03	1.04		
Death Rate																																						

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TABLE No. 4.
DEATHS UNDER FIVE YEARS—DEATH RATE PER 1,000 ESTIMATED POPULATION UNDER FIVE YEARS.

	TOTAL DEATHS.												RESPIRATORY.						DIARRHOEAL.						ALL OTHER CAUSES.											
	CONTOGIOUS.				RESPIRATORY.				DIARRHOEAL.				ALL OTHER CAUSES.				CONTOGIOUS.				RESPIRATORY.				DIARRHOEAL.				ALL OTHER CAUSES.							
	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.	City.	Man.	Bx.	Bklyn.	Qu.	Rich.						
1918—Deaths	21,019	9,403	2,069	7,646	1,445	456	2,325	1,150	222	742	179	32	6,347	2,810	533	2,499	403	102	33.7	34.1	30.8	33.7	32.9	43.5	4.09	4.19	2.81	2.81	7.9	7.9	11.0	9.2	9.7			
Death Rate	33.7	34.1	30.8	33.7	32.9	43.5	3.73	4.17	3.30	3.27	4.07	3.05	10.2	10.2	7.9	7.9	11.0	9.2	15,744	7,311	1,631	5,543	1,035	314	1,336	655	163	491	75	22	3,805	1,782	385	1,374	211	53
1919—Deaths	24.7	26.0	24.1	23.5	22.7	29.4	2.10	2.33	2.41	1.82	1.65	2.06	6.0	6.3	5.7	5.9	4.6	4.9	17,288	7,980	1,659	6,124	1,163	362	2,176	1,065	206	719	135	51	4,528	2,151	376	1,549	280	52
Death Rate	26.8	28.7	23.0	25.9	24.9	31.6	3.37	3.82	2.86	3.04	2.89	4.45	7.0	7.8	5.21	6.96	5.99	5.99	26.8	28.7	23.0	25.9	24.9	31.6	3.37	3.82	2.86	3.04	2.89	4.45	7.0	7.8	5.21	6.96	5.99	5.99
1920—Deaths	7.32	7.32	7.69	6.87	8.24	10.8	4.18	4.51	2.76	4.38	3.02	5.49	4.91	5.31	4.48	4.61	4.75	4.54	4,725	2,034	555	1,627	325	124	3,165	1,476	523	1,092	222	292	492	225	64	6.0	6.0	
Death Rate	7.32	7.32	7.69	6.87	8.24	10.8	4.18	4.51	2.76	4.38	3.02	5.49	4.91	5.31	4.48	4.61	4.75	4.54	4,725	2,034	555	1,627	325	124	3,165	1,476	523	1,092	222	292	492	225	64	6.0	6.0	

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TABLE No. 5.
 BIRTHS REPORTED AND DEATHS UNDER ONE YEAR OF AGE FOR 1918 AND 1919—DEATH RATES UNDER ONE YEAR PER 1,000 BIRTHS REPORTED.

	1920.			1919.			1918.		
	Births.	Deaths under 1 year.	Death Rates per 1,000 Births.	Births.	Deaths under 1 year.	Death Rates per 1,000 Births.	Births.	Deaths under 1 year.	Death Rates per 1,000 Births.
Manhattan.....	56,839	5,211	91.7	56,546	4,928	87.2	59,434	5,710	96.1
Brooklyn.....	14,581	1,133	77.6	14,788	1,093	73.9	16,843	1,302	77.3
Brooklyn.....	49,171	3,956	80.5	47,526	3,679	77.4	49,568	4,479	90.4
Queens.....	9,485	779	82.1	8,966	715	79.7	9,518	884	92.9
Richmond.....	2,770	261	94.2	2,551	224	87.8	2,683	252	105.1
City.....	132,856	11,340	85.4	130,377	10,639	81.6	138,040	12,657	91.7

BUREAU OF CHILD HYGIENE

TABLE No. 6.
DEATHS FROM ALL CAUSES UNDER ONE YEAR OF AGE, 1917, 1918, 1919, 1920.

AGES.	MANHATTAN.				THE BROOKLYN.				BROOKLYN.							
	1917.		1918.		1919.		1920.		1917.		1918.		1919.		1920.	
	1917.	1918.	1919.	1920.	1917.	1918.	1919.	1920.	1917.	1918.	1919.	1920.	1917.	1918.	1919.	1920.
Under 1 month.....	2,346	2,266	2,105	2,145	559	559	448	462	1,730	1,796	1,583	1,024	1,730	1,796	1,583	1,024
1 mo. and under 2 mos.....	551	584	400	489	101	78	69	69	350	357	225	292	350	357	225	292
2 mos. and under 3 mos.....	460	446	395	403	73	67	60	60	243	243	242	247	243	261	242	247
3 mos. and under 6 mos.....	1,075	1,040	993	929	161	128	136	124	695	665	612	589	695	665	612	589
6 mos. and under 9 mos.....	881	941	748	864	157	141	86	132	596	629	491	547	596	629	491	547
9 mos. and under 12 mos.....	809	807	658	800	124	141	79	97	528	639	368	513	528	639	368	513
Total under 1 year.....	6,122	6,084	5,359	5,630	1,175	1,114	578	944	4,142	4,347	3,521	3,812	4,142	4,347	3,521	3,812

AGES.	QUEENS.				RICHMOND.				CITY.							
	1917.		1918.		1919.		1920.		1917.		1918.		1919.		1920.	
	1917.	1918.	1919.	1920.	1917.	1918.	1919.	1920.	1917.	1918.	1919.	1920.	1917.	1918.	1919.	1920.
Under 1 month.....	388	370	301	336	92	127	100	106	5,115	5,118	4,537	4,073	5,115	5,118	4,537	4,073
1 mo. and under 2 mos.....	81	58	51	50	16	14	16	16	1,098	1,091	821	922	1,098	1,091	821	922
2 mos. and under 3 mos.....	147	135	111	111	35	20	43	39	854	849	756	770	854	849	756	770
3 mos. and under 6 mos.....	127	110	104	101	33	50	41	43	2,753	2,905	1,803	1,678	2,753	2,905	1,803	1,678
6 mos. and under 9 mos.....	113	111	83	96	51	33	31	32	1,796	1,855	1,493	1,478	1,796	1,855	1,493	1,478
9 mos. and under 12 mos.....	87	113	49	73	32	41	22	23	1,580	1,741	1,176	1,506	1,580	1,741	1,176	1,506
Total under 1 year.....	845	823	634	700	284	289	247	254	12,568	12,657	10,636	11,340	12,568	12,657	10,636	11,340

TABLE No. 7.
DEATHS FROM INFLUENZA AND PNEUMONIA FOR 1918 AND 1919 UNDER ONE YEAR AND UNDER FIVE YEARS.

	INFLUENZA.						BRONCHO PNEUMONIA.						LOBAR PNEUMONIA.					
	1920.		1919.		1918.		1920.		1919.		1918.		1920.		1919.		1918.	
	Under 1 Year.	Under 5 Years.	Under 1 Year.	Under 5 Years.	Under 1 Year.	Under 5 Years.	Under 1 Year.	Under 5 Years.	Under 1 Year.	Under 5 Years.	Under 1 Year.	Under 5 Years.	Under 1 Year.	Under 5 Years.	Under 1 Year.	Under 5 Years.	Under 1 Year.	Under 5 Years.
Manhattan.....	78	214	73	201	171	565	740	1,326	602	1,035	780	1,486	227	517	226	510	379	988
Bronx.....	30	60	18	52	32	130	154	251	144	248	157	308	42	93	45	102	74	198
Brooklyn.....	93	232	69	214	163	612	522	933	465	795	677	1,447	166	385	155	371	259	738
Queens.....	17	33	16	60	40	124	107	204	98	145	121	256	22	49	17	42	39	113
Richmond.....	5	10	5	14	24	65	29	46	21	33	24	50	8	12	7	17	13	44
City.....	223	549	181	541	430	1,496	1,552	2,760	1,330	2,256	1,759	3,547	465	1,056	450	1,042	764	2,101

BUREAU OF CHILD HYGIENE

Morbidity and Mortality, Under 2; Between 2 and 5; and Under 5 Years Age—The same causes and conditions which keep infants well or make them sicken and die have a correspondingly good and bad influence upon health and lives of older children. Unfortunately, the infant mortality rate is the only numerical valuation which we have to show influence of activities of the Bureau of Child Hygiene, and its educational propaganda upon control of infant life, although it is known and felt by workers in child hygiene that the effect of such measures upon infant and child morbidity is correspondingly as great, if not greater. Absolute figures showing the influence of child hygiene activities upon child morbidity are not ascertainable. If however, as has been estimated, there are ten cases of illness for each death, the amount of illness prevented in infants and children, during recent years, through the enormous reduction in infant and child mortality in this city, will be readily appreciated. What such a reduction in family illness means from the economic standpoint, to say nothing of the freedom from worry and anxiety entailed by such illness, requires no extended comment. In general, it will be found that when the infant mortality rate is low, the mortality rate under two, and under five, is correspondingly low, and vice versa. There is in general, to which there are occasional exceptions, a definite correlation between the infant mortality rate and the death rate during later age periods.

This correlation between the infant mortality rate and rates in later childhood applies not only to the total infant mortality rate but to the rate of the various group diseases. A reference to Tables II, III, IV will show that, during 1920, there was an increase in the infant mortality rate under two, between two and five, and under five years of age, over 1919, from the contagious and respiratory diseases. The true index of infant mortality control in any community is the reflection which this type of work has upon the mortality of later childhood. Merely saving infants is insufficient, and cannot be considered constructive in the larger sense. Unless the infant mortality program "carries on" to later childhood it cannot be considered of high standard.

Marriages and Birth Registration.

The Greater City showed an increased number of marriages during 1920, as will be gleaned from the following:

Record of Marriages, City of New York.

1918	56,733
1919	60,256
1920	64,422

This increase was common to all boroughs. The birth registration, during 1920, was 2,479 in excess of that of 1919, 132,856 births being recorded in 1920; as against 130,377 in 1919.

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This increase in marriages and births was anticipated by the Bureau of Child Hygiene, and was due to return of soldiers during spring and fall of 1919, rehabilitation and reconstruction of homes that followed, and improved economic conditions.

During 1918, New York City had the lowest infant mortality rate of any of the ten largest cities in the United States, and during 1917, and 1919, St. Louis was the only large city which surpassed it. Recent investigations has shown that St. Louis formulated its infant mortality rate upon the *estimated* number of births, rather than upon *actual* number recorded. Under such circumstances, comparison is hardly in order and, for 1920, St. Louis will not be included in the birth registration area of the United States. The corrected figures of infant mortality rates for the ten largest cities, for 1920, are herewith given. The tables below show the comparative infant mortality rates of New York City, and the other nine largest cities in the United States, during 1917, 1918, 1919, 1920:

INFANT MORTALITY RATES FOR THE TEN LARGEST CITIES IN THE UNITED STATES BASED ON 1,000 BIRTHS REPORTED.

	1917.	1918.
New York City.....	88.8	91.7
St. Louis.....	79.6	91.4
Cleveland.....	100.0	97.74
Detroit.....	103.4	107.0
Boston.....	99.6	114.8
Buffalo.....	103.66	121.5
Pittsburgh.....	111.0	122.5
Philadelphia.....	111.0	123.9
Chicago.....	106.3	131.3
Baltimore.....	119.26	147.7

INFANT MORTALITY RATES OF THE TEN LARGEST CITIES IN THE UNITED STATES, 1919.

	BIRTHS.	DEATHS.	INFANT DEATH RATE.
New York City.....	130,377	10,639	81.6
St. Louis.....	13,570	1,021	75.2
Detroit.....	25,377	2,460	96.8
Boston.....	18,735	1,814	96.8
Buffalo.....	12,708	1,396	109.8
Pittsburgh.....	14,307	1,656	115.3
Philadelphia.....	42,046	3,778	89.8
Chicago*.....	63,359	5,766	91.0*
Baltimore.....	17,631	1,711	97.0

*Estimated only. Not willing to give out number of births, as they cannot enforce registration, on account of lack of funds.

BUREAU OF CHILD HYGIENE

INFANT MORTALITY RATE FOR THE TEN LARGEST CITIES IN THE UNITED STATES, BASED ON 1,000 BIRTHS REPORTED, 1920.

	DEATHS:	INFANT DEATH RATE.
New York.....	11,340	85.4
Cleveland.....	1,702	86
Philadelphia.....	3,857	88.57
Boston.....	1,966	100.8
Buffalo.....	1,388	101
Detroit.....	2,880	104.2
Baltimore.....	1,960	104.2
Pittsburgh.....	1,619	110.8
St. Louis*.....	.....	.....
Chicago*.....	5,667	.....

*Are not included in the birth registration area.

The tentative figures of mortality rates, of the larger cities of the United States, for 1920, seem to indicate that, in many cities, the infant mortality rate for 1920 will be larger than that for 1919, and that in some of the ten largest cities, such as Baltimore and Boston, the infant mortality rate will also be increased.

It has never seemed fair to us to compare this city with the other larger cities. New York City is practically in a class by itself, in so far as the birth registration is concerned, both as regards the number of births registered and the completeness of registration—98% to 99% of all births are registered here. During 1919, for example, with a birth registration of 130,377 equalled practically the sum total of births recorded in Chicago, Philadelphia and Detroit; and excelled total registration of St. Louis, Cleveland, Boston, Buffalo, Pittsburgh, Baltimore and Detroit. If comparisons are to be made at all, it would be reasonable to compare the Borough of Brooklyn and Chicago, and the Bronx with St. Louis. Comparing the infant mortality figures for 1919, we find that the Borough of Brooklyn, with an estimated population approximating Chicago, showed an infant mortality rate of 77.4, during 1919, and 85 for 1920, as against 91 for Chicago during 1919; and that The Bronx, with a population approximating St. Louis, an infant mortality rate of 73.9 for 1919, and 77.6 for 1920, as against 75.2 for St. Louis, in 1919.

From whichever standpoint, therefore, we view the infant mortality situation in New York City, during 1920, it must be admitted that the results, both for the City as a whole, and for the individual boroughs, were gratifying.

Baby Health Station Service—The Baby Health Stations are Bureau centres through which the activities for the reduction and control of morbidity and mortality of infancy and early childhood are carried out. Sixty stations were maintained and operated for the first three-quarters of the

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INFANT MORTALITY SUMMARY FOR 43 CITIES—1920.

Totals of the 53 Weeks in 1920 Taken from the Weekly Health Index.

City. ^a	Popu- lation. ^b	Total Deaths.	Death Rate. ^c	Deaths Under 1 Year.	Provi- sional Infant Mor- tality Rate, 1920. ^d	Infant Mor- tality Rate, 1919. ^e	MORTALITY DATA FOR CALENDAR YEAR 1919		
							Total Deaths.	Death Rate.	Deaths Under 1 Year.
Total	23,381,432	327,213	13.8	47,894	....	....	317,814	13.8	44,476
Albany	113,920	1,814	15.7	175	74	81	1,853	16.4	171
Atlanta	202,902	3,573	17.4	480	....	....	3,136	15.8	379
Baltimore	740,172	11,521	15.4	1,992	106	98	11,432	15.7	1,712
Birmingham	180,685	3,020	16.5	493	....	....	2,945	16.7	372
Boston	751,108	11,778	15.5	1,996	102	97	11,683	15.7	1,820
Buffalo	510,106	7,355	14.2	1,388	101	110	7,498	14.9	1,398
Cambridge	109,694	1,662	14.9	265	90	70	1,466	13.4	194
Chicago	2,727,504	35,276	12.8	5,743	....	....	33,493	12.5	5,741
Cincinnati	401,878	6,158	15.1	659	82	88	6,300	15.9	609
Cleveland	808,268	10,124	12.4	1,629	83	95	9,903	12.6	1,746
Columbus	239,307	3,584	14.7	416	91	94	3,308	14.1	402
Dayton	155,749	1,900	12.0	283	88	89	1,759	11.6	279
Denver	258,583	4,528	17.3	462	....	....	3,741	14.7	364
Fall River	120,546	1,789	14.6	474	134	119	1,729	14.4	409
Graod Rapids	138,822	1,851	13.2	317	102	85	1,563	11.5	240
Indianapolis	317,868	4,722	14.7	623	92	80	4,158	13.4	468
Jersey City	299,413	4,262	14.0	759	....	....	4,365	14.7	685
Kansas City, Mo.	328,326	5,364	16.1	759	....	....	4,914	15.3	592
Los Angeles	587,073	8,460	14.2	843	75	67	7,685	13.6	612
Louisville	235,289	3,463	14.5	352	77	96	4,068	17.3	387
Lowell	112,798	1,786	15.6	432	131	124	1,708	15.2	379
Milwaukee	460,894	5,462	11.7	988	91	101	5,008	11.0	1,028
Minneapolis	384,571	4,756	12.2	590	64	65	4,396	11.7	525
Nashville	118,740	2,330	18.5	322	....	....	2,185	18.5	260
Newark	417,654	5,607	13.2	996	....	....	5,315	12.9	856
New Haven	163,872	2,887	14.4	365	82	73	2,995	13.0	319
New Orleans	389,897	6,969	17.6	793	....	....	7,283	18.9	731
New York	5,665,148	74,260	12.9	11,464	85	81	74,131	13.3	10,593
Oakland	219,770	2,594	11.6	291	70	61	2,670	12.5	233
Philadelphia	1,837,270	26,960	14.5	3,919	89	91	25,920	14.3	3,797
Pittsburgh	590,876	9,774	16.3	1,607	108	114	9,410	16.1	1,643
Portland, Ore.	260,478	3,205	12.1	289	55	69	3,366	13.1	336
Providence	238,279	3,746	15.5	577	....	....	3,537	14.9	514
Rochester	299,015	3,648	12.0	565	83	74	3,646	12.5	473
St. Louis	777,320	11,106	14.1	1,133	....	....	10,254	13.3	996
St. Paul	235,617	2,917	12.2	325	62	68	2,776	11.9	331
Sao Francisco	513,122	7,420	14.3	516	57	62	8,014	15.9	815
Seattle	319,659	3,441	10.5	322	51	55	3,440	11.0	329
Spokane	104,194	1,494	14.1	155	64	55	1,190	11.4	119
Syracuse	173,393	2,652	15.1	429	98	91	2,194	12.9	364
Toledo	246,617	3,462	13.8	486	93	90	3,202	13.4	432
Washington, D. C.	443,056	6,551	14.6	810	89	85	6,372	14.7	698
Worcester	181,479	2,612	14.2	412	84	92	2,637	14.8	425

a—Cities appearing in the Summary are those shown for the 53 weeks in the Weekly Health Index.

b—Population estimated as of July 1, 1920, based upon the Federal censuses of 1910 and 1920.

c—Allowance has been made for the five extra days which must be deducted from the 53 weeks to give a period of 366 days.

d—Infant mortality rate is based upon deaths under 1 year as returned each week and estimated births, 1920.

e—Cities left blank are not in the registration area for births.

year and, during the latter quarter, eight others—those transferred to municipal control by Mr. Nathan Straus—were added, making sixty-eight in all.

The organization of these stations was substantially the same as in former years, one inspector being assigned to three stations—attending each, twice weekly, on so-called Clinic Days—and one nurse and one nurse's assistant being assigned to the station daily. At these departmental centres a large and varied number of activities are conducted which may be summarized as follows:

BUREAU OF CHILD HYGIENE

1. To supervise expectant mothers during pregnancy, the lying-in period and for one month after birth of child.
2. To advise mothers with regard to the care and feeding of babies.
3. To encourage, secure and maintain, entirely, or in part, breast-feeding, which is the life-saving measure par excellence for infants.
4. To supply, when artificial feeding is necessary, a good grade of clean, safe milk, at lower cost than the market price to those who are unable to pay the latter price.
5. To prevent by educational and prophylactic measures of child hygiene, the diseases of infancy and childhood caused by errors in diet or unhealthful living, and by such teaching to so increase the resistance of babies as to minimize the possibility of illness.
6. To serve as bureaus of information, or community centres, to which inhabitants of the neighborhood may come for advice and assistance regarding the health and physical welfare of the entire family.
7. To effect not only a reduction of infant morbidity and mortality, but indirectly, to promote the general health and well-being of the entire family by bringing into the homes rules for healthful living.
8. To afford centres where vaccinations may be performed throughout the year, thus saving public expense and discomfort of traveling to the various borough offices for such service.
9. To examine children of the pre-school age (two to six years), for the determination of physical defects which have been unrecognized, and which interfere with their well-being, and to secure necessary correction.
10. To afford co-operation to other city departments by calling their attention, through proper channels, to any infringements of their regulations met with by the field force of the Baby Health Stations.
11. To maintain an emergency corps of inspectors, day and night, to visit sick babies.
12. To organize Little Mothers' Leagues, of girls twelve years of age and over, to instruct them in the fundamentals of child diet and care, and to fit them for the care of their young brothers and sisters, and to train them to become efficient mothers of the future.
13. To secure the prompt admission of sick babies to hospitals.
14. To secure the prompt admission of expectant mothers to maternity institutions.

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15. To secure the prompt admission of babies to temporary shelters during the illness of their mothers.
16. To secure the prompt admission of infants and children to day nurseries, when the mothers are forced to work.
17. To secure the prompt admission of mothers and children to summer or convalescent homes.
18. To secure free excursions for children during the summer time.
19. To secure free ice for worthy poor families, for the proper preservation of milk.

In our efforts to control infant and child health, two essential and basic principles have been fostered: (1) The encouragement of maternal nursing; (2) enrollment of babies as soon after birth as possible.

Encouragement of Maternal Nursing—All programs for control of infant mortality must take into account, primarily, the mother, who is the main element in the child's environment. Mother's love and affection are not sufficient, in themselves, to protect infants. They must be advised and educated, and no advice to the mother is more productive of good for herself and child than the encouragement of breast-feeding. A continuous and persistent campaign of education on the value and importance of breast-feeding, as a life-saving measure, as a preventive of disease, and as a means of increasing bodily resistance, in infants, has been employed. It is universal knowledge that maternal nursing is the remedy above all others, for reduction of infant mortality, especially from diarrhoeal diseases. All textbooks and public health reports emphasize this fact, and many figures are submitted in substantiation. The advantages of breast-milk over all other forms of infant feeding has been aptly expressed by our own Oliver Wendell Holmes, as follows: "A pair of substantial mammary glands has the advantage over the two hemispheres, of the most learned professor's brain in the art of compounding a nutritious fluid for infants."

During 1920, as in previous years, the majority of infants enrolled at the Baby Health Stations were breast-fed exclusively, or in part; and the mothers who, upon admission, were inclined or desired to discontinue maternal nursing, or who, through advice, previous to admission, had done so, were urged to persist in breast-feeding and were instructed in all matters bearing upon the necessary essentials for a continuance of a proper milk supply; namely, hygiene, diet, personal, and home cleanliness, exercise, and other related subjects. It was not uncommon to find that many mothers, who had been led to believe that they could not nurse their babies, continued maternal nursing for many months as a result of the aforementioned supervision. The following table will show the character of the feeding of infants admitted to the Baby Health Station, during the past eight years:

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INFANTS ADMITTED TO BABY HEALTH STATIONS.

	PER CENT. BREAST-FED EXCLUSIVELY.	PER CENT. BREAST-FED AND BOTTLE-FED.	PER CENT. BOTTLE-FED.
1913.....	54.85	19.60	25.55
1914.....	62.47	17.21	20.32
1915.....	59.00	18.00	23.00
1916.....	68.00	14.00	18.00
1917.....	68.30	13.20	18.50
1918.....	67.00	17.00	16.00
1919.....	66.90	17.00	16.00
1920.....	66.70	13.80	19.50

There was a slight increase in the percentage of infants bottle-fed exclusively; due, no doubt, to the economic conditions which necessitated some mothers to engage in gainful occupation.

Enrollment of Babies as Soon After Birth as Possible—For many years, it has been the observation of the Bureau of Child Hygiene that over forty per cent. of all deaths under one year of age take place during the first month of life, and that about one-half of all deaths under one year of age take place during the first three months of life. The indication, therefore, for reaching infants as soon after birth as possible, in order that errors in diet, hygiene, and personal care, may be corrected in their incipiency, becomes apparent.

The year 1920 was no exception to the fact that a large percentage of infant deaths takes place during the first month, and the first three months of life. The following table demonstrates this fact:

DEATHS OF INFANTS UNDER ONE YEAR OF AGE.

	1919.		1920.	
	NO. OF DEATHS.	PERCENTAGE OF DEATHS DURING THE FIRST YEAR.	NO. OF DEATHS.	PERCENTAGE OF DEATHS DURING THE FIRST YEAR.
Under 1 month.....	4,537	42.7	4,673	41.2
1 to 2 months.....	821	7.7	922	8.1
2 to 3 months.....	756	7.1	770	6.8
3 to 6 months.....	1,906	17.9	1,798	15.9
6 to 9 months.....	1,443	13.6	1,671	14.7
9 to 12 months.....	1,176	11.0	1,506	13.3

The high percentage in infant deaths during the first month of life is closely and intimately associated and correlated with the supervision of ex-

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pectant mothers—pre-natal care—in that approximately seventy-five per cent. of all deaths during the first month of life are due to these causes. With these facts in mind, it is perfectly natural that the Bureau of Child Hygiene should seek the enrollment of babies at the Baby Health Stations, as soon after birth as possible. The results of our efforts will be noted below:

AGE OF INFANTS ADMITTED TO BABY HEALTH STATIONS—ARRANGED BY PERCENTAGE.
CITY OF NEW YORK.

	1915.	1916.	1917.	1918.	1919.	1920.
Under 1 month.....	11.66	13.50	11.75	11.0	12.3	12.7
1 to 2 months.....	22.62	21.10	25.63	26.0	26.3	28.1
2 to 3 months.....	20.91	17.20	18.28	18.0	18.1	19.4
3 to 6 months.....	25.26	22.00	22.49	23.0	22.0	21.1
6 to 9 months.....	11.98	14.20	12.20	13.0	12.3	11.1
9 to 12 months.....	7.57	12.00	9.65	9.0	8.9	7.6

During 1920, the Bureau of Child Hygiene was a little more successful than during the past three years, both in the registration under one month, and under three months of age. While the number of infants under one month of age registered with the Baby Health Stations shows a slight increase, the number is altogether too small, and renewed and persistent effort will be made to increase this registration.

Early enrollment during the first month, and during the first three months of life, is made possible through reference of infants by pre-natal nurses, the Maternity Center Association, various nurses' settlements, Babies' Welfare Federation, the canvass of babies registered with the Department of Health, as secured from birth certificates, and by mothers and citizens of neighborhoods in which the stations are located. The policy of the Bureau of Child Hygiene in forwarding to parents of all babies registered, approximately within ten days after birth, a duplicate birth certificate with incidental educational literature, calling their attention to advantages of Baby Health Stations, has been very helpful in securing early enrollment, in that many mothers have taken advantage of the co-operation offered by the Department.

The Baby Health Station service has established itself permanently in the public eye. The popularity is attested by the increase of stations and by the increased enrollment. The following tabulation shows registration of Baby Health Stations since their organization in 1911:

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 BABY HEALTH STATION ENROLLMENT.
 CITY OF NEW YORK.

Year.	NUMBER OF STATIONS.	NUMBER OF CHILDREN UNDER 1 YEAR OF AGE, ATTENDING STATIONS.	NUMBER OF CHILDREN 1 TO 2 YEARS OF AGE, ATTENDING STATIONS.	NUMBER OF CHILDREN UNDER 2 YEARS OF AGE, ATTENDING STATIONS.
1911.....	15	5,006	2,146	7,152
1912.....	55	21,316	9,136	30,452
1913.....	56	26,350	11,293	37,643
1914.....	56	27,165	11,643	38,808
1915.....	59	37,197	8,865	46,062
1916.....	59	39,646	8,656	48,302
1917.....	59	41,496	5,569	47,165
1918.....	59	41,691	4,449	46,182
1919.....	60	39,304	6,571	45,875
1920.....	60*	42,152	6,281	48,433

* The eight additional stations, transferred to the City of New York by Mr. Nathan Straus, are not included in this tabulation.

It is gratifying to be able to report that the total registration during 1920, was in excess of 1919. There is an increase in the registration of babies under 1, and a decrease between 1 and 2 years of age. This is in line with the policy of the Bureau of Child Hygiene to secure as many babies as possible under one, that is as early in life as possible. Of the total enrollment during 1920, 48,433 were under two years of age, and 42,152, or 89%, were under one year of age.

Still more gratifying, is the fact that increased registration, during 1920, was common to all boroughs, the greatest occurring in Brooklyn. Manhattan has a large number of allied child-caring health stations, while, in Brooklyn, baby health station service is limited to the Department of Health. This accounts for the larger increase in registration in Brooklyn, and is also due to increased activity along pre-natal lines.

From year to year, influence of Baby Health Stations has shown itself, in the general improvement in personal and home cleanliness and hygiene, in greater responsiveness of the clientele to advice and suggestion, increased confidence of the nurse as a friendly visitor, better understanding of preventive measures, of first-aid during illness, and in improved regularity in attendance. Many babies residing in districts beyond confines of stations, and securing milk from other sources, have been enrolled, thus bearing testimony to the fact that the public has come to look upon these stations as educational centres rather than as milk depots. We have experienced no difficulty in securing a satisfactory enrollment. On the contrary, one of our greatest difficulties has been that we have neither sufficient accommodations nor working force to adequately meet demands. In some stations enrollment has been exceptionally large, 500 to 700 babies, a number which

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makes it exceedingly difficult to afford each and every child attention that is necessary. In order to offset this, a plan has been perfected whereby insistence upon attendance of the babies weekly has been modified, and a program for attendance weekly, bi-weekly, or tri-weekly, according as they are "very young," "sick," "weak," "delicate," "artificially fed," "breast-fed," or "entirely well," has been formulated. By this means the Stations with an unusually large enrollment have reduced the daily attendance, to within reasonable limitations, and babies who need attention most have been given special consideration. In the program of last year provision was made to keep a watchful eye on babies who were weak, delicate, sick, or suffering from malnutrition, by recording on their history cards "S" (sick) or "-" (minus, delicate). In former years, babies of this type, whose mothers, because of ignorance, carelessness, or neglect, refused to bring them to the stations, regularly, were dropped from the rolls after every effort was made to secure regular attendance. It was felt that these babies should not be made to suffer for the sins of omission or commission of their parents. These babies, whether enrolled, or when found on home visits, are now kept under observation, and followed up at home, and all necessary advice and instruction given. While it is true that, with a large number of this class of infants under supervision at the stations, the number of deaths will increase, nevertheless, it is felt that, as a result of intensive supervision, a certain number who would otherwise have died, were saved.

We were, furthermore lead to formulate this program as the result of our experience with district or home visiting by nurses, during summer months, when it was found that, of the large number of mothers and babies referred by them to Baby Health Stations, only 3% to 6%, during different years, took advantage of this opportunity and enrolled their babies. Since many of the histories showed them to be delicate, indication for permanent follow-up was clear. During 1920, special effort was made to secure subsequent enrollment of these children. Our efforts were crowned with success, as is shown by the fact that of 11,288 infants referred to the stations, 1,769, or 15%, were subsequently enrolled, during 1920.

The influence of the educational propaganda is not limited to the station clientele alone. It spreads through the neighborhood, and many of the station mothers are our best canvassers and advertisers. The public has come to learn that these stations are prophylactic centres, or places designed for keeping well babies well. This has been exemplified, from year to year, by the fact that rather a small percentage of enrolled babies are found to be ill or suffering from gastro-enteritis or malnutrition, at the time of admission. The figures show that, during 1919, 4.6% of all the babies enrolled were found to be suffering, at the time of admission, with gastro-enteritis; during 1920, 4.8%; while only 12.1% of the children en-

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rolled were found to be suffering from malnutrition, in 1919, and, 12.2%, during 1920.

Milk Dispensed at the Baby Health Stations—Up to the year 1920, there was only one type of milk sold and dispensed at Stations, namely, Grade "A." This was sold as whole milk, in quart bottles. During 1920, three types of milk were sold, (1) Grade "A"—for infant use; (2) Grade "B"—for older children and family use; (3) So-called "Straus" milk—milk of different strengths, modified according to ages of infants, dispensed and sold in individual bottles; (4) Whole Milk, in 8 and 16 ounce bottles.

1. *Grade "A," Bottled, Pasteurized Milk*—Although this type of milk has always been considered the lesser part of the stations' usefulness and influence, the amount sold is necessarily large, since, it is dispensed not only to babies who must be artificially fed, but to nursing mothers, expectant mothers, older children suffering from malnutrition or illness, cases of pulmonary tuberculosis, convalescents from influenza or general diseases, school children in open-air classes, in fact, to anyone who presents a certificate from a duly accredited physician, or allied child-caring or social agency, to the effect that, in their opinion, the person making application stands in need of milk, and is unable to pay prevailing market price.

During 1920, 5,973,264 quarts of Grade "A" were sold at the sixty Baby Health Stations, an increase of 360,000 quarts over 1919. This increase is common to all the boroughs, with the exception of Brooklyn, in which the decrease was due to sale of milk so adjusted as to have Grade "B" used by older children and adults.

QUARTS OF GRADE "A" MILK SOLD AT BABY HEALTH STATIONS.
CITY OF NEW YORK.

YEAR.	MAN- HATTAN.	THE BRONX.	BROOK- LYN.	QUEENS.	RICH- MOND.	TOTAL.
1918.....	2,762,213	157,265	2,740,247	102,307	53,393	5,815,425
1919.....	2,653,465	189,870	2,612,284	101,209	55,304	5,612,132
1920.....	3,029,615	234,735	2,538,956	108,035	61,923	5,973,264

This increased sale of Grade "A" milk, during 1920, over 1919, brings out the following points:

1. As a result of educational propaganda, the public has become educated to the fact that milk is not only an essential, vital and indispensable food for infants and growing children, but that, even at the advanced price, it is the most economical of all foods. The public has come to purchase milk in many cases to the exclusion of other less essential and less nourishing articles of feeding, particularly, for infant and child consumption. It has been educated to the fact that milk is a food, not a drink or beverage.

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2. A large part of the public prefer to use Grade "A," rather than Grade "B," even for older children and adults. The price is not always the important consideration. They have learned the economy of paying more for a safe, clean milk.

3. No matter what the market price of Grade "A" has been, the selling price at stations has been from three to five cents less, per quart. With three to five cents, per quart saved, the economic advantages accruing to the poorer element—which must of necessity have milk for infants and growing children—on the basis of almost six million quarts annually, is readily appreciated. On the basis of a differential of only three cents per quart, the 5,973,274 quarts sold during 1920 would mean a saving to the public of \$179,197.62. The price of milk at the Baby Health Stations during 1920 fluctuated correspondingly with market conditions, and varied from 13½ cents per quart in May (the lowest), to 17½ cents per quart during September, October and November.

II. Grade "B" Pasteurized, Bottled Milk—The sale of Grade "B" was begun very late in 1919, and was extended, during 1920, to include the majority of Baby Health Stations. This type of milk was dispensed because of the desire of the Commissioner to place at disposal of the public, at as low a price as possible and to as great an extent as possible, a high grade milk for family use, particularly for the use of older children, who did not require Grade "A." The differential between the selling price of Grade "B" at the stations and the market price, for the same grade was, at times, as much as 3 or 4 cents. In this wise, the tenement population was assisted in reducing cost of living, and had placed at their disposal, on "cash and carry" basis, a good quality of milk below prevailing market price. The sale of this milk was conducted after 1 P. M., so as not to interfere with the regular station service, which is from 8 A. M. to 1 P. M. daily. Special care was exercised to see that infants and young children continued to receive Grade "A," bottled, pasteurized milk.

QUARTS OF GRADE "B" MILK SOLD AT BABY HEALTH STATIONS, 1920, CITY OF NEW YORK.

Grade "B" Milk Sold in Greater City..... 522,881 quarts

III. Straus Milk—With the transfer to municipal control of eight baby health stations, formerly maintained by Mr. Nathan Straus, the City took over the plant, and continued to pasteurize and modify milk, and dispensed it in individual bottles, along same lines as conducted by Mr. Straus. These stations were limited to the Borough of Manhattan. The Straus policy was practically uninterrupted. The selling price of the modified milk remained substantially the same. The selling price of Straus "whole" milk, however, was slightly increased, in order to make it conform to the price of whole

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milk sold at the Baby Health Stations; this type of milk being exactly the same as dispensed from the pasteurizing plant, and furnished by the same company. From September 1 to December 31, 1920, 269,940 bottles of this milk were sold.

The Bureau of Child Hygiene holds fast to the belief that the best scientific method for feeding infants is through use of modified bottled milk, rather than in the form of prepared individual feedings. For this purpose formulae were regulated by doctor-in-charge to fit individual children. Practical demonstrations of the prescribed formulae were given with special care by the nurses at stations, and in the homes, and were repeated until the nurse was convinced that the mother understood. No hard and set rules were outlined for physicians in the artificial feeding of infants, except that two fundamental principles were insisted upon. (1) To urge secure breast-feeding, wherever possible; (2) to fit the formula to the individual needs of the child, as regards age, weight, development and digestive capacity. For the most part, simple dilutions of whole milk, with addition of sugars, were used. In difficult cases, various food modifications and proportions were tried. Cases of malnutrition and marasmus were given special attention and effort was made, in selected cases, to have a neighbor nurse a baby, or furnish "expressed" breast-milk. Supervising medical inspectors acted as consultants to the regular Baby Health Station inspectors, and arranged to see and discuss with them, periodically, such feeding cases as were proving difficult to control. This supervision was productive of good results.

Milk and Child Health Exposition, and "Better Baby" Contest—In order to emphasize the importance and value of milk as a food, and to increase its consumption, a milk and child health exposition was held at the Grand Central Palace, May 17th to May 22d, 1920. Furthermore, in order to stimulate interest in better babies and better children, a "Better Baby and Child Contest" was held, in connection with this exposition. The Bureau of Child Hygiene co-operated in every possible way to make the undertaking a success. Baby contests were held, and by a process of elimination the best babies under two and from two to six years were determined by inspectors of the Department and a special committee of children specialists.

At the exposition, a model Baby Health Station was established, at which mothers were instructed on baby care. A separate day of the week was set aside, and known as "Borough Day," at which the prize winning baby and child of each borough were presented with medals. A special feature of the exhibit was a weighing booth, at which all children were weighed and given result of the findings, and another booth at which two hundred children were fed every day, at five o'clock. In arrangement and conduct, the exhibit of the Bureau of Child Hygiene surpassed any of its kinds in previous years.

Co-operation—There are few phases of public health work in which co-operation is so necessary or so productive of great good as in baby welfare control. Since causes of infant mortality are so complex, methods of approach must necessarily be many and varied, and in this municipalities frequently require assistance, as well as moral and material support of allied child-caring, social, charitable, philanthropic and other agencies, as well as newspapers. For, after all, control of child life is more of a socio-economic than a medical problem; more a question of education and prevention, than of treatment; more one of sufficient family income, good housing, personal and home hygiene, avoidance of over-crowding, employment, gainful occupation of mother, racial or religious prejudices, customs and superstitions: in other words, it is more a question of environmental adjustment, industrial opportunities, living wage, and, civic co-operation, than of medical and nursing care, per se. From this point of view it will be readily understood and appreciated, that in bringing to infants and children, care and attention necessary for their well-being, a large number of agencies are necessary. Child care can no longer be considered an individual problem, nor the problem of a municipal health department alone. It must be looked upon rather as a community problem, or a close business partnership of all agencies and individuals interested in child welfare.

It is gratifying to be able to state that the Bureau of Child Hygiene has received considerable support and co-operation from private agencies and many city departments, which made it possible to enhance the efficiency of the service.

Since the control of child life is so closely related to social and economic conditions, social service activities have always been and probably always will be an integral part of the work. In this direction we have been immeasurably assisted by co-operative agencies. It is impossible to mention all of these agencies. Among the many may be noted: the various Mayor's committees—committees on coal, ice, housing, excursions, etc.; National League for Women's Service, Knights of Columbus, Catholic Big Brothers, Big Sisters, United Hebrew Charities, Volunteers of America, Order of Elks, Salvation Army, New York and Brooklyn Tuberculosis Committees, Brooklyn Bureau of Charities, American Red Cross, St. John's Guild, Young Women's Christian Association, Herald Free Ice Fund, Wholesale Ice Company, Teachers' College, Pratt Institute, Red Stocking Committee of Brooklyn, Social Service Exchange; many newspapers, particularly N. Y. American and Journal, N. Y. Tribune, N. Y. Herald, as well as newspapers printed in foreign languages; the Academy of Medicine, United States Public Health Service, State Industrial Commission, American Frugality Association; other city departments; Police, Fire, Tenement House, Street Cleaning; and, the Babies' Welfare Federation. This latter organization, a federation of 172 agencies interested in child welfare activities, with a

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central office in the Department of Health—acts as a clearing house to all membership agencies, and unifies activities, without interfering with the individuality of any of them. City departments, fresh-air homes, day nurseries, dispensaries, maternity institutions, baby health stations, homes hospitals, community associations, relief agencies, settlements, temporary shelters, in fact, all types of social service relief, medical, institutional and other care, are represented in the membership. Through this federation, provision is made for the care of pregnant women, prior to and after delivery, for prompt admission of sick babies into hospitals and institutions, for admission of babies and children into temporary shelters and nurseries, during periods of family trouble; for distribution of free ice, co-operation of relief agencies, securing of “wet” nurses, admission to baby health station of babies discharged from maternity institutions, and for a number of other measures, which bring much comfort, and material relief, to needy and deserving families. This type of organization exemplifies the “one for all and all for one” principle, and has been a contributory factor of no small moment in the reduction of infant mortality in New York City, in recent years. A very excellent directory of child welfare agencies for Greater New York has been compiled by this organization, and is a very valuable and practical reference work.

Special mention must also be made for the “Milk for the Children of America Committee,” of which Mrs. Oliver Harriman is president. This committee donated several thousand dollars for free distribution to needy children of pre-school age, during four months of the year, April, May, June and July, and in this wise, made it possible to raise the nutritional standard of many poorly nourished children. Six thousand quarts of milk, per month, were distributed in the Boroughs of Manhattan, Bronx, and Queens, through the good offices of this organization.

The Bureau of Child Hygiene was also fortunate in having placed at its disposal, through the office of the Commissioner, money supplied by the Board of Estimate and Apportionment, the result of a surplus realized from sale of army foodstuffs. This money was used to meet frequent requests received from outside sources, during the year, for free milk.

The educational advantages of the Baby Health Stations were again emphasized during 1920, in the Borough of Queens, because of the limited number of stations and the large distances that it is necessary to travel, six temporary Stations were established at public schools, and at branch offices of the Department of Health, or other places.

These temporary Stations were supported during 1920, as in previous years, largely through voluntary contributions of mother's clubs, associated with the schools, or, through private funds, and arrangements were made with a local concern, in some instances, to supply a high grade of milk for infant and child feeding, below the prevailing price. The bureau of Child

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Hygiene furnished necessary medical and nursing service. One of these centres was maintained by the Sunshine Committee of the 20th Century Club. These temporary Stations in Queens supervised 758 babies, and were located in districts where no Baby Health Station service had been organized and afforded considerable assistance to the needy in these localities.

The Mayor's Committee of Women afforded a very special type of co-operation, by providing free tri-weekly, all-day water trips, for mothers and children, during the summer, on steamboat "Correction." These excursions began on June 2d, and gave mothers and children a day's pleasure and recreation, which was greatly appreciated by many thousands. The Bureau of Child Hygiene provided the necessary corps of doctors and nurses and excellent co-operation was received from Police and Fire Departments. Every provision was made for the feeding, care and comfort of mothers and babies and, at the end of the summer, this activity was voted a decided success.

The value of the Baby Health Stations as educational factors and as agencies for the control of infant and child life, was again emphasized during the year through the establishment of additional Stations, by outside child-caring agencies, American Red Cross, Judson Memorial, Visiting Nurse Association of Brooklyn, Staten Island Health Centre, Richmond Hill Century Club. An interesting feature of the establishment of these new stations was the fact that some of them opened in what was formerly known as the "corner saloon." If we only could have as many Baby Health Stations in the Greater City as we had saloons, what a wonderful protection of maternity and infancy would result.

Mothers' Classes—While personal and individual instruction is the aim of Baby Health Station service, it has been found necessary and expedient, at times, to hold various classes for mothers, where general group instruction in preventative health measures were given.

The fact that respiratory diseases have assumed such an important place in the cause of infant mortality has demonstrated the need for instruction in preventative measures. At these classes, instruction was given on all factors which were likely to increase respiratory diseases; high mortality among infants and young children, which resulted in these conditions; relation of contagious diseases, as well as on ways and means for their prevention.

Cooking classes were held and mothers were instructed in proper preparation, care, selection, and cooking of these articles of food which were most important and essential for growing childhood. As a rule mothers provided the necessary "raw material"; in other instances, funds for food articles were secured by nurses through personal friends. In many instances, the prepared food was given, at the suggestion of the

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mothers, to needy children or families in the neighborhood. Economic conditions of the day rendered it important that the tenement population should be shown how to spend their money most judiciously. Special emphasis was given to the fact in all these classes, that milk was the best food for infants and young children, and practical demonstrations were given as to various ways in which it could be prepared to suit the taste as well as food habits of the different nationalities.

Sewing classes were conducted mainly for expectant mothers, and demonstrations were given how to prepare necessary articles at a small price. In several cases material was donated through agencies or private individuals. The outstanding feature of these classes was the fact that they not only provide material advantage to mothers, but by affording them a certain amount of social intercourse, they relieved the monotony of their daily life, and gave them a healthier mental attitude, which is very essential to comfort during pregnancy.

Classes in corrective exercises were also held at several stations, and teachers were provided by private agencies.

The same applied to classes for correction of speech defects. These were open to all children in the neighborhood, and proved of considerable value.

The nutrition classes, as popularized by Emerson of Boston, were also established at several of the stations, and not only mothers, but "Little Mothers" were instructed on the value of various food articles, proper purchase and their preparation. The nutrition classes were also established by private agencies.

Little Mothers' Leagues—Little Mothers' Leagues have been one of the features of the Bureau organization for many years. These are organizations composed of school girls, 12 years of age and over, conducted at many of the Baby Health Stations, as well as in public and parochial schools. When started in vacation period, they seldom can be carried on through the following school year. In order to make them all-year-round institutions, organization was effected, and, at many of the stations, progressive leagues of these girls will be found. During the year, thousands of school girls come under educational influences of inspectors and nurses of the Bureau of Child Hygiene, through these leagues, and as a result of instructions given baby brothers and sisters are better taken care of and the girls become better prepared for the exacting duties of motherhood. In many of these leagues, cooking classes have been formed in addition to their regular program, and these girls have been taught by nurses and expert dietitians, from allied child-caring co-operative agencies, the essentials of proper dietetics and cookery.

The leagues are organized, for the greater part, in poorer sections of the City where mothers, by reason of poor financial status and ignorance of rules for healthful living, need assistance and co-operation of the older

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girls. Most of the league membership consists of children whose parents have been born in foreign countries.

The Little Mothers' League of Chinese girls, organized in 1919, in one of the Baby Health Stations, has been continued, and is influential in spreading child welfare activities to the Chinese population.

The membership of the Little Mothers' Leagues of public and parochial schools and Baby Health Stations, totals about 15,000 annually. These leagues have been in existence now for over ten years and, with an annual registration of many thousands, it can readily be appreciated, what a potent force such an organization exercises over control of infant mortality.

These girls are very responsive to instruction, and have proved of great assistance to the nurses, not only in acting as interpreters for mothers, and as health visitors to neighborhood mothers, but, for urging refractive mothers to bring babies to stations regularly.

The Little Mothers' League is a type of preventive health work which is comparatively easy to secure, costs the municipality practically nothing, and produces tangible results. It is a type of work which makes an instantaneous appeal to visitors, and one cannot observe a meeting held by these youngsters, without going away with the feeling that the activity is well worth while. It is no exaggeration in our opinion to say that a large part of reduction in infant mortality which has taken place during recent years, is due to cumulative education of Little Mothers of the Greater City.

District or Home Visiting by Field Nurses—Unfortunately, not all mothers of the tenements, in which the largest proportion of infants is born, take advantage of opportunities afforded at Baby Health Stations. In point of fact, many of the babies who need such care and attention most are never brought to these centers. Since many mothers will not come to us, we feel, in the interest of the baby, we should go to them. Thus it is that, during the months of July, August, and part of September, supervision of infant life is supplemented by the assignment of an augmented force of nurses, from the Division of School Medical Inspection. During these months, as many school nurses as possible are assigned to special districts, in which previous experience and analysis have shown either that a high infant mortality, or a large infant birth registration exists. Each nurse is required to canvass and secure 150 infants in her respective district, and to keep these infants under careful supervision. In the event of removal, death, refusal to accept service, or other circumstances, which result in a number less than 150, she is responsible for making up the original complement of 150 by canvassing the neighborhood. This work, while conducted for only a few months, is, nevertheless, of an intensive character. Visits are made to these infants according to the needs of the situation; to well babies, at least once a week for every ten days; and to sick, weak, delicate infants, as frequently as necessary. These nurses make their daily office or headquarters, in most cases, at one of the adjoining Baby Health

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Stations, and hold conferences with medical inspectors, to whom all sick and subnormal cases are referred. This is the only type of conditions treated, although first-aid, or emergency care, is given in cases ill with other diseases, and this is followed by every effort to see that the baby receives subsequent care at the hands of private physician, hospital, or dispensary.

The volume of this work performed, during 1920, was somewhat larger than during 1919. It is lower than during 1918, because of the fact that budgetary provision was not allowed for as many temporary "summer nurses" as during that year, and because of vacancies and other special activities which were conducted during the summer. Attention is called to the fact, however, that, despite the many shortcomings during 1920 in the nursing service, such a special assignment of a large number of nurses during the summer for special employment certificate work, vacancies, resignations, special studies, etc., approximately 1,800 more infants were supervised. A tabulation of the number of infants under supervision by the Bureau of Child Hygiene, through its district or home visiting nurses, since 1911, is herewith appended:

DISTRICT OR HOME VISITING DURING SUMMER MONTHS—NEW YORK CITY.

	UNDER SUPERVISION.	SICK BABIES TREATED.	DEATHS FROM DIARRHOEA.	DEATHS FROM OTHER CAUSES.	TOTAL.	RATE PER 1,000 BABIES UNDER SUPERVISION.
1911.....	16,987	3,382	..	..	237	13.9
1912.....	22,417	1,872	86	121	207	9.2
1913.....	18,609	1,211	89	93	182	9.7
1914.....	17,826	781	47	64	111	6.2
1915.....	19,109	620	90	91	181	9.4
1916.....	17,563	934	65	134	199	11.3
1917.....	14,594	18	42	49	91	6.2
1918.....	19,069	..	42	34	76	3.9
1919.....	10,397	..	33	37	70	6.7
1920.....	12,134	..	30	21	51	4.2

By way of comparison, the following table is appended:

INFANT MORTALITY DURING THE SUMMER.

BIRTHS, DEATHS AND RATE PER 1,000 LIVING BIRTHS FOR THE PERIOD. JULY 3D TO SEPTEMBER 4TH, 1920.

	BIRTHS.	DEATHS.	RATE.	RATE PER 1,000 SUPERVISED BABIES.
Manhattan.....	9,972	1,004	100	6.3
Bronx.....	2,500	131	52	5.1
Brooklyn.....	8,452	613	72	2.7
Queens.....	1,716	110	64	0.0
Richmond.....	477	45	94	6.3
City.....	23,117	1,903	82	4.2

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The latter table shows the *infant mortality rate per thousand babies under supervision*, through this district work, as compared with the rate per thousand living births, for the period from July 3d to September 4th, in all babies, which includes supervised babies.

From July 3d to September 4th is the period during which this special intensive district visiting and supervision were conducted. It will be readily seen from these tables how this type of work is conducive to a lowering of infant mortality, and how, if it were possible to spread same over the entire year, a very decided reduction in the infant mortality rate would take place.

An interesting fact in connection with summer district visiting, during 1920, was, that we succeeded in securing subsequent admission into the Baby Health Stations, at the expiration of the summer, of a much larger percentage of infants than during former years. As has been previously noted, it has been our experience that from 3 to 6% of these babies which, at the expiration of the summer are referred to the Baby Health Stations, are subsequently enrolled. During 1920, as aforementioned, 15% were enrolled. The combination therefore, of Baby Health Station service, for the year round, and home visits during the summer months for the babies whose mothers will not bring them to the Baby Health Stations, has proved of distinct usefulness.

Physical Examination and Follow-up of Children of Pre-School Age—

For many years the Bureau of Child Hygiene has recognized the existence of a gap in its administration of child hygiene activities, between the Baby Health Station child and the school child. This gap is the child of pre-school age, from 2 to 6 years. The pre-school age period, is unfortunately one that has not been given sufficient attention by public health authorities. It would, perhaps, be fairer to say that the desire for giving this attention exists, but that the means are not at hand for perfecting the necessary organization. The pre-school age has very aptly been called, by one of the public health nurses, the "careless age," signifying, as she puts it, the fact that less care is given at this period than at almost any other period of child life. This pre-school age should be the "careful" period of childhood, and special care should be given to these children, because the seed for much illness in later life is sown at this age.

Ample provision has been made, by most progressive health departments, for the control of infancy and for the supervision of the school child, and commendable results have been accomplished. The pre-natal and the pre-school age periods continue to be the two weak links in the chain forged about the control of child life. Just as the best time to take care of the health of the infant is before it is born, so the best time to take care of the health of the school child is before it enters school, rather than after. With the neglect of either the pre-natal period or the pre-school age period, the con-

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tinuity of successful control of child life, will be interrupted. The Bureau of Child Hygiene has preached for a great many years the importance and necessity of directing attention to the pre-school age period. We have had neither the appropriation, nor the personnel to conduct this work on the large scale that it merits. The Baby Health Stations, established primarily for care and feeding of babies under two years of age, have not lent themselves, under the present system of organization, to any extended supervision of children of the pre-school age, because of the increased volume and scope of infancy and early childhood care, necessitating a corresponding increase of time and energy on the part of the limited medical and nursing force; because mothers seem to have all they can do to look after the baby or babies that are brought to the stations without the added burden of bringing children of the pre-school age to these centres.

Although comparatively few examinations at this age were made at the Baby Health Stations, during 1920, sufficient data have been compiled from a study of previous years, and, from examinations conducted by co-operative agencies, to justify the recommendation that this type of work be extended by the municipality.

The percentage of malnutrition, among children of pre-school age, is somewhat higher, as a rule, than among those going to school and the existence of physical defects among them is quite as common and, in some instances, more so. If physical defects which interfere with the well-being and educability of the child were remedied or removed, during the pre-school age period, the health and well-being of the school child and his scholastic progress would be considerably enhanced. Physical examination and follow-up is one of the most pressing public health problems at the present time. It is one of enormous magnitude in New York City, when it is remembered that the estimated population of children from 2 to 6 years of age is almost half a million, that is, about half of the estimated school population. When it is remembered that the entire working medical force of the Division of School Medical Inspection examines, approximately, 250,000 school children annually, it is easily appreciated what a large medical working force would be necessary in order to make any definite impression upon the status of children of pre-school age. In fact, the problem is so big that it is one for the community to undertake rather than for the Health Department alone, and, if ever to be solved, ways and means for these examinations at various centres, such as schools, hospitals, dispensaries, guilds, settlements, clinics, day nurseries, baby health stations, etc., will have to be devised, or the public will have to be educated up to the necessity of having these children examined periodically by private physicians.

As a result of the Bureau's propaganda and publicity a large number of hospitals, dispensaries, and child-caring agencies, established pre-school age clinics and centres, during 1920, and much valuable work was accom-

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plished. Furthermore, the Bureau of Child Hygiene, working with the pre-school age committee of the Babies' Welfare Federation, formulated a special and detailed type of history and examination from which is a distinct advance on all forms of recent years, and which records essential data for proper supervision and care of these children, and which is used by all agencies engaged in this type of work.

Malnutrition in Children, Under 7 Years of Age—A special study and survey was made by field forces in order to determine the relation of consumption of milk, and other factors, to the nutrition status of children under seven years, the pre-school age. Previous studies had shown that, not only was there a large percentage of malnutrition among school children (approximately 20%) but that about the same percentage, in fact a little higher, existed among children of pre-school age. It became important to ascertain, if possible, whether malnutrition at this age was due entirely to inability of the public to purchase milk for these young children at the prevailing price, or whether other contributory factors of malnutrition, such as improper feeding, irregular habits, existing physical defects, unfavorable environment, insufficient quantity of milk, or other food, child's dislike of milk, lack of funds, unemployment, mother's opinion that milk was unnecessary, or other factors, were the cause of malnutrition. The histories of facts obtained by the nurses were recorded on a special form, and tabulated by the Bureau of Records. An analysis of the figures showed that 22,940 children under seven years of age were inspected; of this number, 5,496, or 24%, were suffering from malnutrition.

Housing Survey—Housing conditions, as previously noted, bear a very direct and important relationship to infant and child morbidity and mortality, as well as to the health of the community at large. In order to determine the extent of overcrowding, congestion, and other unfavorable home conditions, the field force of the Bureau of Child Hygiene, assisted in the housing survey instituted at the direction of the Commissioner. All essential factors were recorded on special forms and the results tabulated by the Bureau of Records. As a result of this survey it was estimated that approximately 100,000 of the children born in New York City, annually, or about 75%, are born in the tenements.

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School Medical Inspection.

STATISTICS OF SCHOOLS.

(Showing number and registration of schools and inspectors and nurses assigned hereto, during the school year 1919-1920.)

	MAN- HATTAN.	THE BRONX.	BROOK- LYN.	QUEENS.	RICH- MOND.	CITY.
Public schools.....	162	57	185	101	39	544
Registration.....	280,467	112,528	298,922	75,273	17,751	784,941
Parochial schools.....	70	31	75	28	9	213
Registration.....	56,632	15,281	51,932	14,293	2,214	140,352
Kindergartens.....	28	0	11	0	0	39
Registration.....	1,273	0	410	0	0	1,683
Total number of schools.....	260	88	271	129	48	796
Registration.....	338,372	127,809	351,264	89,566	19,966	926,976
School medical inspectors.....	36	11	33	11	3	94
School nurses.....	83	28	85	18	7	221
Schools per inspector.....	7.2	8.0	8.2	11.7	16	8.4
Schools per nurse.....	3.1	3.1	3.1	7.1	6.8	3.6
Pupils per inspector.....	9,399	11,619	10,644	8,142	6,655	9,801
Pupils per nurse.....	4,076	4,564	4,132	4,975	2,852	4,169

From the above table, it may readily be surmised that one of the most striking features of the work of the Bureau of Child Hygiene in its Division of School Medical Inspection is the wide territory to be covered, number of schools to be visited and the number of children to be kept under observation.

To carry on the work, the Bureau has ninety-four medical inspectors and two hundred twenty-one nurses who must visit seven hundred ninety-six schools and supervise the health of 926,976 children. This would seem to be an almost impossible task, but it has been accomplished, as far as protection of the community against spread of contagious diseases is concerned.

In a lesser way, effective work has been done among certain groups of school children. It becomes increasingly evident that the City must either make a larger appropriation, so that an increased number of medical inspectors and nurses may be employed for this work, or a marked readjustment made in the manner in which the work is carried on.

Primarily, the City is concerned with three fundamental factors in conserving health of school children. *First*: Protection of the community

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from spread of infectious disease. Here the school may be a distinct menace, affording as it does an opportunity for the close contact of children who are at the ages when infectious diseases are prevalent. In order that the community may be protected, close and constant supervision for the purpose of detecting early cases of diseases and preventing spread of infection is an essential part of any system of school medical inspection. *Second*: When a community makes education compulsory, it assumes responsibility for providing a decent, clean and wholesome environment for children during their school hours. Furthermore, as children during that time may be effected by their environment, and by readjustment of their lives to the exigencies of school control, the community is necessarily responsible for the maintenance of their health during this period, and also must exercise such care as will detect incipient physical defects, correct them early in their occurrence and, what is far more important, prevent, in so far as possible, the occurrence of such physical abnormalities. *Third*: As part of the education, the community, for its protection in the future, must consider that education in health is one of its prime functions. Such instruction does not necessarily mean ordinary teaching of hygiene. It does mean the teaching of health habits and encouragement of the child to co-operate in the matter of obtaining sound health for himself.

Although the two first-mentioned functions are probably those which, by their very nature, must receive prior attention, it is evident that teaching health habits to children, and determination to make children the most interested persons in their own health, is the most important type of work that the community can carry on. Only in that way will we have sound and virile citizenry. The child who knows how to keep well and who, moreover, is so trained in health habits that he demands the type of environment that will make such habits possible, has provided not only for himself but for the community at large those standards of healthful living which make for the prevention of all disease, and for raising the standard of individual and community health.

Conditions of School Buildings—In order to meet the first requirement of adequate protection of child health, it is evident that increased appropriations must be made, not only for building new schools but for placing present schools in good condition. Repeated surveys have shown that insanitary conditions in school buildings are common. Inadequately lighted rooms, poor equipment, in the way of inadequate seating capacity, desks and seats that are not properly fitted to the size of the child, worn out toilet apparatus, lack of adjustable school furniture that is not adjusted, inadequate ventilation, floors and walls that are so worn and out of repair that it is impossible to keep them clean, ill-ventilated and inadequate cloakrooms, and lack of proper washing facilities—these are conditions which exist in many of the schools at the present time. They are all factors which make for

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lowered vitality in the children and which may easily predispose toward disease.

Tentative Diagnosis by Teachers—It is recognized by most school hygienists that the teacher forms the first line of defense in any attack upon diseased conditions among school children. Since school medical inspection was first started in 1895 in Boston, the teacher's interest and co-operation have been sought and usually obtained. It has been her part to look over her class each morning and to decide whether or not there were any symptoms present in any of the children which might denote a condition of ill-health. The teacher has never been required to make diagnoses or to do other than recognize the most ordinary types of symptoms and then to send to the medical inspector or nurse such children as she thought needed further supervision or treatment. For this purpose, teachers have been instructed by medical inspectors and nurses as to type of symptoms it is desirable for them to note—symptoms which might indicate that the child is in early stages of an acute infectious disease, has one of the most chronic forms of infectious eye or skin disease, or some type of physical defect. This co-operation has, to a great extent, been obtained from all teachers. Individually, there have been instances where teachers were not sufficiently interested to control the health of children of their classes in this manner, but it has required only the outbreak of two or three cases of infectious disease, or the occurrence of a large number of physical defects to arouse interest of teacher to the importance of better health control in her classroom.

For this reason, the Bureau of Child Hygiene has felt that, on the whole, teachers have rendered an important service, and that their usefulness as a co-operative influence in the health supervision of school children has been convincingly demonstrated.

During the year the Department of Education made plans to hold a so-called Health Day in the schools for the purpose of using the teacher to a greater extent as a factor in promotion of health among pupils. With this idea in mind, the Department of Education, through its Department of Physical Training and Hygiene, instructed teachers of physical training throughout the City as to methods to be used in detecting physical defects. In turn, the teachers of physical training instructed the principals and they instructed their teachers. It may readily be expected that such instruction, passing as it did through so many groups of laymen, could hardly be considered adequate. In making its program for Health Day, the Department of Education felt that there was great opportunity to contribute a better type of work on the part of the teachers. One day—November 9, 1920—was set aside to be known as Health Day. On this day teachers were to make physical examination of each child in the class, and to record defects found on the child's physical record card. Thereafter all children found to have physical defects were to be sent to medical inspectors for complete

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physical examination, and for corroboration of the teachers' findings. The Department agreed to co-operate in this work, but with extreme doubt as to its advisability or the worth of its ultimate results.

The Health Day program was carried out as planned. Immediately thereafter, the children recorded by the teachers as having physical defects were sent to medical inspectors of the Bureau of Child Hygiene to be examined. Statistical reports of this work were tabulated, by two or three week intervals, in order to have an accurate knowledge as to the value of the work. The first period ranged from November 21 to December 18, 1920, and the results showed that out of 23,704 children found by the teachers to have physical defects, and referred to the medical inspectors for re-examination, there was an entire or partial disagreement with the teachers' findings in 18,259 cases.

A more detailed analysis of these findings shows that:

1. In all, 23,704 pupils were examined. In 65% of these cases the medical inspector's findings disagreed, in whole or in part, with those of the teachers—partially, in 41% of the cases, and wholly, in 24%.
2. This disagreement was common to all boroughs, in the following degrees: The lowest per cent. of the disagreement occurred in Queens, with a total of 52%; then Manhattan, with 63%; Richmond, with 69%; Brooklyn, with 71%, and The Bronx, with 71%.
3. The medical inspectors disagreed with the teachers' findings in 18,259 defects, in the following order:

Vision	5,905
Nutrition	4,336
Nasal Breathing	4,249
Teeth	2,901
Hearing	868

The next report of checking up of the teachers' findings covered the period from December 18, 1920, to January 1, 1921. Out of a total of 5,860 pupils examined by medical inspectors, diagnosis made differed from that of the teacher in 4,386 instances. The disagreement was total in 22%, and partial in 44% of the cases.

Shortly after the beginning of the new year, a supplementary report showed that the variation between the doctors' findings and those of the teachers totalled 65%—43% partial and 22% total.

Control of Contagious Diseases—During the year the schools have been remarkably free from infectious diseases. During the early part of the year a considerable number of cases of influenza was reported in all age groups. The Bureau of Child Hygiene, having established the precedent of keeping schools open during time of epidemic, followed same procedure in this instance, and at no time during the progress of this epidemic of influenza was it felt at all necessary to close any public or parochial school.

The system of school medical inspection used in the former epidemic

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was again put into operation. Children arriving at school went immediately to classes, and did not intermingle before or after school or at recess. Morning inspection was made of each child by the teacher to detect early symptoms that might be supposed to be those of influenza. Any child found to be in the slightest degree affected was reported to the doctor or nurse for further examination. If excluded from school attendance, the case was reported to the central office of the Department of Health, and a diagnostician was sent to the child's home to confirm tentative diagnosis, and to order the child under quarantine for required time, or to give a certificate allowing return to school. During the entire time of the epidemic, absences from school were not greater than had been customary for that time of year, and the age group from five to fifteen was but slightly affected, either in the incidence of, or death from, influenza. The Bureau of Child Hygiene feels that it has demonstrated beyond reasonable doubt that, with an efficient system of school medical inspection, it is not only safe, but of greatest value to the community to keep schools open, under rigid medical supervision during time of any epidemic of disease in a community.

The schools were likewise remarkably free from other types of infectious disease during the year. The following table gives a comparison of the more common types of contagious disease for the years 1910 and 1920. In every instance a marked falling off from former conditions is shown. The routine procedures of the Bureau in control of contagious diseases in schools continue to be effective.

CONTAGIOUS DISEASES FOUND IN SCHOOL CHILDREN.
RATE PER 1,000 CHILDREN REGISTERED IN SCHOOLS.

	1910.		1920.*	
	Cases Found in Schools.	Rate per 1,000 on Register.	Cases Found in Schools.	Rate per 1,000 on Register.
Diphtheria.....	738	1.08	11	.02
Scarlet fever.....	203	.29	50	.06
Measles.....	628	.92	420	.46
German measles.....	.....	.....	80	.....
Chickenpox.....	1,235	1.80	608	.69
Whooping cough.....	244	.32	187	.20
Mumps.....	1,024	1.5	440	.49
Tuberculosis.....	101	.....	.....	.....
Miscellaneous.....	.....	.....	73	.....
Total.....	4,173	6.1	1,982	2.1

* NOTE—Queens statistics are not included in this tabulation because of certain inaccuracies.

Contagious Eye and Skin Diseases—The relative prevalence of contagious eye and skin diseases remains about the same during the past several

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years. There is, however, a marked diminution in the incidence of cases since the year 1910, as may be seen by the following table:

CONTAGIOUS EYE AND SKIN DISEASES FOUND IN SCHOOLS.
RATE PER 1,000 CHILDREN REGISTERED IN SCHOOLS.

	1910.		*1920.	
	Cases Found in Schools.	Rate Per 1,000 on Register.	Cases Found in Schools.	Rate per 1,000 on Register.
Pediculosis.....	153,797	225.3	211,564	254.3
Trachoma.....	20,915	30.6	944	1.1
Acute conjunctivitis.....	26,855	39.3	{7,309 279}	9.1
Follicular conjunctivitis.....				
Ringworm.....	4,508	6.6	2,854	3.4
Scabies.....	2,251	3.2	3,029	3.6
Impetigo.....	9,052	13.2	11,151	13.4
Favus.....	290	.42	341	.30
Molluscum contagiosum.....	143	.20	308	.37
Miscellaneous.....	46,017	....	....	....
Total.....	263,828	386.5	263,638	254.4
School population.....	682,608	....	831,810	....

* NOTE—Queens statistics are not included in this tabulation because of certain inaccuracies.

This decrease is shown in practically every instance except pediculosis, where there is an increase. This increase, however, is probably due to normal fluctuations which are encountered from year to year, and does not indicate any widespread increase in the spread of the condition.

Pediculosis remains one of the unsolved problems of public health work. In this respect New York's position is not unique, as shown by the annual report for 1919 of the Medical Officer of Health of the London County Council, which states that 25% of the older girls, when inspected in school, present some trace of recent infestation of the head by lice. The difficulty in reducing this condition lies not in lack of knowledge as to how the vermin and nits may be eradicated nor in lack of co-operation on the part of teachers and children with the school doctor and nurse. The reason the problem has not been solved is because of home conditions. Children who follow directions given them and whose heads are clean and free from infection will be found at a subsequent date with the verminous condition of the head quite as bad as before. Home investigations have shown that the condition is unduly prevalent among older members of the families and among children of pre-school age. The families do not regard this condition as a disgrace, accepting it apparently as one of the ordinary incidents of life. Owing to lack of information as to the possibility of head lice being car-

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riers of any specific form of infection, and the consequent inability of the Department to wage a campaign based upon such knowledge, attempts to eradicate this verminous condition in families have thus far been ineffective. A mere desire for cleanliness is not enough to induce a large part of our population to keep themselves free from vermin either of the head or body. There is, however, one hopeful indication; that as far as children in school are concerned the presence of live vermin is demonstrated in very few cases, and then only in small numbers. The cases classified as pediculosis are mainly those where nits only are found in the hair. Little by little, education of the public that this is a disgraceful and uncleanly condition is having its effect, and it is not too much to hope that there will come a time when school children at least, may be kept free from vermin.

Physical Defects—As far as it is possible to ascertain, New York City was the first community to institute on any definite scale a system of complete physical examination of each school child; that is, children have been examined upon entering school for the first time, in the third and sixth grades. The physical examination is followed by reference to the nurse of all children found to have any physical defects. The nurse then visits the children in their homes to obtain co-operation of the parents in providing necessary treatment, and after such treatment has been obtained the child is re-examined by the medical inspector to see whether or not the treatment has been effective.

The percentage of physical defects found in the children in public and parochial schools has not varied much in the past few years, with the exception of defective nutrition, where a marked increase was noted, beginning in 1915, reaching its apex in 1917 and since then showing a slight but steady decline.

The incidence of these defects, by boroughs, for 1920, is shown by the following table:

INCIDENCE OF PHYSICAL DEFECTS IN CHILDREN IN PUBLIC AND PAROCHIAL SCHOOLS.

As Shown by Physical Examinations Made by the Bureau of Child Hygiene, 1920.

DEFECT.	MANHATTAN.	BRONX.	BROOKLYN.	QUEENS.	RICHMOND.	CITY.
Vision.....	8.0%	7.8%	8.3%	7.4%	4.7%	7.9%
Hearing.....	.2%	.6%	.5%	.66%	.25%	.4%
Nasal breathing.....	12.8%	16.4%	10.7%	7.1%	6.9%	11.6%
Hypertrophied tonsils.....	16.3%	19.0%	14.0%	11.1%	15.2%	15.3%
Nutrition.....	22.5%	16.4%	16.1%	9.2%	6.9%	17.5%
Cardiac disease.....	1.2%	1.1%	1.6%	.77%	1.3%	1.3%
Pulmonary disease.....	.16%	.14%	.1%	.1%	.04%	.19%
Orthopedic defects.....	.65%	.47%	.9%	2.7%	.4%	.9%
Nervous disease.....	.40%	.8%	.6%	.4%	.6%	.5%
Teeth.....	59.2%	57.8%	68.9%	50.4%	59.5%	61.8%

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NUMBER OF PHYSICAL EXAMINATIONS OF CHILDREN IN PUBLIC AND PAROCHIAL SCHOOLS, SHOWING THE NUMBER FOUND WITH GENERAL DEFECTS, WITH DEFECTIVE TEETH AS THE ONLY DEFECT, AND THE PERCENTAGE OF THOSE EXAMINED NEEDING TREATMENT.

Six Years Compared.

YEAR.	NUMBER OF PUPILS EXAMINED.	NUMBER WITH DEFECTS OTHER THAN OF TEETH ONLY.	NUMBER WITH DEFECTS OF TEETH AS ONLY DEFECT.	PER CENT. OF THOSE EXAMINED NEEDING TREATMENT.
1915.....	278,174	83,934	122,344	74%
1916.....	276,611	97,478	116,146	77%
1917.....	328,190	111,463	145,109	78%
1918.....	247,735	86,311	104,587	77%
1919.....	248,978	91,268	92,812	73%
1920.....	243,416	85,742	85,061	70%

In this table the number of children found defective is less than it has been for the past few years and also the number found with defective teeth as the only defect is much less than in 1915.

It has seemed wise and necessary to separate the defects in to two main groups. In one group have been placed children who have defective teeth. In the other group have been placed children who may have defective teeth but who have other physical defects in addition. It is interesting to note that there seems to be an increase in the number of cases of associated physical defects to be found, ranging from 30% in 1915 to 35% in 1920, while the number of cases where defective teeth was the only defect shows a corresponding decrease, from 44% in 1915 to 35% in 1920. It is evident, however, that, setting aside cases who have defective teeth as the only defect, approximately 35% of the children in the schools need such treatment for some form of physical abnormality which may or may not include dental care.

Physical Examination of Children by Private Physicians—From the time of the institution of physical examinations until the fall of 1915, all examinations were made by medical inspectors. At beginning of the school year 1915, the Bureau of Child Hygiene determined to secure as many physical examinations as possible made by family physicians. It was hoped in this way that several objects could be accomplished; First, extension of total number of examinations made; second, co-operation with private physicians of the City by affording them an opportunity to examine these children, and third, an opportunity to compare the physical findings in cases with those made by school medical inspectors who, of necessity, must conduct physical examinations under less advantageous conditions that surround the practice of private physicians. It was also felt that by this method

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the Department would obviate certain criticisms that had been made by the medical profession to the effect that they were not being consulted, with particular reference to their patients.

Every child entering school for the first time is given a physical examination blank and a form letter addressed to the family physician, asking that the child be examined and stating that if attached card is not filled out by the family physician and returned within ten days, the school medical inspector will make examination. The results of examinations made is shown by the following table:

DEFECTS FOUND IN SCHOOL CHILDREN BY FAMILY PHYSICIANS.

	NEW ADMISSIONS.		EXAMINED BY PRIVATE PHYSICIANS.			
	1915-16.	1918-19.	1915-16.		1918-19.	
Manhattan.....	39,072	50,117	5,363	13%	1,999	4%
The Bronx.....	12,410	15,864	2,682	21%	1,626	10%
Brooklyn.....	33,963	51,787	7,186	21%	4,006	7%
Queens.....	6,915	4,470	298	4%	378	8%
Richmond.....	2,102	303	87	4%	9	3%
City.....	94,462	122,541	15,616	16%	8,018	6.5%

COMPARISON OF PERCENTAGE OF DEFECTS FOUND IN SCHOOL CHILDREN BY FAMILY PHYSICIANS AND BY SCHOOL MEDICAL INSPECTORS.

	BY FAMILY PHYSICIANS.			BY SCHOOL MEDICAL INSPECTORS.		
	1915-16.	1918-19.	1920.	1915.	1918.	1920.
Total examinations....	16,203	6,019	5,632	278,174	247,375	243,416
Defects found:						
Vision.....	3.8	2.3%	3.5%	8.9%	9.4%	7.9
Hearing.....	.9%	.4%	.33%	.7%	.5%	.4%
Nasal breathing.....	11.7%	5.7%	6.4%	10.0%	10.1%	11.6
Hypertrophied tonsils	20.8%	12.1%	18.2%	11.6%	13.5%	15.3%
Nutrition.....	10.3%	5.7%	10.0%	6.3%	14.2%	17.5%
Cardiac.....	1.9%	1.4%	1.5%	1.5%	1.6%	1.3%
Pulmonary.....	1.5%	.6%	.8%	.3%	.3%	.19%
Orthopedic.....	1.5%	.9%	1.6%	.7%	.8%	.9%
Nervous affections...	3.9	2.6%	3.6	.7%	.6%	.5%
Teeth.....	33.8%	19.5%	27.6%	64.7%	65.2%	61.8%

It will be seen from these tables that there has been a marked falling off in the number of children examined by private physicians, the figures showing that 16 per cent. were examined during the years of 1915-1916 and only 6.5 per cent. during the years 1918-19. There is no single Bor-

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ough in which examinations made by private physicians have been sufficiently large in number to indicate any particular interest on their part or on the part of the parents in this method of procedure.

The marked decrease in the number of children so examined may be due to several reasons. While it is impossible to classify these reasons with any degree of accuracy, the Department feels that the lessened number of examinations made by family physicians is due to an increased confidence on the part of parents in the work of the school physicians, as reflected in their increased willingness to allow children to be examined by them.

In the table given above, showing a comparison of the individual physical defects found by private physicians and those found by school medical inspectors, it is felt that comment may be made under several of the sub-headings:

Defective Vision—Family physicians report an almost negligible amount of defective vision. This is probably accounted for by the fact that comparatively few physicians are equipped with even the ordinary Snellen tests card, or similar cards, for testing acuity of vision, and make no pretense of making anything but the most perfunctory examination of the eyes. It must be admitted, however, that many of the new admissions cannot read letters. At any rate, the discrepancy between the percentages found by medical inspectors and private practitioners is altogether too large to warrant the belief that private practitioners make anything but a superficial examination in testing acuity of vision.

Defective Hearing and Nasal Breathing—No great variations in the findings of these conditions appear.

Hypertrophied Tonsils—Under this heading we note that while private physicians, in the 1915-16 period, recorded almost twice the number of hypertrophied tonsils, in the 1918-1919 period the percentage of cases found by them was below that found by school medical inspectors. The figures for 1920 show a slight increase in the number of cases found by private physicians—18.2 per cent. as against 15.3 per cent. by medical inspectors.

Malnutrition—Under this heading we find a condition similar to that noted under hypertrophied tonsils, in that, during the 1915-16 period, private practitioners reported a far larger percentage of malnutrition than the school medical inspectors, whereas in the 1918-19 period and for 1920 they found less than the medical inspectors. In the light of numerous studies made on the subject of nutrition of school children, there can be no question but that figures submitted by medical inspectors are nearer the truth.

Cardiac Defects—This heading offers a most interesting and instructive comparative study. On the many occasions criticisms have been advanced that school medical inspectors fail to detect organic disease of the

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heart, and justification for occasional failure in this regard is understood from the fact that examinations must necessarily, in the majority of cases, be conducted through the clothing. It would be expected that in the examinations by private practitioners, where the child is examined stripped, more careful and detailed diagnosis would be made. A comparison of the figures submitted by private physicians and school medical inspectors shows remarkable uniformity, in that for the period 1915-16 we have 1.9 per cent. by private physicians as against 1.5 per cent. by medical inspectors, for the period 1918-19 1.4 per cent. as against 1.6 per cent. and for the year 1920 1.5 per cent. by private physicians as against 1.3 per cent. by medical inspectors.

Pulmonary Disease—What applies to cardiac disease applies with even greater emphasis to pulmonary disease. Exact diagnosis of pulmonary tuberculosis in school children, under the conditions of examination are available, are well nigh impossible. In point of fact, no attempt is made by the school medical inspector to make a definite diagnosis of pulmonary tuberculosis. All that they attempt to do is to indicate a suspicion that such a condition may exist, leaving it for the private practitioners, hospitals, dispensaries, etc., to establish the final diagnosis after more careful and, if necessary, repeated examinations. The discrepancy, however, between the findings of private practitioners and school medical inspectors is far less than might be expected.

Orthopedic Defects—Naturally, slight orthopedic defects, such as mild degrees of spinal curvature, can be more readily diagnosed when the child is stripped than under school conditions, yet the discrepancies are not great.

Nervous Diseases—A far larger percentage of nervous diseases have been found by private practitioners. This is to be expected when one considers that the examination conducted by the school medical inspector takes but a short time and that, at the time no nervous manifestations may be shown by the child. The private practitioner, who is more thoroughly acquainted with the habits of the child, would naturally be more capable of detecting nervous temperaments and the like, included under this heading.

Defective Teeth—Private practitioners have indicated a relatively small percentage of defective teeth. All past experience demonstrates that this percentage is entirely too low. The figures are accounted for by the fact that private practitioners consider as defective teeth only those cases which show marked and pronounced decay and cavity formation, or where a large number of teeth are involved; in fact, some practitioners do not consider decay in temporary teeth as decay at all. This accounts, in large measure, for the low percentage of defective teeth recorded.

Undernourishment—The striking increase in malnutrition among children of school age, which began to manifest itself in 1914, reaching its

apex in 1917 and since then showing a slight but regular decline, is worthy of particular comment.

The Department has, for several years, used the Dunfermline Scale as a basis for grading the nutrition of school children. This scale is simply a standard for recording types of cases found after medical examination. "No. 1" indicates excellent nutrition—the nutrition of a healthy child. "No. 2" indicates good nutrition, a condition which just falls short of the No. 1 class. "No. 3" indicates nutrition requiring supervision. These cases are on the border line of serious impairment. "No. 4" indicates children requiring medical treatment. In these cases the nutrition is seriously impaired.

In order to determine the nutritional status of the child, various factors are taken into consideration; weight in relation to height and age, condition of the musculature and mucous membranes are noted, the child's posture, its expression of fatigue, presence of dark circles under eyes and a drawn expression of face, hollow chest, protruding shoulders, winged scapulae and all of the other stigmata of lowered nutrition are taken into consideration.

During the past two years the Department has received special co-operation from the Department of Education in combating conditions of undernourishment among school children. During 1919 the Bureau of Child Hygiene made 51 special surveys of public schools where it was felt that conditions were below average standard. The number of malnourished children ranged from 13 per cent. to 61.4 per cent. In 1920 the Bureau made surveys in 63 schools, where the number of cases ranged from 8.9 per cent. to 36.3 per cent. The schools covered in the two years were practically the same, showing that the work which followed surveys made in 1919 had proved effective in markedly lowering the rate of undernourishment in the indicated schools.

Particular co-operation has been manifested between the Bureau of Child Hygiene and the Department of Domestic Science, where children found to be undernourished have been referred to for special instruction in the matter of feeding. School nurses have followed up all such cases to see that they were placed in good physical condition, and both departments have co-operated in obtaining as far as possible a readjustment of home life, personal hygiene and general environment of child, both in the home and at school.

From its years of experience in dealing with undernourishment, the Bureau feels that the condition, at least as it exists among children of New York City, is not necessarily caused by lack of food. The causes which have been most predominant are those which relate to wrong type of feeding, irregular feeding and lack of personal hygiene, the latter including insanitary surrounding, lack of ventilation in sleeping rooms, inadequate sleep at night, going to bed at too late an hour, too much nervous excitement, particularly undue attendance at the movies, lack of proper bathing facilities and the presence of various types of physical defects, particularly

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adenoids and enlarged tonsils. It has seemed exceedingly difficult to correct cases of undernourishment simply by provision of additional feeding, and it is increasingly evident that placing these children in proper condition as regards nutrition can result only from the placing of the child's personal hygiene on a sound basis, and proper adjustment of its environment.

The Bureau of Child Hygiene feels that solution of the problem of undernourished child cannot be brought about by the provision of any facilities, however adequate, for dealing with children who are already undernourished. The program, to be effective, must be based upon preventive lines similar to those that have been so effective in baby saving work. The treatment of sick babies did not reduce the infant mortality rate, but keeping well babies well showed its effect in an immediate and marked reduction in the number of babies who died. The problem of the undernourished child is just the same.

Until we can evolve a system of health supervision which will keep well children well rather than allow them to become undernourished and then attempt to correct the condition, we shall not advance the solution of this problem to any marked degree. Such a preventive health program is not at all impossible of accomplishment. It will need the combined action of all health, social and educational forces in order that it may succeed.

Vaccination—During the year the Bureau took an active part in the campaign to prevent spread of smallpox. The State law requires that no child shall be admitted into any school in a first or second class city until it has been vaccinated. The Department of Health, through the Bureau of Child Hygiene, offers vaccination to all who cannot secure it elsewhere and is ready to pass judgment as to whether or not any indicated school child has been successfully vaccinated. The Department does not exclude any child from school attendance because it has not been vaccinated. That is the function of the Department of Education or authorities in charge of any school, but the Department of Health, with consent of parents, will vaccinate or revaccinate pupils submitted for such purpose, or will examine any child to determine whether or not it has been successfully vaccinated.

In a previous study made of pupils in three schools it was found that 7 per cent. were not successfully vaccinated. It is felt that unvaccinated pupils are a source of danger in any community, as far as the spread of smallpox is concerned. The Bureau, therefore, in co-operation with school authorities, made special effort to see that children are properly vaccinated, either by their own physicians or by Department of Health.

During the regular routine class examination of pupils in the months of September and October, 1920, special effort was made to examine the arm of each child to determine whether or not it had been successfully vaccinated.

(a) The arms of 787,953 pupils in the public, parochial, high and other schools were inspected. The total registration of these

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schools is 926,976. The difference between these figures is accounted for by absence on the date of inspection, transfer and other circumstances.

(b) Of the total number of pupils inspected, 4.9 per cent. or 39,198 showed no evidence of previous successful vaccination in the form of a scar.

(c) The percentage of "no scar" pupils was higher in the colored than in the white group—6.1 per cent. in the former and 4.9 per cent. in the latter.

(d) The percentage of "no scar" pupils was higher in the parochial than in the public schools—12.3 per cent. as against 4.3 per cent. among the whites and 9.4 per cent. against 6 per cent. among the colored.

(e) The percentage of "no scar" pupils was highest in the boroughs of Queens and Richmond, being 16.2 per cent. in Queens and 10.7 per cent. in Richmond and 4.9, 4.4 and 2 per cent. respectively in Brooklyn, Manhattan and The Bronx. The lowest rate of "no scar" pupils, therefore, was found in The Bronx.

(f) Taking the public elementary schools only, we find that, of the 705,998 children whose arms were inspected, 30,506 or 4.3 per cent. of the whites presented no scar. Here we find the highest per cent. of unvaccinated whites in the public elementary schools exists in Queens, next Richmond, then Brooklyn, Manhattan and The Bronx.

(g) Of the 19,322 colored children in public elementary schools, 1,162 or 6 per cent. present no evidence of scar. Here we find the highest percentage in Richmond, 19.6 per cent.; next Queens, with 10.2 per cent.; then Bronx, Manhattan, and Brooklyn in the order named.

The total number of unvaccinated pupils in public elementary schools was, therefore, 31,668—30,506 among whites and 1,162 among colored.

As result of conferences with parents by inspectors, nurses and school authorities, 19,921 pupils were vaccinated. This reduces the percentage of unvaccinated pupils in the schools, at the present time, from 4.9 per cent. to 2.4 per cent., the computation based upon the total number inspected—787,593. Continued effort is being made to have the remainder properly vaccinated.

This large body of unvaccinated pupils attending schools—almost 50,000 of those originally registered, was the result of several years' accumulation, during which time school authorities failed to exercise the necessary care before admitting pupils to school attendance.

It is felt that, following this campaign, a better understanding will exist among school authorities as to their responsibility under the law, and

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that the future will show fewer unvaccinated children attending school. This is the first time in history of the Department that complete survey of the arms of all school children has been made, and the end has more than justified the effort.

There still remains to be considered the fact that approximately $2\frac{1}{2}$ per cent., or 25,000 pupils, are unvaccinated. In point of fact and of law, and in the interests of public health, educational authorities should assume responsibility for seeing that these children be vaccinated. The courts have ruled definitely on this subject, and it is felt that the interests of public health and community safety demand that every child who receives instruction in the schools of this city should be vaccinated.

Special impetus was given to vaccination of infants and young children at the Baby Health Stations during 1920, because of the publicity spread, relative to danger of smallpox being imported from war-ridden zones of Europe. While, in former years, vaccination was offered to the public and performed at the Baby Health Stations throughout the year, the number during 1920 was larger than in former years.

The clientele at the Baby Health Stations is especially a potential source of danger, in so far as small pox is concerned, in view of the fact that many have never been vaccinated. The very large majority of vaccinations performed at these centres were primary vaccinations, and, in this wise, a large number were protected against this disease. Though, essentially centres for the care of infants and children, the Bureau of Child Hygiene felt that the situation warranted the opening of stations, and no citizen was refused vaccination upon request. During 1920, 30,041 vaccinations were performed at the Baby Health Stations, of which 29,211 were primary and 830 re-vaccinations.

Open-Air Classes in the Public Schools.

In 1904, the Sea Breeze Hospital, located at Coney Island, and caring for children suffering from bone and gland tuberculosis, organized an open-air school. In 1908, Bellevue Hospital organized an open-air school on a discarded ferryboat, which was properly altered. It was called a day camp, as the children remained there from 8.30 A. M. to 5 P. M., on school days. Other such classes opened since, both on ferryboats and roofs of hospitals and clinics. They are designated as day camps, and very successful results have been obtained.

In 1910, an "anaemic class" was organized in P. S. 21, Manhattan, for children who were physically sub-normal. The New York Tuberculosis Committee proposed this experiment and supplied equipment and food.

In 1914, the Board of Education took over these classes and the number has been increased each year. The scope of usefulness has also been

widened, as it has been demonstrated that, with few exceptions, every child will be benefited under such environment.

Children discharged from day camps or sanatoria as arrested cases of pulmonary tuberculosis were formerly transferred to regular school classes. This exposed them to a relapse, and frequently their work was too tedious and the concentration required was more than they could tolerate. These children are now admitted to an open-air class, whenever it is possible for them to attend a school having such a class. Soon after this, children exposed to tuberculosis in their homes were also admitted to the open-air classes.

In 1913, open-window classes were organized and teachers were permitted to keep their windows open throughout the year. There is no special selection of pupils, but an entire regular class is placed in one of these rooms.

Scope of Medical Supervision: In March, 1917, the Board of Education requested the Department of Health to take charge of the open-air classes, as the medical work in these classes had increased to such an extent that they were unable to handle it. The Bureau of Child Hygiene assumed medical supervision of these classes, and, by mutual agreement, formulated the following program of procedure: To recommend—

1. Organization of new classes.
2. Location of classrooms.
3. Proper equipment.
4. Standards and exercise supervision, as to ventilation, heating and temperature that classrooms maintain.
5. Pupils to be admitted.
6. Periodical physical examinations of all pupils, and notify parents as to conditions found.
7. Home visits, for purpose of conferring with and advising parents as to the need of correcting conditions found.
8. Supply teachers with full information as to conditions found, and arrange for co-operation between teacher, medical inspector, and nurse.
9. Routine medical inspection at definite intervals, for purpose of observing physical status of children, and room conditions.
10. Supervise and direct, weighing pupils, monthly, and measuring them, each term.
11. Recommendations as to discharge of pupils.
12. Prescribe physical training exercises for individual pupils.

Designation of Classes: These classes were formerly officially designated as "anaemic classes." As this name gave an erroneous conception of the types of pupils admitted, the Bureau recommended that they be called "open-air classes." The three types of classes with special ventilating methods are appropriately grouped as (1) Outdoor Classes, (2) Open-Air

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Classes, (3) Open-Window Classes. Furthermore, by changing the name to "open-air" classes, the stigma which was attached to pupils in "anaemic" classes was avoided, and these pupils were looked upon the same as those in regular classes. The parents do not object to their children being admitted to an open-air class, though they frequently refused to have them admitted to an "anaemic" class. This report deals with one type of special ventilated classes, namely, "open-air" classes.

Purpose of Classes: These classes are organized to make it possible for types of pupils whose physical condition prevents them from attending school in regular classes, to regain their normal condition, and, at the same time, to procure education, without loss of time, and to safeguard children of school age who are arrested cases of tuberculosis, or who are exposed to this disease in their homes.

Conduct of Work: The Bureau of Child Hygiene has continued to carry out this work with the original organization established for this purpose, as it has not been found necessary to make any changes in a plan that has proven efficient. The organization consists of:

1. Director of the Bureau.
2. Assistant Director.
3. Supervising Medical Inspector of Open-Air Classes.
4. District Supervising Medical Inspectors of Schools.
5. District Supervising Nurses of Schools.
6. Medical Inspectors of Schools.
7. Nurses of Schools.

At present the following types of children are admitted to open-air classes:

1. Children exposed to tuberculosis at home, or in whose family there has been a recent death from this disease.
2. Children who have had tuberculosis, which is now arrested or cured.
3. Children suffering from malnutrition.
4. Children who become tired easily, or show languor or fatigue before the end of the day, and who, on this account, are unable to carry on their class work.
5. Children who are frequently absent because of bronchitis, etc.
6. Children suffering from nervous diseases, except chorea.
7. Children suffering from cardiac disease who are recommended by private physicians as being proper cases for these classes.

Increase in Classes: The classes have increased from 84, in 1917, to 113, in December, 1920. The demand for classes continues, but lack of funds for equipment has made it impossible to comply with requests made

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by principals for new classes. In many instances, adequate classrooms are not available.

Classrooms: At present, classrooms are located in public parks, on roofs of buildings, or over auditoriums of schools, and in regular classrooms. However, all new classes, with but few exceptions, are located in regular classrooms, for several important reasons, as follows:

- 1st. Most available quarters.
- 2nd. Least expense involved to make required structural changes.
- 3rd. Most conveniently located, so that excessive stair-climbing can be avoided.
- 4th. Can be located near toilet facilities.
- 5th. Kitchen facilities can be readily arranged.
- 6th. Proper protection can be procured in rainy or snowy weather.
- 7th. In new buildings, less than \$400 will cover extra expense for structural changes.

Only where quarters are already provided with structural changes have classes been established on roofs, as the expense of providing these changes are much in excess of any funds available. No new classes have been organized in public parks.

Register and Attendance: In only a few instances has there been any difficulty in maintaining a full register. On account of the housing situation, some sections of the City are now short of children of school age. Schools so affected have all classes below an average register, and it has not been the policy of the principals of schools so affected to make sufficient effort to urge parents to give permission to have their children admitted to an open-air class. However, this has in reality only applied to three classes and only two are now below the required registration of twenty-five.

The vaccination campaign conducted at the opening of school in September last occupied the time of inspectors to such an extent that they were unable to carry out their duties in open-air classes until many weeks after school opened, and, on this account, a number of classes were below their registration until inspectors were again able to resume this part of their work.

At suggestion of the Associate City Superintendent-in-Charge of Open-Air Classes, the register of these classes was increased to 28 pupils, daily, by having three extra pupils to fill in for all absences. This plan was to maintain an average of 25 pupils daily. This plan was not successful because most of the classrooms were too small to accommodate the extra pupils, and also because the extra equipment required was not supplied. It has recently been amended so that the register can be reduced to 25 again. The average attendance in open-air classes is much higher than the average attendance of the school it is located in.

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Equipment: The standard equipment remains the same as last year: individual study chairs, sleeping bags, and cots. No new equipment or replacement has been supplied throughout the entire year. No equipment is supplied to teachers for their personal use.

Methods of Examination: The medical inspectors examine every child at the beginning and end of each term, and as often during the term as any individual requires it. At each visit to an open-air class, the teacher and nurse advise the medical inspector of conditions of the children, and particularly of those who require his personal attention. The nurses visit the classes at least once a week. As nurses visit these schools daily, the teacher is always able to reach her in event of any child requiring special attention. All data is noted on a special form (296-K), an individual record card being kept for each child. An addition has been made on the form providing space and appropriate headings for the inspector to note the physical training exercises each pupil should be permitted to take part in, and reason for placement in open-air class.

Follow-up: The follow-up is conducted in three ways: school consultations, home visits and mothers' meetings. A regulation of the Associate City Superintendent of Schools, in charge of the Open-Air Classes, demands that the first home visit, each term, be made by the class teacher.

The nurses hold school consultations, and make home visits as often as the individual cases require it. In the event of any case requiring special attention, the nurse refers it to the medical inspector, who holds a school consultation or makes a home visit, according to the individual case referred to him.

Mothers' meetings are held monthly by teachers and medical inspectors and nurses to co-operate at these meetings.

Difficulties Encountered: Work of any magnitude is generally interfered with whenever anything prevents the routine from being carried out throughout a term. The two conditions which affected our work during 1919 were very much in evidence during 1920, namely, lack of teachers and equipment. The former is now a question of the past, as the open-air teachers are now classified and receive the maximum salary.

The other question is far from solved. No new equipment was received or replacements made during the entire year. It was also impossible to have the required repairs made, because no funds were available. Though new equipment has been ordered, it will not be enough to supply the required amount for old classes, and, therefore, leaves nothing for the new ones. The date of delivery is very uncertain. Likewise, there is at present no fund to pay the required repairs of equipment or structural parts of the classroom needing attention. There are classes now organized for more than three years that have not received any equipment at any time.

Changes in school organization have delayed the opening of new open-

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air classes. The two main reasons are the formation of junior high schools, and increase in part-time classes. These are matters that cannot be controlled so long as the proposed new school buildings are not available.

Teachers: Teachers of the open-air classes must now have a special license. They must take a prescribed course and pass an examination to receive this license. Special provision was made to give preference to the teachers-in-charge of open-air classes, as it is the desire of the Board of Examiners to retain all the old teachers who have proven themselves competent and fit for this special kind of work.

While last year there was a shortage of teachers, there is now an over-supply. The increase in salary was a great stimulus, particularly for young teachers who can receive this special license after teaching in regular grades for three years, and fulfilling prescribed requirements. There is no other position that offers such a high salary to young teachers. However, this is a great advantage, as the young teachers are the most desirable for these classes.

It is very fortunate that principals now fully appreciate the great necessity of using greatest care in selection of teachers for these classes, and try them on probation. Though not within his duties, the principals always confer with the Supervising Medical Inspector for Open-Air Classes as to fitness of a new teacher, and have always given full weight to his judgment. It can honestly be said that practically all teachers of recent appointment, that is within two years, are excellent teachers from all view points.

The qualifications required are: good health, even temperament; capacity for doing a large amount of school work well, as a number of grades must be taught; physical ability to make home visits; tact in handling both children and parents; willingness to do social service; and a desire to study the problems of work in the class by reading and taking appropriate courses of study. With very few exceptions, the teachers now in charge of these classes have these qualifications. Principals and teachers afford us full co-operation and are always anxious and willing to do anything that will be of benefit to their pupils, both in school and in their homes. The classes observe the following daily routine:

9 to 10 A. M.	School work.
10 to 10:15 A. M.	Extra feeding.
10:15 to 11 A. M.	School work.
11 to 12 Noon	Rest period.
12 to 1 P. M.	Lunch period.
1 to 2:45 P. M.	School work.
2:45 P. M.	Extra feeding.

We feel that we have established the fact that best results are obtained with an A. M. rest period from 11 to 12 noon, directly before lunch. The teachers are now unanimously in favor of this routine, as thereby a maximum amount of school work is done with a minimum amount of fatigue. At the final dismissal at 3 P. M. the pupils do not show fatigue. Their

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P. M. school work is as satisfactory as their A. M. work. Classes located on roofs or upper floors observe a rest period from 1 to 1:10 P. M. which is deducted from their A. M. one, so that the children can get a short rest after climbing stairs.

The above routine is carried out by full-time classes. The register of some schools has increased to such a number that all classes are on part time. On this account, principals have made application to the Board of City Superintendents, to grant them permission to discontinue their open-air classes to make room for two classes in a classroom instead of one. During the year the Associate City Superintendent-in-Charge permitted some of these classes to be conducted on a part-time schedule. This made it possible for two open-air classes to use one classroom. When classes are on part-time the daily routine is entirely different from the routine of full-time classes, and is as follows: One class is from 8 A. M. to 12 noon, and the other from 12 noon to 4 P. M. Both have a continuous session of four hours. The feeding is limited to one for each class, at 9 A. M. and 3:45 P. M., respectively. The teachers are instructed to give a short rest period each hour, but not to use the cots. This plan puts a great deal of responsibility upon parents, as they are instructed to have their children rest for at least one hour after they are dismissed from school, at 12 noon, and after they have had their luncheon. The parents of children coming to school at 12 noon are instructed to have them rest for at least one hour before luncheon, presuming they come to school after it. This plan permits only one extra feeding, and parents are likewise instructed as to necessity of providing sufficient extra feeding, in addition to children's meals at home.

While this plan of a part-time session is new for a number of classes, it has had a fair trial at P. S. 50, Brooklyn, for over three years. When this school became so overcrowded that the principal was short of classrooms, the two open-air classes were placed on part-time to make room for two extra regular classes in the one room gained by this plan.

All types of division of time for part-time classes were tried out, and it was finally proven that the four-hour continuous session was decidedly the best and most efficient plan, both pedagogically and from a physical and health viewpoint. It has been demonstrated, at P. S. 50, Brooklyn, that, with competent teachers, an interested principal, and proper co-operation of parents, the result of a four-hour continuous session will practically equal the results secured with the old routine. It does mean a great deal more work for the teachers, particularly in keeping in touch with parents, but it also makes for better care of the children by parents. However, it brings in return the much sought for home routine which we are seeking so earnestly to have established, so that it will be continued after a child is transferred from an open-air class. With the increase in part-time classes the coming term, it is expected that many more of these classes may have to be conducted on a part-time basis.

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Schools that have had only one class, when all are on full time, gain an extra open-air class when part-time is established. This is one way of increasing the classes, with very little expense, as extra bags for the new part-time classes is all the equipment required for the second class. How efficient this work will prove to be, with many classes on part-time, can only be known after it has had a fair trial.

Scope of the Work—While the original aim of this work was to procure favorable school conditions for some of the children sub-normal physically, it is now extended to all children physically sub-normal, as noted in the types of children admitted to these classes. The medical inspector decides the particular children that are to be admitted; except cardiac disease cases, who must bring in writing a recommendation from their private or hospital physicians as to being satisfactory cases for and admission to such a class. Not a single cardiac case admitted to an open-air class has had to be discharged because condition was aggravated or made worse by following the routine. In fact, every cardiac case, when placed in an open-air class, has improved.

The needs that open-air classes fill are now well known, and requests are constantly being made by physicians and parents to have their patients or children admitted. Whenever this is possible, the request is complied with. However, the number of classes and their location make it impossible to place all applicants.

The Bureau of Preventable Diseases has compiled a list of children of school age who are arrested cases of tuberculosis or exposed to this disease in their homes. This list numbers over 12,000 and our present register of open-air classes would not provide for more than one-quarter of these. The present outlook does not hold out hope of increasing the number of classes materially for several years, so that we will still be unable to care for more than a small number of children exposed, or with disease arrested, unless some readjustments are made. The Board of Education, however, has promised to provide for at least one open-air class in every new elementary school of average size.

The experiment conducted at P. S. 158, Manhattan, proves, each term, more and more the value of open-air classes for normal average children. What has been previously reported in reference to this class can only be more emphatically repeated. The pupils do better and more work, concentrate better, and require less home work than those in regular classrooms. The attendance is also better, and the teacher, likewise, finds his work easier, and can do much more without fatigue, as well as maintain his full interest throughout the school day.

Open-Air Classes for Normal Children: If facilities such as are offered by the open-air classes were available throughout school life, it would follow that the physical condition of pupils would be improved when they have

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completed their scholastic career. It has been repeatedly demonstrated that pupils discharged from open-air classes, because their physical condition has improved so much that inspectors considered them physically able to be placed in a regular classroom, have retained their physical condition in their new classroom, but were unable to keep up the high standard of school work. When many of the pupils lose the advantage of light, air, rest, and extra feeding they are unable to do the amount of school work to which they were accustomed. This fact, alone, should be sufficient to prove of what great value open-air classes would be for the average pupil. The open-air classes have been conducted long enough to prove their value, and a further study is not required. Very little more knowledge of information is at present available. The only progress that can be made that will be of true value, is to increase their number and to supply their advantages to all pupils in all classes.

New Problems to Be Solved: This year, a new plan for mothers' meetings was tried. Instead of limiting the attendance to mothers of pupils of the open-air classes, all pupils were asked to invite their parents to attend the meetings. In schools where this was tried it was very successful, as large attendances proved. Many parents became interested and informed us that, though their children were in regular classrooms, they would adopt at home suggestions offered for the open-air class pupils. This is the kind of propaganda that is most needed, as every parent should be acquainted, fully, with the proper home conditions and environment their children should have, whether physically normal, or sub-normal.

New Methods: Unfortunately, the work of the open-air classes is handicapped because it is necessarily carried out by inspectors and nurses assigned also to regular routine school work. On account of their many duties, they are limited as to the time they can give to their open-air classes. This work could, of course, be more regularly, more systematically, intelligently, and uniformly performed by a separate, properly trained corps of inspectors, who would always be available to visit the classes requiring their attention. The mothers' meetings, school consultations, and home conditions, require special personal qualifications. With a separate corps, studies could be conducted which would be of great value, and results secured that can hardly be expected with our present limitations of personnel.

Feeding: Milk was again supplied to every open-air class this year. In the Boroughs of Manhattan and The Bronx, a fund was procured from the surplus from the sale of army and navy foodstuffs. In Brooklyn and Queens, the Tuberculosis Committees of these boroughs supplied it for all the classes. In the Borough of Richmond their own funds were more than sufficient to supply milk and a hot lunch. Every child in an open-air class received 8 ounces of milk in the A. M., and 8 ounces in the afternoon, each school day.

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The great value of milk was demonstrated, as every child who did not suffer from some acute illness during this time gained. Besides, the loss in weight, so common each spring, was avoided in most of the children, and even in those few who did the loss was only trivial. Next year, the classes in Manhattan and The Bronx will not be supplied with milk from any central fund, as the one available became exhausted. However, we have been able to interest private individuals and the School Children's Welfare League, who have promised to supply many of the classes. The League is going to hold a drive for funds, and hopes to raise enough to supply classes in Manhattan and The Bronx. The Tuberculosis Committee of Brooklyn and Queens will continue to supply the classes, as they have done for the past five years. The failure to procure milk for any one class is a great handicap for pupils. The children are now all accustomed to receive it, and in every case they gained some weight. If it is not supplied, many children will not gain sufficiently. Outside assistance is required, as no class can raise the required sum from its own pupils.

Health Supervision: The number of physical defects present were less than found in previous years, and many more children had their defects corrected. The decrease was due to the fact that so many children were continued in open-air classes after defects were remedied.

Improved economic conditions permitted many parents, this year, to pay for private care of their children. A number of classes had 100% treatment for all defects of the pupils. There has been no increase of institutional facilities for the care of school children.

All teachers and nurses now do a great deal of social service work in which they have been thoroughly instructed by Supervising Inspector of Open-Air Classes. The housing difficulties prevented many from improving their living quarters, but most families had more money than usual, so they were able to improve their own premises, and provide better food. A great deal of time and effort are devoted to remedying home conditions, and parents are now more responsive and willing to follow instructions. Great stress is placed upon the necessity of carrying out, at home, the routine followed in school, particularly on non-school days. This includes extra feeding. The number of parents following instructions has markedly increased.

There is seldom any difficulty experienced by the medical inspector in finding proper cases for the waiting list of any class, or in procuring consent of parents to place children in an open-air class. All the classes are visited systematically by the Supervising Inspector and as often again as demands of individual classes require his personal attention. He holds conferences with the principals, teachers, supervising inspectors, supervising nurses, inspectors, and nurses, with reference to the work, generally, and their individual classes. Explanations are made to them with reference to various phases of the work, how it should be carried out, what results are sought

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and how to attain them, as well as individual studies that can be undertaken. He also attends and addresses many parents' meetings.

SUMMARY OF RESULTS OF OPEN-AIR CLASSES, 1920.

Schools with open-air classes.....		76
Open-air classes		113
Classes		2,780
Register of classes		3,110
Pupils examined:		
Boys	1,468	
Girls	1,642	
Defective vision		396
Glasses obtained	361	
Defective hearing		34
Treated	26	
Defective teeth		1,472
Treated	1,216	
Defective nasal breathing.....		208
Treated (operation)	183	
Hypertrophied tonsils		407
Treated (operation)	302	
Defective nutrition		2,905
Improved in Open-Air Classes.....	2,658	
Cardiac disease		149
Treated	149	
Pulmonary disease		74
Treated	68	
Orthopedic defects		69
Treated	69	
Nervous affections		43
Treated	43	
Total discharged from classes.....		330
Total pre-tuberculous children.....		794
Total who gained.....		3,001
Total who did not gain.....		98
Total who lost.....		11

Work of Medical Inspectors.

Inspections	581
Regular physical examinations.....	3,408
Re-examinations	7,132

Work of Nurses.

Contagious diseases:	
Inspections	40,283
Instructions and treatments.....	9,294
Physical defects:	
Instructions at school.....	10,347
School consultations with parents.....	1,476
Cases terminated	981
Visits:	
Contagious diseases	301
Physical defects	4,108
To dispensaries	124
To lectures	178

Improvement of pupils: It will be noted that less physical defects are recorded for this year, because so many pupils were continued in their classes though their defects had been corrected. However, of the existing defects, more were corrected than in previous years, when estimated by percentage.

The weighing of pupils was maintained on a uniform plan, so that the

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data is accurate. No child was considered to have gained unless there was an average gain of eight ounces per month. Those who fail to gain a normal average are individually studied by the medical inspector. In most instances the causes are ascertained, then removed or remedied, and a gain rapidly follows. The average gain, per child, for the entire city, during 1920, was 9 pounds, 1 ounce. The increase over previous years was due to the supply of milk maintained for every class. The greater gain accrued during cold weather, as has always been the case, but pupils failed to get the former set-back with the approach of warm weather. Though they failed to gain as much they did not lose as in former years. This likewise was due to the extra supply of milk.

Another reason why many gained so much, during 1920, was the fact that more children were cared for in summer camps, and more than the usual number was sent to the country by their parents, because of better financial status.

The high standard of scholarship, which has been demonstrated for the past years as one of the results procured in the open-air classes, has again obtained. The record as herewith given, furnished by the teachers, shows an improvement over previous years, as the standard is higher than heretofore.

Results of work in open-air classes: We have continued to follow up pupils discharged from open-air classes and transferred to regular classes. In 1918, 367 were transferred; of these 211 are still under observation, and can more than keep up with their regular work. In 1919, 491 were transferred, and of these 347 are still under observation; and are fully competent to continue their regular work. All pupils transferred in 1918 and 1919, who have been followed up, are in excellent physical condition and gaining steadily. Not one of these pupils has lost the gain made and, therefore, it has not been necessary to return them to an open-air class.

In 1920, 330 pupils were transferred to regular grades, with results as noted above, under caption "Cases discharged from opening classes."

It is interesting and noteworthy fact that pupils transferred to regular classes, after being members of an open-air class, always regret that they are not still in one of these classes. They all miss the low temperatures and relaxation. However, they all carry away with them the routine of these classes, and follow it, at least to some extent, in their homes. Many parents, after seeing results attained by their children in open-air classes, follow the routine for their other children. It is only in very rare instances that parents now request that their children be taken out of an open-air class and transferred to a regular one. This occurs when a child is in the higher grades, and the parent is unacquainted with the school work. They fear the child will not receive sufficient schooling. After they have been, however, in an open-air class for some time, they object to having them taken out.

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Summer vacation: The Association for Improving the Condition of the Poor, and the Tuberculosis Committees of Brooklyn and Queens, conducted camps at Southfield, N. Y., again this year, and afforded vacations to 648 boys and girls of open-air classes. This has been the means of preventing many from losing weight during the summer vacation. The coming summer, they will be able to care for many more, as they both will have larger camps.

Conclusions: Now that this work has been conducted for so many years, and the results have been so uniformly good, definite conclusions as to the value of the methods and routine are possible.

Summary of Conclusions as to Value of Open-Air Classes.

1. Physically subnormal children improve in mental and physical condition.
2. Their nutrition and weight improve, and this gain can be maintained.
3. Arrested tuberculosis cases have no relapse.
4. Exposed cases remain in good health, and do not acquire tuberculosis.
5. A nervous system is restored to normal.
6. Cardiac cases, kept under proper medical supervision, improve markedly.
7. Capacity for doing work is increased to, at least, a normal average.
8. Absence from school, on account of illness, is greatly reduced.
9. The number of infectious disease cases are greatly reduced.
10. Food is correctly prepared, and a proper diet follows.
11. Good habits are established and followed.
12. Hygienic rules are introduced into the homes, and followed in later life.
13. Average normal children do not lose as they progress in their school life, but maintain, at least, a normal average physical condition.
14. The parents acquire the same knowledge as regards diet, good habits and hygienic rules as the children do.
15. The children learn how to do the right thing at the right time, for the rest of their lives.

It has been repeatedly stated by us that this work must, sooner or later, be extended to include all pupils of regular classes. This would insure better physical condition, less sickness, and better scholastic results.

All members of the Bureau of Child Hygiene whose work has brought them into touch with open-air classes, take this opportunity to express their thanks for the hearty co-operation of the Associate City Superintendent-in-Charge of Special Classes, as well as for that from principals and teachers, and various committees on the prevention of tuberculosis.

Sight Conservation Work Among School Children.

The eye clinics were organized in 1902, to care for the large number of cases of trachoma, and cases of suspected trachoma, found, at the time, in public schools. For several years, work of these clinics was almost exclusively treatment and operation of these cases.

The eye clinics are now nine in number, located, with one exception, in public schools, five in Manhattan, three in Brooklyn, one in The Bronx, and one in Queens. They are maintained under jurisdiction, and in accordance with rules and regulations, of the State Board of Charities. Only children whose parents are unable to pay a private physician, are accepted for treatment.

The eye clinics of the Bureau of Child Hygiene have been reorganized, during the past three years, and there exists a system of close co-operation with the Division of School Medical Inspection, to produce a great increase in efficiency over the old organization, and to attain the following results:

First: The detection and treatment of all contagious eye diseases among school children.

Second: The detection and correction of refractive errors in school children, not already under private treatment.

Third: The examination of all candidates for, and supervision of sight conservation and blind classes, in public schools.

The staff consists of: 1. The Director and Assistant Director of the Bureau of Child Hygiene. 2. The Borough Chiefs, in control of the administration of clinics in each borough. 3. The Supervising Oculist, charged with the supervision of technical work of the staff, in all boroughs, and in direct charge of sight conservation and blind classes. 4. The Supervising Medical Inspectors, field heads of the work in schools. 5. Supervising Nurses, field heads of nurses, in clinics and schools. 6. Oculists and nurses, in each clinic. 7. Medical inspectors and nurses, in schools.

The character of the work of eye clinics has changed greatly in the last three years.

In response to recognized harmful effects of refractive errors on mental development of the growing child, refraction work has increased enormously, and the clinics have a highly developed staff of ophthalmologists, expert in the refraction of young children, mentally defective children, and partly-sighted children.

In line of experimental research, groups of hundreds of mentally defective children, "habitually left-back," have been refracted, and those with refractive errors have been properly fitted with glasses, the cases followed up, for months and years, for data on effects of eye strain on the child mentally.

There are several reasons why these clinics are needed, in addition to the public eye dispensaries of the City.

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1. Correct refraction of the young child is a tedious and tiresome task, and, in nearly all eye dispensaries, for this reason, is passed on to the novice or lowest assistant, and, in some cases, to the optician who has the contract to fill prescriptions for the glasses. Refraction of the very young child, backward child, and mentally defective child, calls for the very highest skill on part of the oculist and, in our opinion, should never be entrusted to the novice or optician. The oculists of the clinics of the Bureau of Child Hygiene are highly trained, with years of experience in refracting these cases.

2. It has been impossible to obtain sufficient facilities in public eye clinics to handle the great mass of refraction work. The sight conservation and blind classes are under direct supervision and care of the Supervising Oculist. All candidates for these classes are examined by an oculist of our clinics, and the report sent to the Supervising Oculist, who makes final recommendation as to assignment of the child to a normal or sight conservation class, or to a blind class and, in those cases not under private treatment, which is the case in the great majority of these children, he assumes active treatment of the condition found, if any treatment is indicated.

A vast amount has been accomplished by this intensive systematic work in the sight conservation classes. About 2,000 candidates have been examined—110 were assigned to the blind class, where the child is taught the Braille system of finger reading; 845 were assigned to sight conservation classes, which are equipped with special large print blocks, raised maps, most favorable lighting, individual assistance from special teachers, to permit these partly sighted children to perform as near regular grade as possible, without injury to their already crippled eyes. All of this class of children, who are not under private treatment, and where it is indicated for the existing eye condition, are cared for by a co-operative plan between special teachers and the supervising oculist. In this way it has been possible to accomplish a great amount of improvement as the child is kept constantly under observation and treatment, which overcomes great obstacles to results in treatment of this class of cases in public eye clinics with no official connection with Department of Education.

Good results have been secured in removal of corneal scars by prolonged application of negative galvanism, in clearing up old trachoma cases, in keeping progressive myopes under constant observation, and closely following their sometimes rapidly changing refractive conditions, which are so important in these cases.

The system now in operation between eye clinics and schools, to care for eye cases without loss of school time to the child, and to avoid confusion and overcrowding at clinics, is for the school nurse, principal, teacher, social worker, or attendance officer to phone the nearest eye clinic.

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and make appointment for a certain number of cases on a certain day. It is required that the parent sign a consent card, and that some older person accompany the child, if a mydriatic is to be used. The school nurses, attendance officers, social workers, etc., often bring groups of children to clinics, saving parents the loss of time from work or home duties. During the year ending July 1st, the following work was performed at these clinics:

WORK OF EYE CLINICS.

Visits to clinics.....	79,253
New cases	19,639
Refractions	30,128
Prescriptions for glasses.....	10,021
Medical prescriptions	84,068

The sight conservation work in public schools aims: 1. To provide conditions under which "partially-sighted" children may study without injury to the eyes. 2. To provide supervision and treatment, by an oculist of the Bureau of Child Hygiene.

The equipment of these classes consists of special large print, proper light, raised maps, adjustable desks, and individual assistance by teachers, who prepare all work in large, easily read copy, which permits the partly-sighted child to keep pace with its normal grade, without further loss of vision. Constant supervision and treatment are given by the oculist, who examines the eyes of all candidates and assigns the child to a blind, sight conservation, or to a normal class. He makes a full diagnosis and prognosis, and outlines the kind and quantity of work that may be permitted for each individual child. He also strives to improve the condition found, by the indicated treatment, whatever the condition may be, disease or refractive error. Each child suffering from any eye disease or refractive error is instructed to go to its private oculist for treatment, if financially able, but, with the great majority of children in these classes this is not the case, in which event, if the parents consent, the child is treated in the Child Hygiene Special Clinic, for these classes.

The oculist care of these classes has been under direction of the Bureau of Child Hygiene for about four years with most gratifying results, in a large number of cases. The hearty co-operation of Miss Moscrip, Board of Education Inspector of Blind and Sight Conservation Classes, and her splendid corps of teachers has been of great assistance. The blind classes continue to teach the Braille system and other usual educational work. At present there are six blind classes, and twenty-eight sight-conservation classes, and more classes have been authorized.

Some highly practical results have been obtained since the Bureau took over this work—results that would not have been obtained otherwise. For example, through the combined efforts of principals, teachers, medical inspectors, and nurses, after special instruction by the Supervising Oculist, a large number of children with vision in the better eye of 20/70, or worse,

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were found, taken to our clinics, and over 900 returned to school with practically normal vision after treatment or refraction. These children had all been through the usual routine of school medical inspection, but, due to either error in original vision test, unsuccessful follow-up work, or lack of co-operation by principals and teachers, due, in most cases, to a lack of thorough understanding of the importance of this work, there had been failure to get them under proper treatment. Of those admitted to sight-conservation classes with vision that could not be improved at once by refraction sufficiently to do normal work, may have been improved by combined treatment and proper use of eyes to such a degree that they have been reassigned to normal classes. All children with a vision in the better eye of 20/70, or worse, are candidates for sight conservation classes. If the oculist cannot improve this vision, the child may be assigned to the sight conservation class. If the vision is improved to better than 20/50 by glasses or treatment, the oculist decides if sight conservation work would be beneficial in each case, as in many cases of progressive myopia the vision can be improved with glasses to a greater degree than 20/50, or to even normal vision, 20/20. A final recommendation is given by the oculist-in-charge of each case, as to the extent to which the use of the eyes shall be permitted, with full instructions as to glasses, re-visits to the oculist, etc., as by this method only can most children be kept under most favorable conditions.

The educational feature of the work is becoming more and more prominent, not only with parents, children and teachers of the sight conservation classes, but with principals and teachers throughout the City. Many principals today have but a very vague idea of what a sight conservation class is, but nearly all are intensely interested and co-operative, after hearing the subject fully explained with the other very important activities of the eye clinics, especially the subject of harmful effects of refractive errors on the mentality and school progress of the growing child.

By far the most common cause of loss of vision in the children of the sight conservation classes is progressive myopia. Progressive myopia is a subject with which the general practitioner and the school teacher should be far more familiar than many are now. They should be sufficiently familiar with this subject to be able to explain intelligently to parents and children why the myopic eye needs so much more careful and constant attention than other forms of refractive errors. It is here that the sight conservation class is of inestimable value in co-operating with the oculist in saving these near-sighted children from irreparable injury to their vision. The constant strain of near-sighted eyes can be relieved by wearing glasses if properly fitted, combined with proper use of eyes, but it is only through the co-operation of the family physicians, teachers, social workers, and school nurses that parents and children can be educated up to the point of giving these eyes proper and sufficiently sustained care. The ciliary muscle

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spasm of myopic eyes of children and therefore the necessity for the use of a mydriatic in the proper refraction of these cases, is clearly explained to the parents in non-technical language why the child should be taken to the experienced oculist and not to the optician, who is not permitted to use a mydriatic by law, because he is not a physician.

Those having control of children of the school age should know the importance of proper light in conservation of eyesight, and harm done by working the growing eye in improper light. The starting of near-sight in a normal eye is undoubtedly very often caused by eye-strain necessary to read and study in a poor light. The question of light receives but scant consideration in many schools. Many classrooms are lighted very poorly by gas on all days but the very brightest, and the study room of one of our high schools, in the auditorium, has practically no daylight. No more favorable setting could be imagined for the development of myopia, blepharitis, headaches, and all that long list of neuroses caused by eye strain in the growing child. It will be necessary to do a great deal of educational and propaganda work before we shall be able to correct these defects and guard against repetitions in new buildings. Many night schools are not provided with proper lighting equipment, and the work done by pupils under this poor illumination is producing same bad results as in poorly lighted day schools.

A large part of good results is obtained by skillful refraction, which is the proper fitting of glasses. Refraction of the partly-sighted child, mentally defective, backward, or very young child, required highest skill and is usually beyond that of the oculist of little experience and of the optician. This work calls for constant use of "skiascopy" or "shadow test," by which measurement of refraction of the eye is made without assistance from the child, as in these classes the child can be of but very doubtful assistance to the oculist. After considerable practice a high degree of accuracy is obtained by this method. A great deal of harm may be done to defective eyes by improper use, and also to the physical well-being of the child, from effects of eye strain in producing reflex nervous symptoms.

Out of the 132 ungraded or mentally defective children, refracted by the supervising oculist, and for whom glasses were procured, 34 were found to be normal mentally after relieving their eye strain and giving them vision, and more than 65 per cent. showed decided mental improvement, and many showed physical improvement. In the child of normal mentality, defective vision is a great handicap, as is shown in every large school or group of schools. In a group of 400 "habitual left-back" children in one of our large schools, it was found that more than 100 had decided refractive errors. Glasses were prescribed for about 110; one hundred of this number procured the glasses, and, in less than three months, saw some very agreeable results. Out of the 100 more than 98 of the "habitual left-backs" passed

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the regular school examination, many skipping classes, and one boy, far behind his grade for age, skipped five grades on the examination. Of the ten who did not have their prescription for glasses filled, only one was promoted. In the same school we had the walls of a small room nearly covered with test papers, showing the startling improvement made in writing, drawing, and arithmetic, in remarkably short periods by children of all ages after correction of refractive errors.

The total number of cases recommended to the blind and sight conservation classes during the school year were 995, but the public schools have been able to admit less than half of this number as there are only about 30 classes and these are widely scattered.

Dental Clinics for School Children.

The establishment and maintenance of dental clinics were the outgrowth of school medical inspection, through which it was found that a very large percentage of the children of public schools had dental defects of varying degrees, kind and extent, and that public facilities for the care of these defects were woefully lacking.

The Department has maintained, since January 1st, 1913, eight dental clinics for school children. Six of these clinics are located in school buildings, and two in buildings in the vicinity of schools. Other things being equal, experience has shown that the best place to perform dental work for children is within the school building, since such organization not only saves time, effort, rent, light, heat, and other overhead charges, for all concerned, but the school atmosphere results in a greater and more ready acceptance by the child of this work, and permits of closer co-operation by educational authorities. The personnel of these clinics consists of supervising dentist, nine dentists and eight nurses. The supervising dentist and dentists are part-time officers, serving three and one-half hours daily, from 9 A. M. to 12.30 P. M.; the nurses are full-time employees with hours from 9 A. M. to 4.30 P. M. The dental work at these clinics is under supervision of the Bureau of Child Hygiene of the Department of Health, and comprises part of the work of school medical inspection.

With a school population of approximately one million, with from 65 per cent to 90 per cent of school children having potential or actual dental defects, with a considerable number of parents unable to pay for treatment, or not sufficiently alert to realize the importance of prophylactic care, it is obvious that this number of clinics and this limited force are totally inadequate to cope with the dental situation, as it exists in schools of the City. The amount of corrective work that would be required to place the mouths of school children in proper condition is so great that, under existing conditions at any rate, the appropriation of a sufficient amount of money to adequately perform this service is impossible.

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Owing to limited force and budgetary appropriation, it has, therefore, been the policy of the Bureau to concentrate largely upon the preventive side of dental work, as far as possible. The Bureau endeavors to make these clinics central offices, serving as large a proportion of the schools of the neighborhood as their capacity will permit. No attempt is made to treat all children of schools. The main object is (1) to educate and instruct children in prophylactic dental care; (2) to prevent and treat dental defects in children of the younger age groups, in order that future unfavorable conditions may be prevented or modified.

As far as possible, children entering school for the first time, are referred to these dental clinics for examination and slight repair work that is usually necessary at this time. In addition, nurses instruct children in mouth hygiene, giving special attention of necessity of daily use of the tooth brush. The children are taught the importance of clean mouths, and are required to report to the dentists at least once in six months for re-examination and repair of minor defects. Supplemental to the work of dental clinics, every child physically examined in school, irrespective of whether or not he has dental defects, is given instruction in oral hygiene, and tooth brush drills are a regular part of the duty of the school nurse.

The work in these clinics is performed largely upon children of lower grades, that is, of the first and second school years, although emergency cases of toothache, children about to be admitted into tuberculosis preventoria, open-air classes, and children temporarily refused employment certificates, are occasionally treated. The dentists perform extractions and fill cavities.

During the year 1918, the dental staff was increased by the appointment of three dental hygienists. Hope is entertained that sufficient funds will be provided, in the near future, to allow for the appointment of a much larger staff since the Bureau feels that such aid could play a large part in the prophylactic dental work among school children.

The Bureau recognizes its inability to provide sufficient dental care for all the school children and that inadequate provision for such care exists throughout the Greater City. It, therefore, seeks to emphasize the educational and prophylactic side of oral hygiene in its clinics, and provides corrective measures, so far as possible. The need for dental clinics in schools is acute, and the Bureau is constantly in receipt of requests from principals for the establishment of such clinics. During 1920 several additional dental clinics were opened in public schools by mothers' clubs, American Red Cross, Association for Improving the Condition of the Poor, principals' school funds, and other agencies. The need was also felt by parochial schools and, in several instances, ways and means for establishment of dental clinics therein were perfected. Not only have dental clinics been established in schools, but various co-operative agencies have established dental centres

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in congested sections of the City, in and about public schools. These agencies have also seen the possibilities of preventive dental work by dental hygienists and have assigned several as part of their organization.

Several improvements in the dental service were effected during 1920, among which may be mentioned an almost entire change of dentists, a more accurate tabulation of records, an improvement in reports, history forms, consent cards, etc.

It seems apparent that municipal funds for establishment and maintenance of a sufficient number of dental clinics, to adequately care for dental defects in children of the schools, will not be forthcoming for many years. It is, therefore, hoped that some public-spirited citizen, or child-caring agencies, may do for New York what the Forsyth Brothers have done for Boston, Mass., and Mr. Eastman, for Rochester, N. Y. Owing to the small number of clinics and limited working force under supervision of the Bureau of Child Hygiene, we welcome co-operation of citizens who are sufficiently interested in the care of school children to provide funds, not only for equipment and maintenance of dental clinics, but, also, for providing necessary number of dentists, nurses and dental hygienists, so essential for the care of mouth and teeth in early life.

DEPARTMENT OF HEALTH DENTAL CLINICS.

REPORT OF 1920.

Patients	5,874	
Visits	16,064	
Re-Visits	9,333	
Discharged	5,505	
Cured	4,581	
Dropped	114	
Treatments	70,592	
Temporary Fillings	1,686	
In Deciduous Teeth	181	
In Permanent Teeth	1,505	
Operations	46,837	
Extractions, Deciduous	13,199	
With Anaesthetic	583	
Without Anaesthetic	12,616	
Extractions, Permanent	3,533	
With Anaesthetic	3,467	
Without Anaesthetic	66	
Fillings, Permanent (Deciduous Teeth)	13,821	
Silver Amalgam	1,033	
Copper Amalgam	87	
Copper Cement	1,729	
Cement	1,955	
Gutta Percha	4	
In Permanent Teeth:		
Silver Amalgam	4,813	
Copper Amalgam	191	
Copper Cement	1,120	
Cement	2,636	
Gutta Percha	53	
Cleanings	6,058	
Otherwise	8,540	

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Prophylactic Instruction :		
By Dentist	8,368	
By Nurse	18,492	
Cases Examined and Charted.....		7,246
Work Paper Cases		395
Emergency Cases		963
Cases Otherwise		4,516

The Schick Test and the Administration of Toxin Antitoxin.

While the last twenty-five years have witnessed a reduction in mortality from diphtheria, largely as the result of prompt and sufficient administration of antitoxin—a reduction of from 150 per 100,000 to 21 per 100,000 of the population—it is apparent that we have almost approached the limit of control of this disease by the older methods of isolation, quarantine, disinfection, and antitoxin administration. As statistics of the last decade show there has been practically no reduction in the morbidity of diphtheria. During recent years, from 12,000 to 14,000 cases have been reported with from 1,000 to 1,200 deaths. This limitation of control is due to the fact that many susceptible individuals contract diphtheria, not by exposure to cases ill with or convalescent from the disease, but, from carriers or persons in apparent health, who harbor diphtheria bacilli of varying degrees of virulence in their throats and noses. It is well known that a large percentage of cases have not been in contact with known cases of the disease. Furthermore, many mild cases of diphtheria, presenting evidence of only reddened throat, or tonsillar exudate—the so-called “missed-cases,” and many cases of nasal diphtheria, are unrecognized and untreated. These contribute in no small way to the infection of susceptibles.

With, approximately, 1 per cent. of the population acting as carriers, and with many thousands of missed cases, it became apparent that the control of diphtheria was a most difficult problem, unless we could determine which individuals were susceptible, and render them immune to infection. In the City of New York, the problem was further complicated by the fact that, even if it were possible or practical to control the large number of carriers in our own population, we would still have to reckon with the large daily floating population of half a million, in whom it is reasonable to assume this same 1 per cent. of carriers exist.

This stationary incidence and mortality of diphtheria has existed in spite of all rules and regulations of report, quarantine, educational propaganda, administration of antitoxin, school medical inspection, school exclusion, improved hygiene and sanitation, and has been due, largely, to the aforementioned factors, namely, inability to isolate and control carriers and missed-cases. With the intensive school medical supervision exercised by the Bureau of Child Hygiene, in recent years, the prevalence of diphtheria, as well as of other major diseases among school children, has been materially reduced. For instance, the rate of cases found in children of the schools

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and excluded for 1910, was 1.08 per thousand, as against .02 per thousand children, in 1920.

As a result of numerous laboratory experiments and clinical observations, conducted for several years by the Bureau of Laboratories in hospitals and institutions, it was established that the Schick test afforded a simple, convenient and reliable means for determining the susceptibility or immunity of individuals to diphtheria, and that the administration of three doses of toxin-antitoxin, given one week apart, to susceptibles, would protect the vast majority—90 per cent. or more—against diphtheria, perhaps even during their life-time.

The Schick test and the administration of toxin-antitoxin offered such great possibilities, that the Department, through the Bureaus of Child Hygiene, Preventable Diseases, and Laboratories, were ordered by the Commissioner to start an educational campaign to popularize the Schick test and immunization against diphtheria, in the hope that there would ensue a better control of this formidable disease. As a result, the Directors of the Bureaus named were appointed as a committee—the Schick Committee—to formulate a program for conducting the test on a large scale, in order to detect susceptibles or immunes, and to provide for the injection of toxin-antitoxin, to as large a number of the child population as possible. This committee recommended as follows:

1. An intensive campaign be conducted in the Baby Health Stations to promote the application of the Schick test, as soon as present campaign to increase vaccination against smallpox has been concluded.
2. Selected regions, especially those census areas in which the greatest mortality from diphtheria occurred during 1918, are to be selected for the purpose of promoting the Schick test and active immunization. The Bureau of Laboratories will concentrate upon schools of these census areas and other selected regions, in co-operation with the Bureau of Child Hygiene.
3. The Committee recommends the printing and distribution of additional circulars and placards, advocating to parents and guardians the employment of the Schick test and active immunization.
4. The records of the number of Schick tests performed during past years and during the current year, by the Bureaus of Child Hygiene, Laboratories, and Preventable Diseases, respectively, should be forwarded to the Director of the Bureau of Preventable Diseases, to be collected and compiled by him so as to be available for publicity work, and, as a means of certifying to the Commissioner, the total volume of work which has been done in this field, throughout the City, by the Department, as a whole.

Inasmuch as the Bureau has under its supervision, throughout the year some 48,000 children under two years of age, at the Baby Health Stations, and, approximately, one million public, parochial and kindergarten children, and, through the home visits of its field nurses, it came in intimate touch with the pre-school age group,—2 to 6 years—it was very naturally decided that this Bureau should be the one through which the bulk of this work should be performed. Although, it was generally agreed and recognized that the most susceptible children were found in the group from six months to five years, of age—it was felt that approach through the school population would be the most expedient and practical for several reasons:

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1. A large group of, approximately, one million children was readily accessible and more or less easily controlled, supervised and followed up.
2. The school age was responsive to education and to health work, and could be made to understand the importance of the procedure.
3. The school child could carry the story of diphtheria prevention into the homes, and prevail upon parents to have the smaller brothers and sisters tested and immunized.
4. The co-operation of the school authorities would enhance our efforts and further the educational propaganda.
5. As the general public came to learn, through the school children, of the simplicity of the test and the practical harmlessness of the toxin-antitoxin injections, the application of both to the younger and more susceptible age groups would follow, as a matter of course.
6. Such approach offered the possibility of securing, with least effort, a large volume of reliable statistics, which would be of value for formulating future constructive plans. It was less time-consuming, more economical, more accurate and uniform than house to house visitation.

It having been decided that schools were to be in the main avenue of attack, it became necessary to secure co-operation of the Department of Education, and authorities of the parochial schools. The Director of Physical Training, of the Department of Education, under whose immediate jurisdiction this phase of activity was placed gave the Bureau his whole-hearted support and co-operation and, by circularization of district superintendents, principals and teachers aroused a very active interest and willingness to have this work conducted in schools on a comparatively large scale. Only after the office of the Director of Physical Training, secured the consent and co-operation of district superintendents and principals, did we proceed in the schools. It must be said that the enthusiastic support afforded by school authorities, particularly by man principals, was responsible in no small way for the dispatch and decorum with which many hundreds of thousands of cases were tested and injected in the schools. So interested did some of the principals become that they had letters printed and addressed to parents, notifying them of the dangers of diphtheria, and means of prevention, through the Schick test and toxin-antitoxin administration, emphasizing their personal confidence in the procedure.

The first half of the year was taken up largely in preparation for the "Schick Campaign," as we termed it. Special circulars of instruction to parents, with an affixed consent slip; "After-Care of Arm" circulars; certificates of successful immunization; report forms; circulars for physicians; plates showing positive, negative, pseudo, and combined reactions and various articles on the subject in Departmental publications, were prepared and distributed. It is very important, in work of this kind, that records be accurate, for it is no small matter to have a negative reaction improperly or carelessly charged to a child, to give it an immune certificate, and then, later, to have it develop diphtheria. As a further preparation for this work, the Director and Assistant Directors of the Bureau of Laboratories, and their assistants, gave several talks and practical demonstrations to inspectors and nurses of the other Bureaus, outlining in detail the rationalé of the Schick test and toxin-antitoxin injections; the results of their many experiments and obser-

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vations; confidence in the procedure, if properly performed and interpreted; preparation of diluted and heated or neutralized toxin for the control; interpretation of reading, as negative, positive, pseudo and combined; the proper administration of toxin-antitoxin; possibility and frequency of local and constitutional reactions, etc. The field force was impressed with importance of three essentials, upon which reliability of the test depends, namely, (a) A standard toxin dilution of proper strength; (b) Accurate technique in the injection, by means of a good syringe and suitable fine needle; (c) The accurate interpretation of the re-action. Practical demonstrations to emphasize and impress these facts were given on several occasions, because unless the three essentials above mentioned obtain, unjustified criticism and distrust in the value and efficiency of the test will follow.

By the fall of the year, inspectors were sufficiently conversant with the procedures to undertake the work in schools and Baby Health Stations. The school authorities were also prepared, through distribution of appropriate literature to principals and teachers, and short, simple, non-technical talks by representatives of the Bureau of Laboratories, Borough Chiefs, Supervising Nurses, etc. At these talks, such important points were emphasized as, constant morbidity and mortality from diphtheria; large number of deaths under five years of age from the disease; the number of complications among those recovering, inability to reduce the incidence of the disease by older methods; danger of all susceptible individuals from carriers and missed-cases; protection against diphtheria which those showing negative or pseudo reactions enjoy; and practically complete protection against diphtheria in those toxin-antitoxinized with three injections. Many talks were also given to mothers' clubs, and to pupils on special occasions.

This work was conducted, not only in public schools, but in parochial schools—the Catholic School Boards of Manhattan and Brooklyn, showing a commendable spirit of co-operation, and joining with the Department in preparation of a special circular of instruction, bearing **their name**.

It was fundamental with us, during the performance of this work, that no child was "Schicked" or toxin-antitoxined, without the signed consent of parent or guardian. On the whole, very little difficulty was experienced in securing consent, and the number in any given school was in direct proportion to the interest and co-operation of the principals. Most pupils responded willingly to the test and injections.

In our educational literature, emphasis has been given to the fact that the family physician should be consulted, and that only in the event of his refusal or unwillingness to perform the test, and administer injections, would the Department finally proceed, always, of course, with written consent of parents. It has been our endeavor to divert this work, so far as possible, to the private physician, whenever families were able to pay; but it was unfortunate that comparatively few physicians either availed them-

selves of the opportunity of learning the technique and interpretation of reactions, at the various centres at which the Department offered to instruct them, or of applying the test among their clientele. Perhaps, with better understanding on the part of physicians the work will be undertaken by them on the scale which it merits.

In doing this work, one group of inspectors applied the Schick test by using diluted toxin alone, while a second group used diluted toxin on one forearm and the control test, with heated diluted toxin, on the other. The latter group felt that the control test not only enabled them to diagnose or read pseudo reactions more accurately, but offered an index of the likelihood of local or constitutional reaction following injections. It has been our experience that local and constitutional reactions were few and far between, and seldom of a degree and duration to warrant apprehension. The younger the individual, the less likely a reaction after toxin-antitoxin. There have been some differences of opinion, in certain cases, as to interpretation of reaction following the Schick test. In the present stage of development it seems to us the better and safer plan to consider all doubtful or weak reactions as positive, and administer toxin-antitoxin.

Baby Health Stations—In order to co-operate in the reduction of diphtheria incidence and mortality among infants and young children, the Baby Health Station service was extended to perform Schick tests, and to administer toxin-antitoxin injections to the limit of their capacity. This work was performed by the regular staff.

Unfortunately, the number of Schick tests performed in the Stations, during 1920, was not as large as we desired. It must be remembered, however, that it takes time to educate the public in all types of preventive health work and, more especially, in such types as require any injection into the body. Our success in this regard is to be judged rather by the amount of educational propaganda that we spread, than by the number of tests performed, or injections made. In all, some 1,572 tests were performed; in 731 cases, one injection of toxin-antitoxin was given; in 447, two injections; and in 375 cases, three injections; 170 successful vaccination certificates were issued. In 101 cases, natural immunity was found to exist.

In order that as many children of pre-school age as possible should be protected against diphtheria, field nurses of the Bureau of Child Hygiene urged parents living in districts where a Baby Health Station did not exist, to take these children to the clinics of centres operated by the Bureau of Preventable Diseases.

Schools—At public and parochial schools, the work, at first, was confined to children of the kindergarten classes, and later extended to children of older age. Here special workers from the Bureau of Laboratories took active part, assisted by inspectors and nurses of the Bureau of Child Hygiene.

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The following statistics show the amount of Schick work and toxin-antitoxin injections performed at schools and Stations:

SCHICK TESTS AND TOXIN-ANTITOXIN INJECTIONS—1920.

BABY HEALTH STATIONS.

	No. MADE.	RESULTS.				No. INJECT. GIVEN.			SUC-CESS. IM. CERTIF.	NEG. REAC-TION CERTIF.
		POS.	NEG.	PSEUDO.	COMB.	1ST.	2ND.	3RD.		
Baby Health Stations:										
Manhattan.....	545	190	149	30	33	80	66	25	9	57
Bronx.....	18	4	9	2	1	...	...	...	1	7
Brooklyn.....	1,009	250	86	1	4	651	381	350	159	37
Queens.....	...	...	...	...	...	...	...	...	...	...
Richmond.....	...	...	...	...	...	...	...	...	...	...
Totals.....	1,072	444	244	33	38	731	447	375	169	101
Public Schools:										
Manhattan.....	2,330	793	1,040	101	15	799	317	282	110	323
Bronx.....	446	114	279	15	0	89	56	31	13	8
Brooklyn.....	7,539	2,905	2,763	0	24	4,803	2,552	1,698	45	55
Queens.....	512	200	189	20	14	192	136	117	24	71
Richmond.....	127	77	50	...	...	72	1	49	...	44
Totals.....	10,954	4,089	4,371	136	53	5,955	3,122	2,177	197	531
Parochial Schools:										
Manhattan.....	166	126	218	143	5	112	111	88	...	136
Bronx.....	...	...	...	...	...	...	...	...	...	...
Brooklyn.....	...	...	...	...	...	...	...	...	...	...
Queens.....	...	...	...	...	...	...	...	...	...	...
Richmond.....	...	...	...	...	...	...	...	...	...	...
Totals.....	166	126	218	143	5	112	111	88	...	136
Grand Totals (Baby Health Stations, Public and Parochial Schools):										
Manhattan.....	3,041	1,609	1,407	274	53	991	494	395	124	516
Bronx.....	464	118	288	17	1	89	56	31	14	45
Brooklyn.....	8,548	3,155	2,849	1	28	5,454	2,933	2,048	204	92
Queens.....	512	200	189	20	14	192	136	117	24	71
Richmond.....	127	77	50	...	...	72	61	49	...	44
Totals.....	12,692	4,659	4,783	312	96	6,798	3,680	2,640	366	768

While valuable work in the prevention of diphtheria was performed during the year, it must be said this was largely in the nature of preparation for the greater campaign that will be conducted during 1921. This has paved the way for intensive and continued work in the years to come, by a campaign of education among physicians, nurses, social workers, school authorities, parents and children. Time will decide the effectiveness of this procedure upon diphtheria incidence in New York City, and we have confidence that a material reduction will ensue. We feel that the procedure is being popularized, that the public in general are gaining confidence and that soon the Schick test and toxin-antitoxin injections will be looked upon and sought as a preventive against diphtheria, much as vaccination is now considered a protection against smallpox.

Work of the Nurses.

The year made many demands upon nursing service of the Bureau of Child Hygiene. After-war conditions presented problems in homes, and

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among members of school children's families which demanded readjustment before the physical condition of children could be improved or corrected. It is often futile to suggest better baby and child care where there are more acute conditions confronting the family. The school and baby welfare nurse must be prepared and ready to suggest remedies, and obtain constructive relief before she can attempt to convince a mother that her child needs a better regulated diet, better sleeping quarters, and medical attention, generally. Special surveys were made, such as investigation of housing conditions, a milk survey—a tabulation of the quantity of milk used by individual families, to determine if high cost of milk had any bearing upon malnourished condition of many school children. Many other equally important surveys were conducted by the nurses, in addition to the regular work of school and Baby Health Stations.

A regular day's work may mean, to the uninitiated, the mere reporting at some Baby Health Station or public school. Many are the activities of a school nurse, when we consider that each nurse has not less than 3,000 to 4,000 children under supervision, and at times averages many more. A day's program, which includes morning inspection and routine classroom inspection, follow-up of children with physical defects, home and dispensary visits, school consultations with parents, organization and conducting Health Leagues and Little Mothers' Leagues, are a few of the activities which help to make up a rather full day. Added to this are numerous special assignments, when the Bureau concentrates upon some public health work, when the public is to be instructed and made familiar with Schick tests and immunization against diphtheria, for instance, or vaccination against smallpox, or, with special instruction regarding the prevention of respiratory diseases and other contagious diseases.

Much additional work was accomplished by nurses during the influenza epidemic. The existing shortage of nurses in hospitals and elsewhere made it necessary to assign them to Willard Parker and Riverside Hospitals for day and night duty; others who were not so assigned gave bedside nursing care in the homes, in their respective districts. Food, clothing, and shelter for children, medicine and hospital care, were provided, when necessary.

The demands made upon the nurse by members of the community are unlimited and varied. While not a social worker in full sense of the word, the opportunities are frequent, and often put to test the nurse's ability to help and suggest remedies. Through personal friends, philanthropic organizations and relief societies, the nurse has been successful in helping many children to regain their health or spend a vacation in the country during summer months. Additional milk, eggs, extra food, clothing, shoes, glasses and many other equally necessary things have been provided by holding bazaars, for the purpose of replenishing depleted school funds. Work of

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this kind, which entails additional hours of service, thought and energy, deserves at least honorable mention.

During summer months special assignments of nurses are made to boats of various child welfare organizations, which make daily trips with mothers and children needing such outings. Each day, before leaving for these trips, children are examined for possible contagious diseases. During the trips nurses distribute milk and crackers, and make use of the opportunity offered in instructing mothers and children in general welfare problems.

When time permits special instructions are given nurses, lectures provided, and keep them informed and instructed along the lines of latest developments in public health work.

Detailed figures of the nurses' work will be found elsewhere in this report.

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The importance of the work of Bureau of Food and Drugs, and its relation to public health was greatly emphasized during 1920. At the beginning of the year, the public was startled to read of the death of five persons in one family, due to consumption of contaminated olives. These cases were followed by others of food poisoning, all of which emphasized the necessity for strictest supervision, not only to determine the freedom from adulteration of foodstuffs, but to exercise watchfulness over conditions under which food and drink are manufactured, handled, transported, and stored.

Amendments to the Sanitary Code.

Permit to Sell Milk in Store—In order to control the sale of milk and to ascertain whether storekeepers were complying with regulations governing the sale of milk and milk products, it was found necessary to amend the Sanitary Code. Accordingly, the Board of Health, at a meeting held January 22, 1920, amended Section 155 so as to require a permit where milk is sold in stores at retail.

Ice Cream—After an investigation as to the kind and quality of ice cream sold in the City, details of which are dealt with more fully under food standards, Section 177 of the Sanitary Code was adopted by the Board of Health, on April 29, 1920. This section prescribes a definite butter-fat standard for ice cream.

Gelatin—As a result of an investigation of the kind and quality of gelatin used in manufacture of ice cream, it was recommended by this Bureau that a standard for gelatin be adopted and, on April 29, 1920, the Board of Health adopted Section 178 of the Sanitary Code, which defines food gelatin to mean: "A purified product of gelatin prepared from the bones, hides, hoofs, horns and tissues of animals." This section further prescribed that food gelatin shall not contain more than thirty parts per million of copper, or 1.4 parts per million of arsenic, or 100 parts per million of zinc, or 20 parts per million of lead, or 300 parts per million of tin, or two hundredths of one per cent. (.02%) of sulphur-dioxide, or any other added poisonous ingredient, or any ingredient which may render it injurious to health.

Shellfish—In April, 1920, regulations governing the sale of shellfish were amended by Board of Health. Under provisions of the new regulations, before shellfish can be sold in the City, it is necessary to have the source of supply approved by the Board of Health. Specific regulations governing the exclusion of contaminated shellfish were adopted. The regulations also provide that shellfish, where the total score or rating for *b. coli* equals 50 or more, shall be deemed contaminated: the score being determined according to system established by the American Public Health Association. That receptacles and containers in which shellfish are brought into the City

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shall bear a tag upon which shall appear source of supply, and name and address of shipper or producer.

Medicated and Denatured Alcohol—The Sanitary Code was amended on September 30, 1920, so as to require that all denatured and medicated alcohol sold as such at retail must be labeled "Poison."

Poultry Slaughter Houses—The supervision of poultry slaughter houses is one of the most difficult problems which the Department has to handle.

During the year, numerous applications were received for approval of sites to conduct poultry slaughter houses, which resulted in long protracted hearings before the Board. It was found that regulations of the Board of Health, wherein a poultry slaughter house could only be located within 200 feet of the waterfront, was giving holders of permits practically a monopoly on fresh slaughtered poultry in the City, and that it was practically impossible to obtain a new site at which to slaughter poultry. Investigations conducted seemed to indicate that dealers were taking advantage of this condition and competition was practically stifled; and, as a result, the people were forced to pay a higher price for their poultry.

In order to meet these conditions, regulations governing the conduct of poultry slaughter houses were amended on September 30, 1920. The requirement that poultry slaughter houses could only be located within 200 feet of the waterfront was removed; and in its place, the Board ruled that no site for a new poultry slaughter house would be approved if proposed site was located in a restricted district, or located within 200 feet of a church, school, library, hospital, sanatorium or other public institution, or if the site was not suitable or proper, for the establishment and maintenance of such a business. The regulations require the filing of a sketch showing the character of the property within a radius of 200 feet of proposed site, and also the filing of photographs showing the character of the property immediately adjoining the proposed site. The regulations governing the construction and maintenance of poultry slaughter houses were made more stringent, and all of the existing poultry slaughter houses were given until June 30, 1921, in which to make their poultry slaughter houses conform to the new regulations.

Time of Delivery of Milk and Labeling Thereof—Regulations governing the time in which Grade B Pasteurized Milk could be sold in the City were extended from 72 to 96 hours after pasteurization.

Regulations governing the sale of Grade C Milk were also amended so as to permit the sale of this milk in bottles.

Control of Patent and Proprietary Medicines—As result of the enforcement of regulations governing the registration of patent and proprietary medicines, it was found that regulations in force were not complied with by certain dealers, and that unnecessary clerical work was performed in the enforcement of these regulations, which did not make for efficiency.

After consideration of existing regulations and their enforcement, a new

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plan was prepared which met with the approval of dealers in patent medicines and which, while it did not entail much clerical work, was just as effective, and went further, in that before any patent or proprietary medicine could be sold in the City of New York, it would first have to be registered with the Department of Health. Much objection had been raised to filing the names of ingredients of patent and proprietary medicines. This was obviated by making it necessary for the manufacturer of a patent and proprietary medicine only to disclose the ingredients when, in the opinion of the Commissioner or the Board of Health, the claims made for the medicine are considered extravagant or fraudulent. The new regulations were adopted December 29, 1920.

The new regulations also provided that the Department of Health publish, each month, in the Food and Drug Bulletin, a complete list of all patent and proprietary medicines registered; that no patent or proprietary medicine will be registered or registration certificate issued:

(a) If it contains alkaloid cocaine or its salts, or alpha or beta eucaine or their salts, or any admixture, compound, solution or product of which cocaine or eucaine, or their salts, may be an ingredient;

(b) If it contains alcohol in excess of the amount required as a solvent or preservative or is not sufficiently medicated to make it unfit for use as a beverage;

(c) If it contains any methyl (wood) alcohol;

(d) If it is offered or intended directly or indirectly for use as an abortifacient, or for any other immoral or illegal purpose;

(e) If it contains more than the lawful quantity of opium or its derivatives. The term "lawful quantity" as herein used, means: If opium not more than (2) grains, if codeine not more than one (1) grain, if morphine not more than one-fourth ($\frac{1}{4}$) of a grain, or if heroin not more than one-eighth ($\frac{1}{8}$) of a grain in one (1) fluid ounce, or if a solid or semi-solid preparation in one (1) avoirdupois ounce. Provided, however, the provisions of this subdivision shall not apply to liniments, ointments and other preparations containing such drugs which are prepared and suitable for external use only. Provided, further, that all such remedies and preparations are to be manufactured, sold, dispensed or possessed as medicines and not for the purpose of evading the intention and purposes of Article XXII of the Public Health Law of the State of New York;

(f) If the claim is made for the preparation, by means of advertisements or recommendations, that it will "cure" or is a "specific" for any disease, deformity, injury or physical condition;

(g) If it contains any drug, or other substance, which, by reason of its poisonous or dangerous character, is present in such quantities as to render the preparation, when used according to directions, harmful, deleterious or dangerous to human life and health;

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(h) If it is intended for administration to infants under one year of age, it shall contain any derivative of coal-tar, which, in the opinion of the Commissioner of Health, is dangerous to children.

Changes in Organization of Bureau.

In May, 1920, the Board of Health approved the recommendation creating two new divisions in the Bureau to be known as:

1. Division of Food Statistics, Trade, and Market Conditions.
2. Division of Food Standards and Nutrition.

The functions of the Division of Food Statistics, Trade and Market Conditions is to compile statistics concerning the amount and various kinds of food controlled in the City, the establishments at which this food is handled and names of persons engaged in food business. The purpose of these statistics is that the work of the Bureau may be laid out on a better basis. This Division is also required to keep in touch with the general food supply so that, in the event of any possible shortage of food, the Department of Health may be fully advised.

The functions of the Division of Food Standards and Nutrition is to investigate and recommend, for adoption, food standards. Its duties also consist of keeping posted on general information concerning nutrition, so that the Bureau can organize its work along general lines.

Poultry Slaughter House Squad—During the year, it was found advisable to centre the supervision and inspection of poultry slaughter houses in all boroughs in one squad under the immediate supervision of the Director of the Bureau.

The organization of the Bureau consisted of the following:

- (a) Director's Office.
- (b) Division of Milk Inspection.
- (c) Division of Shellfish Inspection.
- (d) Division of Drug and Patent Medicines.
- (e) Division of Chemical Laboratory.
- (f) Division of Food Inspection for each borough.

The work of the first five were considered to be central functions, and persons in charge of the work were under immediate supervision and direction of the Director.

The Borough Chiefs (in charge of the Division of Food and Drug Inspection in the various boroughs) reported to the Director of the Bureau, through the Assistant Sanitary Superintendents of their respective boroughs.

Scope of Work.

The following table presents the approximate number of establishments that this Bureau is called upon to inspect, and to supervise the quality of food handled and sold thereat:

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FOOD ESTABLISHMENTS.

RETAIL.	MAN-HATTAN.	BROOK-LYN.	BRONX.	QUEENS.	RICH-MOND.	TOTAL.
Bakeries.....	1,700	980	500	231	53	3,464
Butchers.....	5,500	5,000	1,800	713	90	13,103
Coffee, tea, spices.....	260		50	20	2	332
Confectioners.....	2,285	1,350	2,000	832	172	6,639
Delicatessens.....	1,000	800	200	991	34	3,025
Drug stores.....	950	875	300	272	51	2,448
Fish stores.....	650	525	200	160	9	1,544
Fruits, vegetables.....	550	900	300	1,207	15	2,972
Groceries.....	7,000	7,200	1,200	1,491	420	17,311
Markets.....	35	15	15	2	67	134
Push carts, wagons.....	5,900		200	75	1,100	7,275
Restaurants.....	5,500	3,500	750	543	395	10,688
Stands.....	3,850		1,000	1,019	133	6,002
Miscellaneous.....			200	250	25	475
Totals.....	35,180	21,145	8,715	7,806	2,566	75,412

WHOLESALE.	MAN-HATTAN.	BROOK-LYN.	BRONX.	QUEENS.	RICH-MOND.	TOTAL.
Butchers' provisions.....	485	62	30	10	2	589
Candy factories.....	250	35	35	9	2	331
Carbonated water.....	145	120	15	74	5	359
Coffee, tea, spices.....	500	40		1		541
Color (food) Mfg.....	2	1				3
Cold storage plants.....	46	7	2	10		65
Commission houses.....	700	132	22		6	860
Condiment mfg.....	20	17		5		42
Cow barns.....		19	80	35		134
Drug mfg.....	200	125	12	5		342
Egg wholesalers.....	350	18	50	8		426
Egg breaking est.....	22	2	2	2		28
Extract mfg.....	150	2	12	2		166
Fat rendering.....	100	10	2	2		114
Fish and shellfish.....	225		1	1		227
Frozen products.....	100	45	6	121		272
Gelatin mfg.....	34					34
Jams, jellies, mfg.....	26	4				30
Markets.....	10		3			13
Piers, wharves.....	139	75			10	224
R. R. terms, and ferries.....	27	12	4	10	5	58
Shellfish fields.....			1			1
Smoke houses and meat preserv.....	434	80	6	38	4	562
Poultry slaughter houses.....	86	112	33	24	2	257
Salvaging estabs.....	10	7				17
Dry storage plants.....	161	144	6			311
Miscellaneous.....			30	340	5	375
Cereal mfg.....	38					38
Prepared food.....	83					83
Wholesale grocers.....	250					250
Wholesale dried fruits.....	142					142
Wholesale spices.....	135					135
Butter, cheese, eggs.....	520					520
Bakers and confect. supplies.....	215					215
Syrup and molasses, mfg.....	45					45
Totals.....	5,650	1,069	352	697	41	7,809
Total retail establishments.....	35,180	21,145	8,715	7,806	2,566	75,412
Total wholesale establishments.....	5,650	1,069	352	697	41	7,809
Grand totals.....	40,830	22,214	9,067	8,503	2,607	83,221

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With the personnel provided, and field to be covered, it was essential, in laying out the work, to first ascertain where the most attention was necessary, and then to arrange organization of the work accordingly.

The supervision of the quality of milk supply is, of course, one of the most important activities of this Bureau and, therefore, this work was handled by a separate Division, and as many men as could be spared were assigned to duty therein.

In arranging other work, the following general scheme was used:

First—The inspection of food in its raw state at points of entry, such as railroad terminals, piers and wholesale markets.

Second—The inspection of the factories where food products are manufactured from the raw materials.

Third—Inspection of bakeries, restaurants and hotels.

Fourth—Exclusion of diseased food handlers.

Fifth—Inspection of retail stores.

Food Standards.

During the year the first standards for any foodstuffs other than milk, cream and condensed milk, were adopted by the Board of Health.

In April, as was previously reported, standards were adopted for ice cream and gelatin. This action was taken as the result of investigations which had been started in 1919, and it was found that ice cream being sold in the City contained glue, cornstarch, and other fillers to the exclusion of milk and cream. This investigation also showed that the butter-fat content of ice cream sold ranged from 1 to 10 per cent.

Inasmuch as the consumption of ice cream was rapidly increasing, and as it was no longer considered a luxury but a food given to children, and recommended by doctors in treatment of their patients, the Board felt that a definite standard should be adopted under which it would be possible to regulate the kind and quality of ingredients used, and have an ice cream which would contain a definite percentage of butter fat.

Investigations made as to quality of gelatin used in the manufacture of ice cream revealed, in many instances, a so-called technical gelatin—which was really glue—was being sold and used in the manufacture of ice cream. This gelatin was found to contain a large percentage of heavy metals and, in some instances, arsenic was found in the gelatin used. As a result of this investigation, and in order to make it possible for this Bureau to control the use of proper gelatin in ice cream, a standard was adopted.

Since the adoption of these standards, the Bureau has been actively investigating other foodstuffs, especially bakery products and various drinks being sold in the City.

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Our investigations have disclosed the fact that there is much fraud in the baking industry—especially as regards pie baking. We found pies being sold which contained none of the fruits under which name they were being sold, but which were practically a product of the laboratory made with fillers—probably cornstarch—in which had been added various artificial colors and flavors.

We also found that the same is true as regards drinks sold in the City. This is especially so of drinks being represented to the people as made from fruits, as for instance oranges. Invariably the drink contains very little orange, and is made up largely of artificial flavor and color.

It is expected that, as a result of work being done along these lines, we will be ready to propose a standard for these products within the coming year.

Overcropped Poultry.

In connection with supervision of poultry slaughter houses, we found that the consumers of this City were being defrauded of millions of dollars each year by fraudulent practice of overfeeding poultry just prior to slaughter.

In order to determine the extent of this fraud, inspection was made in 379 retail kosher butchers. They buy direct from the poultry slaughter houses, and inspection was made immediately following the delivery of poultry to them.

Examinations were made of 7,679 fowls and 3,013 of these were found to be overcropped. Before a fowl was considered overcropped, the Bureau allowed a margin of 3 ounces to each crop. This was not set as a standard but as a working basis for the investigation. In some instances we found crops weighing 13 ounces. The total cost—at prevailing price to the consumer—for the excess crop content of poultry examined in our investigation, was \$239.76. In other words, the consumer who was paying for poultry at the rate of 46c. per pound, was receiving chicken feed which, at wholesale prices, cost the dealer 4c. per pound. It can readily be seen, therefore, that if this same proportion prevailed throughout the entire year, which it undoubtedly did, that consumers of fresh killed poultry were being defrauded out of millions of dollars each year.

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The summary of our investigation is as follows:

OVERCROPPED POULTRY INVESTIGATION.

	MANHATTAN.	BRONX.	RICHMOND.
Fowl examined.....	3,008	2,675	1,996
Fowl overcropped.....	1,552	1,115	346
Percentage of fowl overcropped.....	51%	41%	17%
Maximum weight of crops.....	13 ozs.	12 ozs.	4 ozs.
Average weight of crops.....	4 ozs.	6 ozs.	4 ozs.
Total weight of crops.....	486¼ lbs.	484 lbs.	96½ lbs.
Total weight of excess crop content in excess of 3 ounces.....	195 lbs.	275 lbs.	31 lbs.
Average retail price of fowl (November 18, 1920).....	46c.	46c.	46c.
1,552 crops to consumer at 46c.....	\$229.06		
1,115 crops to consumer at 46c.....		\$226.47	
346 crops to consumer at 46c.....			\$44.16
Excess crop content to consumer.....	\$89.70	\$126.50	\$14.56
Average of whole wheat and whole corn, wholesale.....	.04	.04	.04
Total weight of undigested, wasted whole wheat and whole corn crop content.....	486¼ lbs.	484 lbs.	96½ lbs.
Wholesale feed in crops.....	\$19.45	\$19.39	\$3.86
Retail shops inspected.....	224	67	88
No cause for action cases.....	80	16	45
Violation of rules and regulations (overcropped poultry).....	144	51	43

Shellfish.

During the year, information concerning sanitary conditions of various sources from which shellfish is shipped to New York City for consumption, was gathered.

Communications were sent to local health authorities where shellfish beds were located, also to the State and Federal authorities, asking for information concerning the sanitary condition of the beds, and whether or not shellfish from these beds was permitted sale in their states and in interstate commerce.

As a result of this work, the following bays and bodies of water were approved as proper sources of supply:

- | | |
|---------------------|--------------------|
| Barnstable Harbor. | Cotuit Harbor. |
| Bass River. | Edgartown Harbor. |
| Block Island Sound. | Flanders Bay. |
| Bourne Harbor. | Gardiners Bay. |
| Buzzards Bay. | Great Peconic Bay. |
| Cape Cod Bay. | Great South Bay. |
| Chatham Bay. | Hallocks Bay. |
| Cold Spring Harbor. | Hempstead Bay. |

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Katama Bay.	Oysterville Harbor.
Lewis Bay.	Oyster River.
Little Peconic Bay.	Pleasant Bay.
Lloyds Harbor.	Popponessett Bay.
Marion Harbor.	Plymouth Harbor.
Martha's Vineyard.	Scollop Pond.
Massachusetts Bay.	Shelter Island Sound.
Mattituck Creek.	Shinnecock Bay.
Mattituck Harbor.	Slocums River.
Megansett Bay.	Southhold Bay.
Nantucket Harbor.	Three Mile Harbor.
Nantucket Sound.	Vineyard Haven Harbor.
Napeague Bay.	Vineyard Sound.
Nausett Harbor.	Waquoit Bay.
North Sea Harbor.	Wareham River.
Noyack Bay.	Wellfleet Bay.
Onset Bay.	

Forty-two cases of typhoid fever were reported during the year which had histories of the ingestion of shellfish during the incubation period of the disease. Our investigations disclosed that shellfish consumed by the patients had been received from various beds, but there was no indication to warrant belief that any particular bed was responsible for the typhoid fever.

During the year 591 samples of shellfish were procured for bacteriological examination and chemical analyses. Out of 324 samples of oysters procured for bacteriological examination, 23, or 7%, scored 50 or over. Of 250 samples of clams, 29, or 11.6%, scored 50 or over. Of 17 samples of mussels, 6, or 35%, scored 50 or over. The chemical examinations were made for determination of the presence of colors, heavy metals, and total solids.

Shellfish from the Navesink River, a tidal stream in New Jersey, were excluded on information from the State Board of Health of New Jersey indicating that shellfish from said river were unfit for food purposes. In connection with above exclusion, the Department received a report with regard to an epidemic of typhoid fever in New Jersey, due to ingestion of oysters and clams from said river.

Maurice River Cove oysters were excluded until November 1, 1920, when the order of exclusion was rescinded, providing shellfish from said cove were not floated in the waters of Maurice River.

Patent and Proprietary Medicines.

Fifty-one hearings were held during the year in regard to manufacturers of patent medicines who made false and exaggerated claims as to

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the therapeutic value of their preparations. As a result of these hearings the manufacturers were given an opportunity to eliminate the objectionable statements. In all instances dealers either discontinued sale of their products in the City, or amended their claims so as to comply with regulations of the Department, thereby obviating the necessity of criminal prosecution.

Registrations—At close of the year there were registered with this Bureau 4,330 patent and proprietary medicines.

Milk.

Although The City of New York was not subjected to a dairymen's strike during the year 1920, it was considerably embarrassed because of severe snowstorms which were general through the eastern part of the country in the latter part of January and early part of February. The severe storms on February 4th, 5th, 6th and 7th amounting to a blizzard, greatly hampered deliveries of milk. Milk trains were delayed, in some instances from 24 to 48 hours, and, consequently, all milk and milk products consigned to this City were from one to two days late in reaching the consumer. The country milk inspectors were greatly handicapped in their work. Because of extreme weather conditions, the time limits governing sale of milk and milk products after its production and pasteurization were not enforced. The immense amounts of snow clogging the streets caused the larger milk companies to request the Department to take up the matter of cleaning certain of these streets with the Street Cleaning Department, in order to facilitate milk deliveries. Through efforts of the Commissioner, and with co-operation of the Street Cleaning Department, West Street and necessary crosstown streets leading to the several bridges and ferry approaches were promptly cleared of snow. It is true that, despite these herculean efforts, there was a partial milk famine; however, the Department promptly referred requests for milk from families having infants and children, or sick persons to milk dealers, who made special deliveries to such homes, and eliminated, as much as possible, all cause for complaint in this respect.

As an offset to the above described conditions, which severely taxed the best efforts of dealers in this City, it might be said that the extreme winter weather provided operators of country milk stations and dairymen delivering their milk thereto, with the opportunity for cutting and harvesting an adequate ice supply for the entire year. The members of the New York Milk Conference Board, and officials of the Dairymen's League, Inc., co-operated with the Department and its representatives in urging upon dairymen the absolute necessity of storing ice for the warm weather, if it was the desire to market their milk to the best financial advantage. The constant pressure from all sides was instrumental in having most farmers

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see the light, and, as a result more ice was stored during the winter of 1919-1920 than ever before in the history of milk inspection work.

Country Milk Inspection—Maintaining the high standard of the milk supply of this City depends, to a far greater extent than is realized, upon continuation of country milk inspection work, which vitally important work was inaugurated in 1906, and took on its present intensive form in the early part of 1908.

Since 1915 very little inspection work has been conducted at dairies producing Grade B Pasteurized Milk, for the reason that with its limited force the Department found it necessary to concentrate its efforts upon the inspection of pasturizing plants and dairies producing Grade A Raw and Grade A Pasteurized Milk. There is in the regulations a requirement that a sanitary inspection be made of each Grade B Pasteurized Milk producing dairy by the dealer purchasing the product produced in such dairy, at least once each year; however, it has been forcibly impressed upon representatives of the Department that, since the withdrawal of official inspections of this grade of dairy, sanitary conditions have retrograded.

One day in March a country inspector telegraphed the office that milk shipped that day from a large creamery in New York State (195 cases and 125 cans), had been "flash" pasteurized, being only subjected to a temperature varying from 110 to 135 degrees Fahrenheit. This plant furnished part of the Grade A Pasteurized Milk dispensed in the Baby Health Stations exclusively for the feeding of infants and children. It is obvious that without country milk inspection this would have been sold as shipped, whereas it was embargoed, properly pasteurized, and required to be sold as Grade B Pasteurized Milk.

Later, in May, another inspector telegraphed that 240 cases of "flash" pasteurized Grade A Milk had been shipped from Pennsylvania to several New York City dealers. This was also embargoed, properly pasteurized, and required to be sold as Grade B.

It frequently happens that inspectors find cows which have reacted to the tuberculin test, or are in an unhealthy physical condition (udder and lung affections), product from which is being shipped to this City for consumption. It is the continued inspection and fear on the part of dairymen and plant operators, of suffering financial loss, should they violate the official regulations, that the milk from such diseased animals is not continually offered for sale in this City.

Constant attention is given by representatives of the Department to enforcement of the cooling regulations, proper cleansing and sterilization of milk utensils and containers, and isolation of persons afflicted with communicable diseases, who are in contact with milk supply of the City.

The money spent in country milk inspection work brings results that can be measured only in human lives, and it is no exaggeration to state

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that, if this important phase of inspection work should be curtailed or withdrawn, the milk supply would within thirty days or less, become not only unclean, but unsafe.

Milk Surveys—During the year, several milk surveys were made, through which means the exact amount of milk arriving on one night at the various railroad platforms and terminals, for sale in Greater New York, was determined. The minimum amount was found to be 2,000,660 quarts, on March 22, 1920; while the maximum was 2,646,554 quarts, on June 18, 1920. This amount is greater than has ever before been received.

Vegetable Oil Products—During the year, various products known in the trade as "Nu-Krem," "Creco," "Manna" and "Cremix," were offered for sale by both the sweet and sour cream dealers. At the beginning they were marketed under proper labels; however, it was but a very short time thereafter that the original labels were changed. The vegetable oil products were mixed with Grade B Pasteurized, Sweet or Sour, Cream, and this mixture offered for sale as Grade B Pasteurized Cream. This practice was very general, but just as soon as it became known that vegetable oil could be isolated in the chemical laboratory of the Department, and that prosecution had been instituted against the manufacturers, sale of such products was discontinued by dealers operating in this City. It is true that there are still two or three dealers in Jersey City and Weehawken who are manufacturing "Cremix" and kindred products, but these are being prevented from marketing their product in Greater New York.

Cooling of Milk—The severe winter of 1919 and 1920 was welcome. The milk distributors, milk-carrying railroads, and dairymen, all had the opportunity of providing themselves with the amounts of ice their businesses required, and full advantage was taken of the opportunity afforded. It is true, of course, that many dairymen (whose water supplies were not sufficient to properly cool their product in the warmest weather) did not store ice, but it is felt that with further education and co-operation of the Dairymen's League and various dealers, in the future even these will build ice-houses and fill them each winter.

On various occasions, during summer months, surveys were conducted at several milk platforms in the metropolitan district, for purpose of ascertaining efficiency of the icing of milk cars. Temperatures, in most instances, were found to be within the law and, on most of the roads, the milk containers satisfactorily iced. During the past three years considerable improvement has been effected in icing by railroad companies, through constant prodding by the Department of Health.

Because of the fact that most dealers and dairymen had provided themselves with sufficient ice, the Department found less difficulty than usual in enforcing the cooling regulations at country milk-handling plants. Therefore, during the summer of 1920, the milk supply of this City was cooled

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to better advantage than at any time since the inception of country milk inspection. This was one of the contributing factors to the improvement in quality of milk supply, which was obvious to anybody conversant with the facts.

Milk Exposition—The annual Milk and Child Health Exposition was held during the week beginning May 17th, at the Grand Central Palace. The Department, in addition to showing its usual milk data, charts, photographs, and the like, maintained a laboratory booth, in which were shown official methods of testing milk and cream for chemical and bacteriological quality. This phase of the exhibit created considerable interest, and brought forth favorable comment. The Department was also interested in the feeding of two hundred school children on each evening of the exposition. The food was supplied by the Board of Education, but all other details were taken care of by employees of the Division of Milk Inspection.

City Pasteurizing Plants—The City pasteurizing plants were found, on the whole to be in satisfactory condition; that is, properly equipped and operated. However, on forty-one occasions it was necessary to hold up the operation of different plants until such time as dirty piping, apparatus, or containers, could be properly cleansed and sterilized. This method of penalizing dealers was found productive of satisfactory results.

Sanitary Reserve Corps.

During the year the Commissioner organized a Sanitary Reserve Corps, consisting principally of public-spirited women to assist in helping to enforce health regulations. This Sanitary Reserve Corps was placed under supervision of the Director of this Bureau.

After a preliminary course of instruction, members of the Sanitary Reserve were assigned to districts in the inspection of restaurants, with special reference to the cleansing of utensils. Each member of the Reserve Corps was accompanied by an inspector of the Bureau on his tour of inspection, after which the Reserve Inspector made inspections alone. Where conditions were found to be in violation of the regulations, she warned the operator of the restaurant of conditions found and if, on a subsequent visit, no improvement was found, a reference was made to this Bureau for immediate attention of the regular inspectors.

The work of this Reserve Corps, which is entirely voluntary, should prove of material assistance to the Department. The moral effect of having women visiting the restaurants and interesting themselves in conditions under which they are operated, will do much to bring about improvement, without necessity of prosecution. This Reserve Corps will not confine its activities to restaurants, but will assist in other work, namely, warning violators of the spitting ordinance, etc.

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Terminal Inspections and Wholesale Markets.

The Borough Chief, Borough of Manhattan, reports as follows: As from time to time strikes were declared in certain branches of food industry, especially as regards transportation and handling of perishable commodities, it was necessary to concentrate our attention upon railroad terminals and steamship piers. For example, during the week of March 27th, a strike was declared by longshoremen employed on the Coastwise piers. While, in the beginning, this strike did not materially affect the delivery of perishable commodities, it did develop into a serious situation so that, for a while, perishable commodities could not be shipped into this City and were diverted to other cities. This situation was considerably aggravated when an "outlaw" strike was declared by the railroad yard switch engineers. Owing to the fact that this was uncontrolled by Union officials, little headway could be made to relieve the situation, and deliveries of food intended for this City were considerably curtailed. These strikes caused an unusual food situation. It was during this period that the Old Dominion Line discontinued its service of carrying freight from Norfolk, Newport News, and other Southern ports, which greatly aggravated the existing situation, as this line brought in approximately 47,000 tons of perishable foodstuffs weekly.

The railroad companies did their utmost to continue deliveries but were far below normal, which necessitated the dealers hauling perishable commodities for their customers long distances by automobile trucks. This situation continued until about May 22d, when deliveries became somewhat normal. The service of the Old Dominion Steamship Company was renewed, early in July, by a new company.

During the month of February, owing to the prevailing cold weather and heavy fall of snow perishable commodities were held on the piers, because frozen and thereby rendered unfit for human food. At one time, there was an accumulation of the contents of 620 cars of perishable commodities stored on the pier. There was also a large number of cars of perishable food held on railroad tracks in Jersey City, due to the inability to make deliveries. On account of this situation, the railroad administration placed a temporary embargo upon shipment of perishable commodities to this City. The Federal officials in charge made every effort to prevent the loss of perishable food during the freezing weather, and gave instructions that such commodities should not be distributed or delivered when the temperature was around 28 degrees Fahrenheit. This ruling has been the means of protecting a considerable quantity of fruits and vegetables from freezing and, although it curtailed deliveries, prevented considerable spoilage.

As result of the Coastwise strike, large quantities of rice, which was stored in holds of vessels at southern points became heated, owing to the inability of the steamship company to make deliveries, and embargoes were placed upon shipments of such rice. This material was held under embargo

until it had been thoroughly overhauled to the satisfaction of the Department.

Owing to congestion of railroads and inability to supply required number of refrigerator cars, shipments were received in ordinary freight cars, free from refrigeration. This situation required continuous attention of the inspectors at the piers, and resulted in a number of condemnations of perishable commodities which had spoiled. The inspectors were also informed that, owing to the stringency of our inspection, a number of box-car shipments had been delivered to other points.

During the month of July, it was found that peaches arriving from sections of Georgia were infested with worms and brown rot, so were unfit for human food purposes. This diseased condition was due, so we were informed by experts of the Federal government, to a certain fly contamination on the blossoms. There was nothing from an outward appearance to show that the peach was so infested. Suggestions were made to interested parties, to prevent complete loss of these peaches, that they be diverted to manufacturing where the sound portion could be used under supervision of inspectors of this Department. These suggestions were not met and, in numerous instances, large condemnations were made. Due to these further shipments were diverted to other cities. The peaches were in such a condition that they averaged in price about \$1 per crate, which was far below the price of a sound article.

Owing to enforcement of prohibition, large shipments of California wine grapes were received. The general condition was good. However, the piers were under continuous observation, as many shipments arrived in such condition that it was necessary to order overhauling.

Large shipments of fresh olives were also received from California. Some carloads consisted almost entirely of this commodity. Upon making inquiry concerning these unusual shipments, the inspector was informed that, owing to the number of cases of food poisoning reported from various sections of the country, due to consumption of ripe olives, the growers had determined to ship fresh olives instead of following the usual procedure.

As demonstration of the necessity of inspecting perishable commodities under refrigeration during transit, would cite that the week of March 13th, a condemnation was made of 947,040 pounds of bananas, which comprised almost the entire cargo of the steamer "San Jose." These bananas spoiled as result of a breakdown in the refrigerator machinery of the boat, on its voyage to this City.

Shipments of perishable foods from Belgium were received during the year. They consisted largely of hot-house grapes, which arrived in a satisfactory condition.

The work of the inspectors of this squad did not consist entirely of making condemnations; every effort was made to conserve and prevent further loss of shipments of perishables which arrived in a partly decomposed

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condition. As the result of this attitude, much sound food was conserved. In several instances, shipments were found abandoned on the piers by the consignee who felt it would not pay to overhaul materials which arrived in an unsound condition. In one instance, a car of lettuce was refused by the consignee at Pier 21, Erie R. R., due to the fact that the outer leaves had spoiled. The entire shipment was turned over to the Willard Parker Hospital, where it was overhauled and the sound portion distributed to various institutions of the Department.

At one of the piers, a large consignment of lemons was abandoned by the consignee. The sound lemons, about 50 per cent. of the abandoned lot, were diverted to the hospitals of this City.

A similar inspection activity was followed with reference to wholesale markets. This was also carried out with the idea of preventing spoiled or questionable commodities entering into the trade channels of the City.

Every attention was given, and daily inspections made at the Fulton Fish Market, where a large percentage of the fish sold in this City is received. The dealers located within this market are watched very carefully, because some would not hesitate in selling spoiled fish should the opportunity present itself.

As result of this situation and the concentration of the inspection force, a number of cases have been forwarded for prosecution, wherein they were charged with having violated the Sanitary Code provisions by having in their possession, for sale, spoiled fish.

The inspectors have also been particularly active in preventing the sale of "soaked scallops." It appears the practice was followed by certain shippers of adding water to shucked scallops, whereby increasing the weight of the scallops so as to make them appear to be of a much better quality than they were. As the result of this work, shipments of this soaked product were discontinued.

Every attention was given by inspector in charge of the wholesale egg market to see that the dealers, especially the egg breakers and dealers in storage eggs, conducted their business in conformity with full requirements of the Department. As the result of examining various lots held in cold storage warehouses, quantities were found to be mouldy and otherwise of a questionable nature. An embargo was placed by the inspector upon several thousand cases of these eggs, until the entire lots had been candled, under his supervision, and the unsound eggs removed. This situation was due to the storage of eggs for a greater length of time than is proper.

Considerable trouble was caused by a new concern which opened up an egg breaking business in the wholesale market. This concern was only in business for a short time, when several reports were forwarded against them recommending that they be prosecuted for having spoiled eggs in their possession, apparently to be used or sold. As the result of concentration

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of inspectors at this questionable concern's place of business, it practically discontinued the conduct of egg breaking business.

The Borough Chief of The Bronx, reported as follows: The New Haven Railroad Terminal is the largest point of entry of foodstuffs in this Borough. During the past year, four hundred and eighty-five car loads of potatoes arrived at this terminal, mostly from Maine. In addition, forty-two car loads of apples, thirty-one of turnips, eighty-one of watermelons, twenty-one of cabbage and eleven car loads of grapes arrived. This terminal received constant inspection, resulting in the condemnation of approximately one hundred thousand pounds of vegetables, and seventy-five thousand pounds of fruit.

The Borough Chief of Brooklyn reported as follows: Despite our efforts of conservation, consignees have refused to overhaul partly damaged or deteriorated consignments which resulted in total loss. Their contentions were that market and labor conditions did not warrant their paying for overhauling, in some instances, all they derived was the rebate of the duty. In other instances the discharging of cargoes onto unheated and improperly protected piers, or the shipping of perishable goods in unrefrigerated ships, caused rapid deterioration.

Enormous quantities of flour were embargoed, due to its being wormy, caused by transportation in freight cars, the condition of which did not protect the flour from the elements, and also to delay while in transit.

During the year, large consignments of Danish butter, which was imported into this country for domestic use, were examined by inspectors. Said sampling resulted in the finding of fat foreign to butter. The investigation is still under way.

Factory Inspection.

The Borough Chief of Manhattan reported as follows: During the latter part of the year, a special squad was assigned to this work. The Borough was subdivided into small districts, and two inspectors assigned to the inspection of various food factories in each.

The reports received from these inspectors indicate that, owing to shortage of sugar and its high price, there was very little manufacturing carried on. Some of the candy factories were not in operation, owing to this situation. The general sanitary conditions were good.

As the result of concentration of the inspection force, an embargo was placed upon a large quantity of candy found under suspicious circumstances in the refrigerator of a candy manufacturing concern.

At an ice cream manufacturing plant, which is located in a section of the city where a number of typhoid fever cases were reported, extremely insanitary conditions were found. This concern was operating without the required permit, and, owing to objectionable features, the business was

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immediately discontinued, until establishment had been cleaned, and violations removed.

As the result of prohibition against sale of horse meat in this city, an embargo was placed upon a large shipment of this commodity in a warehouse. This embargo was held until the dealer decided to dispose of it to a soap manufacturing company.

The Borough Chief of The Bronx reported as follows: The food factories situated in this Borough consist chiefly of candy factories, frozen product manufacturers, and soda water manufacturers. Of these, the candy manufacturers predominate. Several of these establishments are very large manufacturers of what is known as hard candy.

There were eighty-five inspections made of these candy factories alone, during the year, and a constant watch was kept to prevent use of unsound material in manufacture of the product. In several instances, dirty and contaminated scrap candy was found and condemned under circumstances that would indicate it was to be reworked and used in the manufacture of foodstuffs.

Bakery Inspection.

The Borough Chief of Manhattan reported as follows: The fact that sanitary certificates of bakeries expire one year from date of issue, acts as a means of practically assuring continuous inspection of bakeries, not only for the purpose of determining their sanitary conditions but also to ascertain the quality of food prepared and sold.

In conjunction with this, inspectors are detailed to carry out special investigations for the purpose of learning if the standards of wholesomeness for foods are maintained in the bakery trade. This special work is so arranged that night inspections are made, and a thorough investigation carried out along the lines indicated.

It is of interest to report that, considering the number of inspections made and the number of bakers conducting business in this borough, it appears that the food served in these establishments is of good quality.

The increase in number of bakeries has added considerable to the work, in that many have been opened within the last few years. In the establishing of this business, proper attention has not been given to important requirement that arrangements be made for discharge of smoke and cooking odors. With this prevailing situation, we have had a number of complaints to handle from citizens, and where such were well founded, and the operator did not take proper action by installing adequate means for ventilating the bakery, prosecution was recommended. A number of dealers, however, upon finding that the Department would not countenance their operating as a nuisance, made suitable installation of mechanical means of ventilation.

Several cellar bakeries were found in operation without the required exemption and sanitary certificates, and as these bakeries had been in con-

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tinuous operation since the passage of the State Labor Law, where sanitary conditions were proper, every effort was taken to legalize them.

Attention was also given to requirements of Section 142 of the Sanitary Code, which relates to exposure to contamination of baked products, and where flagrant violations were found to exist, facts were brought to the attention of the court.

During the year, eggs which were decomposed and unfit for human food purposes, were found in the possession of several of the supposed representative large bakers, and where such spoiled products were found, a recommendation was made that the dealers be prosecuted.

Acting in cooperation with the Bureau of Preventable Diseases, references were continuously forwarded where food handlers were found employed without required medical certificates.

The Borough Chief of The Bronx reported as follows: During the year, considerable attention was given to inspection of bakeries with a view to improving general sanitary conditions and preventing the use of unwholesome foodstuffs. Thursday night inspections of bakeries were made, this being the night when certain classes of unscrupulous bakers used "spot" eggs on a bread product, known as "Hollis."

Eighty-four violators were arraigned in court during the year for attempting to use or sell unsound eggs and total fines collected amounted to \$1,725. These fines ranged from \$5 to \$300. In addition to egg condemnations made at bakeries, there were also quantities of raisins, prune-jelly, rancid nuts (including cocoanut), unsound fruits, and assorted canned goods condemned.

The Borough Chief of Brooklyn reported as follows: Special attention was directed as to the use of substitutes of non-food value for food value product in manufacture of cakes and breadstuffs. In said investigations, in some instances, the use of saccharin was found, it being substituted for sugar in the manufacturing of charlotte-russe.

During the course of inspection, there was found large quantities of flour which was wormy or weevily. There were such large quantities of this flour affected that most of the wholesale bakers deemed it profitable to install a special reconditioning apparatus.

Restaurant Inspection.

The Borough Chief of Manhattan reports as follows: Owing to the fact that restaurants cater directly to the public, this branch of food industry is considered one of our most vital and important activities, and every care and attention was given to determining the quality of food sold and served, as well as the sanitary conditions surrounding its handling.

Another activity is the enforcement of the requirements of Section 144 of the Sanitary Code which relates to methods employed in cleansing of

BUREAU OF FOOD AND DRUGS

utensils, drinking glasses, etc. This requirement is of utmost importance to the general welfare of the public, in that improperly washed glasses may be the means of transmitting communicable or contagious diseases. The work along these lines has been continuous, and results were fairly satisfactory, considering the small force of inspectors.

The latter part of the year, every district inspector was detailed for a period of two weeks to devote his time exclusively to restaurant inspection, to determine, (a) quality of food, (b) sanitary conditions, and (c) if a permit had been secured. During these two weeks, practically every restaurant was inspected, and the results reported indicated that these establishments made every effort to conform with requirements of the Department.

The Borough Chief of Brooklyn reported as follows: In this character of establishment special attention was directed to quality of foodstuffs on premises, and to sanitary conditions surrounding the preparing, handling, and sale of same. In addition, attention was given to the proper cleansing of utensils and to see that food handlers were in possession of Department of Health Medical Cards.

Retail Inspections.

The Borough Chief of Manhattan reported as follows: The retail district inspectors concentrated their attention upon the quality of food also sanitary conditions in these establishments. Instructions issued were: to give as much attention as possible to inspection of bakeries, restaurants, and similar establishments, rather than to concentrate upon retail grocery stores, etc., where violations are not usually of a serious nature. Satisfactory results have been obtained with reference to this activity. Due, however, to large district outlines, it is an impossibility for a district inspector to properly and satisfactorily cover the field under his supervision in a short length of time.

Considering the large number of retail stores, the general conditions were fairly satisfactory and quality of food good.

The Borough Chief of Bronx, reported as follows: During the year, a special effort was made to improve the general sanitary conditions surrounding handling of food in retail stores. While the greatest result in this direction was accomplished by personal effort of inspectors, it was found necessary to serve summonses in one hundred and seventy-seven instances, where storekeepers failed to comply with sanitary requirements of the Department. Fines for these offenses amounted to \$1,251.

Special effort was made to enforce that Section of the Code requiring proper covering and protection of foodstuffs from dust and dirt and human handling. Personal effort accounted for a great improvement in this par-

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ticular condition, but it was found necessary, in order to get compliance, to serve two hundred and six summonses. Fines for this offense amounted to \$903.

Meat Inspections.

The Borough Chief of Manhattan reported as follows: Attention was given to the quality of meats sold by wholesale meat dealers and, as a result, a qualified inspector was assigned to the inspection of these establishments, with the result that a number of condemnations of spoiled material, which would have been sold to the retail trade, were effected. Several prosecutions were brought against some of the large packing concerns.

A case of unusual interest was developed as a result of an inspection made at an establishment operated by a retail butcher. It was found that he had in his possession an unstamped carcass of beef. Examinations revealed the fact that this meat was tubercular, and absolutely unfit for human food purposes. From information obtained, it appears that this animal (a cow) was slaughtered on a farm in the suburbs of the city and brought to this dealer to be disposed of directly to the public. In view of the dangerous character of the violation, a recommendation was made that the dealer be prosecuted.

The Borough Chief, Borough of The Bronx, reported as follows: A veterinarian was assigned during the year to the inspection and stamping of country-killed carcasses, at wholesale and retail markets, and at piggeries. This veterinarian kept a very close supervision over the twenty hog farms located in the Borough, which resulted in the prevention of the sale of hogs that died from natural causes for food purposes.

At one of these piggeries, where he had condemned a number of pigs which post mortem inspection revealed to be infected with tuberculosis, he conducted a general tuberculin test which resulted in the condemnation of several animals.

The Borough Chief, Borough of Brooklyn, reported as follows: A number of years ago the practice of adulterating chopped meat, and facing cuts of meat with sulphur dioxide was stopped by numerous prosecutions, but this practice has been resurrected and numerous samples have been found to contain this substance. Prosecutions for this violation have resulted in a fine of \$100, in each case.

In a case where putrid frankfurters were found on a stand at Coney Island, the Court imposed a fine of \$50.

Food Adulteration.

The Borough Chief of Manhattan reported as follows: Several important investigations were carried out with reference to the sale of adul-

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tered food and, in each instance, satisfactory results were obtained. The following are examples of work carried out along these lines:

Acting upon information received, an investigation was made concerning the sale of some supposed whiskey to a citizen. We were successful in obtaining a sample of the whiskey, and submitted it to the Chemical Laboratory for analysis. The laboratory reported that the product contained a large percentage of wood alcohol, and, considering the fact that drinking of the whiskey had caused total blindness of complainant, immediate action was taken to bring the case to the attention of the Court. This case, after considerable delay, was transferred to the Court of Special Sessions and, after a lengthy trial, the Court found the defendant guilty and sentenced him to jail for an indeterminate time.

A complaint was also received from a citizen indicating that whiskey purchased by him in this city had caused total blindness. A sample was procured and submitted to the Chemical Laboratory, where it was found to contain a large percentage of wood alcohol. This case was also brought to the attention of the Court.

Owing to newspaper articles indicating that deaths were caused by drinking of liquors consisting in part of wood alcohol, qualified inspectors were assigned to the duty of visiting saloons, hotels, etc., for the purpose of making field tests. As the result of this assignment, establishments were visited and, wherever liquors were found, proper tests were made. There was, however, no wood alcohol found.

Information was received from a citizen stating that pickles purchased from a dealer had caused illness in the family. Representative samples of the pickles in possession of the dealer were submitted to the Chemical Laboratory for analysis. Upon such analysis, it was determined that one of the samples contained a percentage of arsenic. These pickles were subsequently destroyed and, in order to determine the source of arsenic, the sample of brine from the barrel was procured, as well as scrapings from the inner part of the barrel. Analysis proved that the arsenic content of the pickles was due to absorption of arsenic from the barrel into the brine, and then into the pickles. It was found that the barrel in question had been purchased originally by a dealer in second-hand barrels from a chemical concern that receives large shipments of crude arsenic. This case clearly shows the necessity of a code section which would prohibit the use of any such containers.

A representative number of samples of alleged pure olive oil were procured and submitted to the laboratory for analysis. The usual container for these products is an elaborately decorated can, which is so worded and designed as to convey to the minds of the purchasers that the product is an imported olive oil. In a number of instances, we have been successful in finding that cottonseed oil had been substituted for olive oil, and where such

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substitutions were found, a recommendation was made that the dealer be prosecuted.

During the year, large shipments of butter were received from Europe. Samples were taken of this butter from time to time, and the laboratory reported, in the majority of cases, that the product conformed with requirements of the Department. Several reports, however, were received indicating that a foreign fat was found in the butter, and as these cases were of recent development, they are still under investigation.

Samples of chopped meat were procured in certain sections of the city, and submitted to the Chemical Laboratory to determine the presence of sulphites. The majority of the samples were free from this preservative. A few, however, did contain such preservatives and, wherever found, a recommendation was made that the dealer be prosecuted.

The Borough Chief, Borough of The Bronx, reported as follows: During the year, twenty-one samples of chopped meat were taken and submitted to the laboratory to be examined for the presence of sulphur dioxide. In eight of these cases, this preservative was found present, but only one of these cases had been disposed of in court up to January 1st. In this instance a fine of \$100 was imposed.

A sample of blue poppy seed, taken from a retail store, was found by the micro-analyst to be adulterated in that same was white poppy seed (an inferior product) artificially colored blue to make same appear to be the more expensive product, known as India poppy seed. The wholesaler, after affidavits had been obtained, was prosecuted and a fine of \$250 imposed.

A sample of vinegar, obtained in a retail store, was found, upon analysis, to contain arsenic. Investigation revealed that the presence of arsenic was due to the fact that this vinegar had been poured into second hand barrels by a dealer in New Rochelle, which barrels had previously contained arsenic. The case is now pending against the New Rochelle concern.

Exposure of Food on Streets.

The Borough Chief, Borough of Manhattan, reported as follows: The exposure of food on the street to contamination is undoubtedly of utmost importance, and is a continuous source of danger to those purchasing such food from peddlers, etc.

Wherever flagrant violations were found by our inspectors, a summons was served upon the offender and the court advised of facts. Due, however, to leniency of Magistrates, very little headway has been made, and this situation will prevail until the Magistrates become impressed with the necessity of imposing substantial fines in such cases.

The Borough Chief of The Bronx reported as follows: Excellent results were accomplished during the year by inspectors compelling store-keepers and stand keepers to properly cover and protect foodstuff against

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dust, dirt, and human handling. A great bulk of this work was accomplished by personal effort. It was found necessary, however, in two hundred and six instances, to serve summonses. In one hundred and ninety-five of these cases fines were imposed, totaling \$903. It is not possible to specify exactly how many of these cases were the result of violations found on the streets. However, in numerous instances, summonses were served on vendors who displayed confectionery and breadstuffs on the street.

Cleansing of Utensils.

The Borough Chief of Manhattan reported as follows: Every possible attention was given to see that drinking glasses and utensils used in the service of food were properly cleansed after usage. This requirement is of utmost importance to the general public who are forced to have their meals in restaurants or lunch rooms. A number of cases developed where, either through carelessness or stupidity, unclean utensils were used; and wherever such was found to be the case, a summons was served upon the offender.

As, however, Magistrates do not generally impose fines commensurate with the character of the violation, some dealers feel that it pays better to be summoned to court and pay a small fine, rather than to go to the necessary trouble and expense of cleansing their utensils.

Owing to prevalence of influenza, it was deemed wise to institute a special inspection service to cover restaurants, lunch rooms, drug stores, or other establishments where soda water and beverages were dispensed. This activity also included the inspection of restaurants to see that dishes and utensils, generally, were properly washed after being used. This special assignment was of utmost importance, and from activities of the squad assigned, very satisfactory results were obtained.

The Borough Chief, Borough of The Bronx, reported as follows: One thousand nine hundred and forty inspections were made of restaurants during the year. In performing this work, inspectors gave special attention to the methods used in cleansing food utensils. In no instance was a permit issued until proper washing facilities had been installed. Supervision was then exercised to compel proper use of such facilities. In spite of this work, it was found necessary, in fifty-six instances, to serve summonses on storekeepers or stand keepers who failed to properly cleanse food or drinking utensils after use. Fifty-four of these violators were fined a total of \$216. Two suspended sentences were imposed.

Cooperation from United States Department of Agriculture.

The Borough Chief, Borough of Manhattan, reported as follows: The policy to cooperate with Federal authorities in the enforcement of pure food law has been diligently continued. As result, officials of the Bureau of Chemistry, of the U. S. Department of Agriculture, seized several ship-

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ments of unwholesome food which probably would not have been discovered had the facts not been brought to their attention by our inspectors.

On the other hand, embargoes have been placed upon shipments of unwholesome food at the request of the Federal Department, until samples could be procured and analyzed, and subsequently seized by an order from the U. S. Court.

Chemical Laboratory's Work.

The analytical work of the laboratory may be divided into the following classes:

1. Milk and Cream Analyses
2. General Food Analyses
3. Drug Analyses
4. Water Analyses
5. Miscellaneous Analyses—those which cannot be included under the above headings.

The total number of samples analyzed for the year was 10,787, which, compared with the number analyzed during 1919, shows a decrease of 2,536. On examination of the figures it is seen that the lowering of the yearly total is due to the smaller number of milks—2,937—submitted for analyses, while analyses of other food products, and drugs, shows an increase of 401 over the number submitted during 1919.

During the year, a new field, the adulteration of sweet creams, sour creams, and butter with foreign fats, was investigated. This work was carried on during the whole year, and involved, at times, entire energies of the laboratory force. It was only through co-operation of the Food Division and Chemical Laboratory that this form of adulteration was checked. This work involved the analysis of 515 samples, and a great deal of research work.

Conclusions.

While the foregoing report shows what the Bureau of Food and Drugs is doing to protect the people from unwholesome food, it only represents what can be accomplished by the personnel now assigned to this important work.

It is shown in this report that there are 82,000 establishments handling food in this City. To supervise the quality of food and sanitary conditions under which it is handled, there are provided 125 inspectors and veterinarians. This force is inadequate to completely supervise the foodstuffs at all of these places.

The importance of food inspection is emphasized in recent publications, from which the following quotation is taken:

“As a further measure of precaution, no food of any description showing even the slightest unnatural odor, unnatural color, swelling of the con-

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tainer, signs of gas, or any evidence of decomposition whatever, should be used for food purposes. In practically every case of botulism the food was shown to have had an offensive or abnormal odor. While all spoiled food may not contain bacillus botulinus, any spoiled food, even though the spoilage be slight, may contain it, and, in view of the fatal effect of very small amounts of the toxin which this organism generates, the only safe rule is to examine carefully all food products before they are served and to discard those which are even slightly suspicious. It is evidently impossible to accomplish the removal of all spoiled food from the market or to provide against all conditions in which spoiled food may be presented to the housekeeper from time to time. In view of these limitations it is necessary to bring about a general recognition of the dangerous character of food which shows clear physical evidences of spoilage, and to call attention to the stringent necessity of discarding all canned goods deviating from the normal."—(*Public Health Reports*), Feb. 13, 1920.

In the past, the principal feature of food control was to protect the people from fraud. The work of recent years has shown that all phases of food control are vital health problems and must constitute, in the future, a large part of health programs.

It is of vital importance that the food we consume be wholesome and safe for human consumption. There is no doubt that intestinal and other disorders, due to particular articles of food, occur more frequently than are recorded. There are few persons who have not experienced gastro-intestinal attacks of moderate severity, which could be reasonably attributed to something eaten shortly before. The great majority of such attacks are of mild character, quickly recovered from, and never heard of beyond the immediate family circle. Only when the attack is more serious than the average, or a large number of persons are affected simultaneously, does knowledge of the occurrence become more widely spread. Although most attacks of food poisoning are usually very slight and of an apparent temporary nature, it does not follow that they are to be considered negligible or of trivial importance from the standpoint of public health. Scientists who have made a study of food poisoning report that, under certain conditions, it is possible that degenerative changes are initiated or accelerated in the kidneys or blood vessels by acute poisoning which is manifested for a short time in even milder cases. These scientists have further stated that, in view of the grave situation evidenced by the increase in degenerative diseases affecting early middle life in the United States, the extent, causes and means of prevention of food poisoning seem pressing subjects for investigation.

The rigid enforcement of the Federal Food and Drug Act has resulted in foods shipped in interstate commerce being so labeled that, where imitations or substitutes are used, such facts are clearly set forth on the label. These same foods, however, when they arrive in the city, are manufactured

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into other products, and the labeling which the Federal authorities require is lost sight of, and foodstuffs containing artificial colors and artificial flavors are being sold without such facts being clearly indicated to the consumers.

There is need, therefore, for a more comprehensive labeling law and for more intensive work following where the Federal Government leaves off.

In proper supervision of the handling and sale of food the consumers are not only protected, but the dealer receives much benefit from such inspection. For instance, in supervision of milk supply, the food inspector practically acts as a check for the milk dealer, notifying him of the necessity of making repairs at once which, if permitted to remain undone, would mean a much greater expense, at a later date.

As a result of the official supervision of milk supply, employees of the dealers are forced to give more attention to the handling of their product, and to so safeguard it as to materially reduce its deterioration. Without such supervision, it would be necessary for each dealer to employ a staff of his own to do practically the same work that these inspectors are doing. The dealers would not employ these persons so as to protect the consumer, but in order to make their business profitable and to eliminate unnecessary waste in the conduct of their business. What is true of milk inspection is also true of inspection of other food industries.

Because of the foregoing, it is felt that the food dealer should be asked to assist in defraying the cost of proper supervision of food supply. This could be accomplished by charging a small fee for permits which are issued by the Board of Health. If such a fee was required, there is no doubt that food work could be materially extended without additional cost to the City. The benefit derived from such an extension would be that not only people of the city would receive better protection, but the dealer would receive the benefits of increased supervision through decreased waste.

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The following is a report of the work performed in the Bureau of Hospitals during the year 1920.

In all, 10,003 cases of disease were treated. Of these, 5,050 were in the Willard Parker and Reception Hospitals; 1,788 in the Riverside Hospital; 2,879 in Kingston Avenue Hospital; 286 in Queensboro Hospital; and 1,022 were in the Municipal Sanatorium for Tuberculosis, at Otisville, N. Y. The period of care of these patients represented a total of 430,734 patients' days, as follows: 101,959, Willard Parker Hospital; 53,709, Riverside Hospital; 93,795, Kingston Avenue Hospital; 5,323, Queensboro Hospital; and 175,948, Municipal Sanatorium.

Medical Progress.

Venereal Disease Service—The problem confronting the Department, relative to male syphilis cases that represent a menace to the community, has been solved to some extent by the Bureau of Preventable Diseases in apprehending such cases and sending them, for forcible detention, to the Riverside Hospital. After appropriate treatment, their lesions having healed, they can be discharged without violating regulations. A small but valuable service has thus been established.

The venereal disease service at the Kingston Avenue Hospital has been considerably improved through change in Court procedure. Instead of cases being apprehended by the Department of Health at the time of discharge from serving a Workhouse sentence, they are now committed by the Court, under jurisdiction of a probation officer, directly to wards of Kingston Avenue Hospital, in Brooklyn, where thorough treatment is given regularly and scientifically, until physicians in charge recommend their discharge, back to the Court. The result of this new method of admission has been twofold. First, it ensures immediate and proper treatment. Second, the fact that patients are under charge of a Court officer all the time ensures better discipline in wards of the hospital. There has been little cause for complaint against patients during the last six months. There were a few attempts to escape.

Through efforts of the Board of Education and its Girls' Manual Training School, New York City Visiting Committee of New York State Charities Aid, New York State Probation and Protective Association, District Attorney's Office, and social service workers, there has been established, in connection with the Venereal Disease Service, classes in reading, writing, spelling, arithmetic, English, and vocational training. Attendance has not been compulsory. Beyond our greatest expectations, many girls evinced great interest in their work, and some of the drawings, compositions and articles submitted have shown talent.

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The Resident Physician of Riverside Hospital was appointed special representative of Department of Health to attend the National Conference on Control of Venereal Diseases, held in Washington, D. C. His report was practically a resumé of printed reports of various workers in venereal diseases throughout the United States, during 1920.

Forcible Removal of Typhoid Carriers—Several typhoid fever carriers, who failed to observe regulations of the Department, were taken to Kingston Avenue and Riverside Hospitals, and detained until their stools failed to show presence of typhoid bacilli. Thus, foci for the spread of typhoid have been removed from the community.

Leprosy—Two cases of leprosy have been held at Riverside Hospital, pending their transfer to the National Leprosorium, in Louisiana. These cases have been treated by chaulmoogra oil, and results are sufficiently favorable to demonstrate its usefulness.

Anthrax—A number of cases of anthrax, the result of handling infected hides, or from shaving brushes, have been admitted to the hospitals of this Bureau. In each instance, patients have been treated by the serum prepared by the Hygienic Laboratory, in Washington, D. C. The results have been very good.

Research Work—There has been carried on throughout the year, research work on gonococcus infected cases in hospitals. This has been done by the resident and attending staff aided by the Bureau of Laboratories. This work has been of great interest to the workers concerned and to other investigators in serological and bacteriological problems, but has not resulted in much of practical value, either in clearing up cases or in determining new methods of care and treatment.

In connection with the treatment of cases suffering from gonococcus infection, considerable work has been done in attempting to remove the foci of infection in the genito-urinary tract by surgical procedure. As the results, thus far, have not been sufficiently numerous, or time since operation long enough, no conclusion can yet be drawn from this work.

Smallpox Service—The smallpox service of the Bureau has been transferred from the Kingston Avenue Hospital, where it had been maintained for ten years, to the Riverside Hospital, on North Brother Island. Three conditions combined to bring about this transfer. First, and most important, was the need of extra space for the growing service of infectious diseases of a minor character at Kingston Avenue Hospital. Second, a general impression that seemed to be gaining ground, not only by the general public, but by the official public of the City, that infectious diseases were no longer being handled on North Brother Island, and that communication between Riverside Hospital and the mainland need no longer be subject to rules and regulations necessary to proper government of an infectious disease hospital. This refers, particularly, to periodic vaccination of all employees, to the

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proper use of methods of isolation, to the proper segregation of visitors and their following regulations laid down to prevent spread of disease. Third, the desire of other departments to take away boats of the Department of Health for duty other than that of ambulance service for which they were originally obtained; and for necessity of which there has been no abatement, except in minds of those ignorant of the necessities of this Department. A very interesting condition showing necessity for more careful inspection at the Port of New York came under observation at Riverside Hospital through the admission of a patient, in the pustular stage of smallpox, who had been in the country two days.

Drug Addiction Service—On April 1, 1920, the appropriation made for treatment of drug addiction became exhausted. In fact, the Department had definitely stated that it would terminate its drug addiction service at that time. This resulted in the resignation of a number of nurses, and reduction in pay of all others who had been working in this service. Everything worked as per agreement, except stopping the drug addict service, which continued. Over 95% of all drug addicts treated at the Riverside Hospital, from the beginning of service until now, have shown, by their acts, a non-appreciation of the service, and have repeatedly attempted to be discharged before the end of treatment, or have in some way interfered with its prosecution while there. The deserving kind of drug addict, of which we hear but never see, in hospital circles, has never yet been admitted to Riverside Hospital for treatment. It is, therefore, recommended that the Department of Health discontinue any kind of drug addiction treatment, and use its authority to have such cases as are of a truly pestilential character detained in institutions that can provide custodial care, for that is the most important therapeutic agent necessary in taking them off the drug.

Tuberculosis Service—With the abandonment of drug addiction treatment at Riverside Hospital, the Tuberculosis Service was resumed and with the decreasing Drug Addict Service, there was a corresponding increase in tuberculosis so that the transition from drug addiction service to tuberculosis did not find the hospital, at any time, without patients.

A small service representing some women who were originally at Riverside Hospital, and others that, for various reasons, the Bureau of Preventable Diseases desired to have taken care of in the Department of Health's Hospitals, has been maintained at Kingston Avenue Hospital for the last two years. It is expected to shortly transfer this service to Riverside Hospital.

Almost every week, types of cases of tuberculosis, in the second or third stages of the disease apply at the diagnostic clinics, which do not warrant being sent to the Sanatorium. Such cases are represented by slight haemoptysis, slight elevation of temperature, too rapid pulse, general septic appearance, moderately extensive lesions, etc. In order that these may

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have the benefit of sanatorium treatment, if they prove eligible after hospital observation for a month or two, provision has been made at Riverside Hospital to receive them, and give them the necessary hospital treatment. In the event of their improvement under the conditions mentioned, they are eventually sent to the Sanatorium.

There being only hospital accommodations for twelve patients at each unit at the Otisville Sanatorium, it becomes necessary, each month, to transfer a certain number of cases back to the City. In order to insure these patients proper hospital care, they are notified that they may, if they so desire, be admitted to Riverside or Kingston Avenue Hospital, and, if there is an improvement in their condition, may be returned to Otisville, at a later date.

Vocational training has been carried on at the Municipal Sanatorium, during the year, under the auspices of teachers provided by the New York City Tuberculosis Committee. The teaching was primarily started for war risk cases, but it has always been given to all applicants desiring to learn. The training consists of basketry, jewelry making, cabinet making, carpentry, book binding and printing. The Sanatorium authorities have been very much surprised and pleased by the number of applicants for the training. When it is remembered that all of these patients must take up vocational training after their regular tour of Sanatorium duty, it can be readily understood how much the opportunity is appreciated by the patients.

In requirements laid down by the American Sanatorium Association for minimum requirements in Sanatorium arrangement and management, a great many of the usages initiated and established at the New York City Municipal Sanatorium, at Otisville, have been adopted.

Upon request of the New York City Tuberculosis Committee, which has established a workshop for discharged patients, the Municipal Sanatorium agreed to send a list of discharged patients with qualifications shown by each in the work performed at the Sanatorium, as evidence of their qualification to be admitted to the workshop.

Anthrax Service—A service for anthrax at Willard Parker and Kingston Avenue Hospitals has been maintained during the year and serum therapy, as mentioned before in this report, both locally and intravenously used, while surgical interference by excision has been discontinued. The mortality rate for this year has been unusually low. This has been attributed, to the effect of serum treatment.

Measles Service—The measles service in the Department of Health's Hospitals for the year was unusually small and it was almost impossible to obtain cases to make the necessary studies that have been going on in the Research Laboratory relative to this disease. There was throughout the country a great stimulus to the study of measles during the past twelve months and, early in the year, the School of Tropical Medicine of Harvard University requested permission to have Dr. Sellards, representing that

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College, detailed to the Willard Parker Hospital for the purpose of obtaining material for this work. Dr. Sellards came to the institution where he obtained some material which is now being worked up. A more acute epidemic occurring in Montreal, Dr. Sellards, for the time being transferred his activities to that city.

Scarlet Fever Service—There was greater prevalence and severity of the symptoms of scarlet fever, during the latter half of the year, than is usual, the Resident Staff of the Kingston Avenue Hospital, during the fall, observed that, upon blood culture, a great many scarlet cases showed a blood infection due, apparently, to a streptococcus. This organism is now being studied and the findings will be given in a later report.

Diphtheria Service—During the year, further observation of the intravenous use of antitoxin, has been made and all evidence shows that this is the ideal way to administer antitoxin, when operators are skillful and understand the method.

During the year, a large number of cases being held in the hospital on account of persistent, positive cultures of diphtheria bacilli, have had their tonsils removed and, in many instances, the cultures have been returned negative as soon as tissues thoroughly healed.

There seemed to be a diminution in the number of chronic tube cases during 1920, as compared with former years.

In May, all the chronic tube children were transferred to the Willard Parker Annex, at Otisville, and retained there until October. This transfer, to mountain environment, of these children plays an important part in their treatment, and a vacation from the city unquestionably prepares them for the indoor life they must lead the succeeding six months. The Board of Education still continues to maintain a public school at the Willard Parker Hospital for chronic tube cases. This class has made more improvement in the last six months than at any previous time.

Whooping Cough Service—The hospitals have maintained a whooping-cough service with an average of about from twenty to thirty patients, during the entire year. Nothing new in the way of treatment has resulted. A committee appointed to study this subject was convinced that whooping-cough is a much more serious disease than generally believed, and that more attention should be paid to its isolation and treatment. The committee recommended that whooping-cough be taken from the minor communicable diseases and placed with the quarantinable types.

Conferences between the Hospitals and Laboratory Staffs—The inter-bureau conferences between the staffs of the Bureau of Hospitals and Laboratories, which had been interrupted during the War has been resumed, to the mutual advantage of both.

Re-establishment of Meetings of the Medical Staff Societies—The Medical Staff Societies of our hospitals, which were temporarily suspended

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during the War, have been re-established and the meetings are well attended and the papers evoke interested discussions. This is a most important part of hospital administration, and should be encouraged to a greater extent by the attending staffs.

Library for the Medical Staff of the Willard Parker Hospital—When the staff house of the Willard Parker Hospital was erected, a private reception room was provided where internes and hospital physicians could meet their families. No real necessity ever having occurred for the use of this room, it has now been utilized as a library, which will in no way affect its being available for its original purpose. A hospital employee will be detailed as librarian and it is to be hoped that this will become one of the good working units.

KINGSTON AVENUE HOSPITAL
GENERAL STATEMENT FOR THE YEAR.

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DISEASES.	PATIENTS.			DISEASES.				PATIENTS.				
	Re- maining Dec. 31, 1919.	Admitted.		Total Patients Treated.	Trans- ferred from other Con- tagious Diseases.	Total Diseases Treated.	Trans- ferred to Con- tagious Diseases.	Dis- charged.	Died.	Transferred to		Re- maining Dec. 31, 1920.
		New.	Hospital.							Num- ber.	Hospital.		Num- ber.
Diphtheria.....	73	751	.....	824	29	853	46	590	141	.....	.....	76
Scarlet fever.....	60	332	.....	392	20	412	32	288	24	.....	.....	68
Measles.....	20	347	.....	367	14	381	18	302	57	.....	.....	4
Smallpox.....	1	2	Riverside	4	2	6	6	3	4	Riverside	2	1
Varicella.....	12	37	W. P. H.	71	7	78	15	55	4	.....	.....	4
Pertussis.....	25	133	.....	158	16	174	4	145	22	.....	.....	3
German measles.....	.....	10	.....	10	5	15	.....	15	.....	.....	.....	.....
Mumps.....	2	12	.....	14	.....	14	2	11	1	.....	.....	.....
Tuberculosis.....	6	31	.....	39	1	40	.....	19	8	.....	.....	13
Cerebro-spinal meningitis.....	2	16	M. San.	18	2	20	2	7	10	.....	.....	.....
Diphtheria and scarlet.....	1	3	.....	4	10	14	5	5	3	.....	.....	1
Diphtheria and measles.....	.....	46	.....	46	12	58	2	31	25	.....	.....	.....
Diphtheria and varicella.....	3	4	.....	7	5	12	4	7	1	.....	.....	.....
Diphtheria and pertussis.....	.....	2	.....	2	4	6	2	3	1	.....	.....	.....
Diphtheria and influenza.....	.....	4	.....	4	.....	4	.....	3	.....	.....	.....	.....
Scarlet and measles.....	.....	1	.....	1	17	18	7	11	.....	.....	.....	.....
Scarlet and varicella.....	.....	2	.....	2	11	13	3	9	.....	.....	.....	1
Scarlet and pertussis.....	.....	.....	.....	.....	3	3	1	2	.....	.....	.....	.....
Measles and pertussis.....	1	1	.....	2	3	5	4	.....	1	.....	.....	.....
Measles and varicella.....	.....	2	.....	2	14	16	9	7	.....	.....	.....	.....
Typhoid fever.....	.....	9	.....	9	.....	9	.....	8	.....	.....	.....	1
Scarlet, measles and diphtheria.....	.....	.....	.....	.....	3	3	1	1	1	.....	.....	.....
Measles, scarlet and pertussis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Measles, varicella and pertussis.....	.....	.....	.....	.....	2	2	2	.....	.....	.....	.....	.....
Diphtheria, measles & varicella.....	.....	.....	.....	.....	1	1	1	.....	.....	.....	.....	.....
Anthrax.....	1	4	.....	5	.....	5	.....	4	.....	.....	.....	1
Erysipelas.....	2	7	.....	9	2	11	.....	10	1	.....	.....	.....
Encephalitis Lethargica.....	.....	3	.....	3	1	4	.....	2	1	.....	.....	.....
Influenza.....	.....	63	.....	63	17	80	3	61	16	.....	.....	.....
Diphtheria and encephalitis lethargica.....	.....	1	.....	1	.....	1	.....	1	.....	.....	.....	.....

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

KINGSTON AVENUE HOSPITAL—Continued.

DISEASES.	PATIENTS.			DISEASES.			PATIENTS.			Re- main- ing Dec. 31, 1920.		
	Re- main- ing Dec. 31, 1919.	Admitted.		Total Patients Treated.	Trans- ferred from other Con- tagious Diseases.	Total Diseases Treated.	Trans- ferred to other Con- tagious Diseases.	Dis- charged.	Died.		Transferred to	
		New.	Transferred From Hospital.								Num- ber.	Hospital.	Num- ber.
Influenza meningitis.....	..	..	..	1	..	1	..	..	1	..	..	..
Impetigo contagioso.....	..	..	..	3	..	3	..	..	..	..	..	..
Poliomyelitis.....	17	..	17	4	..	21	3	..	4	..	..	..
Varicella and erysipelas.....	1	..	1	..	..	1	..	..	1	..	..	2
Pertussis and influenza.....	..	..	..	1	..	1	1	..	..	..	..	..
German measles and pertussis.....	..	..	..	1	..	1	..	..	..	..	..	..
Pertussis and scabies.....	2	..	2	..	..	2	..	..	2	..	..	..
Tubercular meningitis.....	..	..	..	2	..	2	..	..	..	..	..	..
Streptococci meningitis.....	1	..	1	..	..	1	1	..	..	..	..	..
Diphtheria and parotitis.....	..	..	..	5	..	5	2	..	..	..	..	..
Diphtheria and typhoid fever.....	..	..	..	1	..	1	..	..	..	..	..	..
Diphtheria and venereal disease.....	..	..	..	1	..	1	1	..	..	..	..	..
Diphtheria and tuberculosis.....	..	..	..	1	..	1	..	..	..	..	..	..
Diphtheria and German measles.....	..	..	..	1	..	1	..	..	..	..	..	..
Scarlet and poliomyelitis.....	..	..	..	1	..	1	..	..	..	..	..	..
Influenza and varicella.....	1	..	1	..	..	2	2	..	1	..	..	..
Varicella and pertussis.....	1	..	1	1	..	2	1	..	1	..	..	..
Measles and influenza.....	..	..	..	1	..	1	1	..	..	..	..	..
Measles and varicella.....	..	..	..	..	..	..	..	..	..	..	..	..
Tetanus.....	..	..	..	1	..	1	..	..	..	..	..	..
Scarlet, measles and diphtheria.....	..	..	..	..	..	..	..	..	..	..	..	..
Measles, scarlet and pertussis.....	..	..	..	..	..	..	..	..	..	..	..	..
Measles, diphtheria & pertussis.....	..	..	..	..	..	..	..	..	..	..	..	..
Vaginitis.....	1	..	1	..	..	1	..	..	..	..	..	..
Veneral disease.....	85	547	641	9	641	650	14	559	1	6	Riverside	70
Veneral and tuberculosis.....	..	..	..	2	..	2	..	..	..	..	..	..
Veneral and influenza.....	..	..	..	6	..	6	5	..	..	..	..	..
Veneral and Vincent's angina.....	..	..	..	4	..	4	3	..	..	..	..	..
Total.....	296	2,302	2,722	247	2,969	2,969	200	2,187	328	8	240	..
Observation.....	6	133	139	4	143	143	62	48	28	..	5	..
Accompanying.....	2	16	18	12	30	30	1	26	2	..	1	..

BUREAU OF HOSPITALS

QUEENSBORO HOSPITAL
GENERAL STATEMENT FOR THE YEAR.

DISEASES.	PATIENTS.				DISEASES.				PATIENTS.				
	Re- main- ing Dec. 31, 1919.	Admitted.		Total Patients Treated.	Trans- ferred from other Con- tagious Diseases.	Total Diseases Treated.	Trans- ferred to other Con- tagious Diseases.	Dis- charged.	Died.	Transferred to		Re- main- ing Dec. 31, 1920.	
		New.	Transferred From							Hospital.	Hospital.		Num- ber.
Diphtheria.....	8	103	..	111	4	115	3	86	20	W. P. H.	1	5	
Scarlet fever.....	1	69	..	70	2	72	4	54	4	..	..	10
Measles.....	..	25	..	25	4	29	3	26	..	..	..	..
Smallpox.....	..	..	..	..	..	..	..	..	..	..	..	..
Varicella.....	..	..	..	..	..	..	..	..	..	..	..	..
Pertussis.....	2	13	..	15	2	17	..	..	3	..	..	..
German measles.....	..	2	..	2	1	3	..	..	..	..	..	..
Mumps.....	..	1	..	1	..	..	..	..	..	..	..	..
Tuberculous meningitis.....	..	2	..	2	..	..	..	..	..	..	..	..
Cerebro-spinal meningitis.....	..	2	..	2	..	..	..	..	..	..	..	1
Diphtheria and scarlet.....	..	1	..	1	..	..	..	..	..	..	..	..
Diphtheria and measles.....	..	1	..	1	1	2	1	..	1	..	..	..
Meningitis.....	..	2	..	2	..	..	..	..	1	..	..	..
Diphtheria and parotitis.....	1	..	..	1	..	..	..	..	..	..	..	..
Diphtheria & German measles.....	..	..	..	..	2	2	1	..	..	..	..	..
Scarlet and measles.....	..	..	..	..	..	..	..	..	..	..	..	..
Scarlet and C. S. meningitis.....	..	..	..	..	1	1	..	..	1	..	..	..
Scarlet and pertussis.....	..	..	..	..	..	..	..	..	..	..	..	..
Measles and pertussis.....	1	..	..	1	..	..	..	..	..	..	..	..
Measles and varicella.....	..	..	..	..	..	..	..	..	..	..	..	..
Poliomyelitis.....	..	2	..	2	..	..	..	2	..	..	..	..
Scarlet, measles and diphtheria.....	..	..	..	..	..	..	..	..	..	..	..	..
Measles, scarlet and pertussis.....	..	..	..	..	..	..	..	..	..	..	..	..
Vincent's angina.....	..	..	..	..	1	1	..	..	..	..	..	..
Scarlet, measles and varicella.....	..	3	..	3	..	..	..	2	1	..	..	..
Influenza.....	..	1	..	1	..	..	..	1	..	..	..	..
Scarlatina.....	..	1	..	1	..	..	..	1	..	..	..	..
Erysipelas.....	1	..	..	1	..	..	..	2	..	..	..	..
Tetanus.....	..	2	..	2	..	..	..	..	2	..	..	..
Total.....	14	230	..	244	18	262	12	199	34	..	1	16	
Observation.....	..	19	..	19	..	..	..	6	1	..	..	1
No case.....	..	..	..	..	5	5	..	5	..	..	..	..

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

WILLARD PARKER HOSPITAL
GENERAL STATEMENT FOR THE YEAR.

DISEASES.	PATIENTS.				DISEASES.				PATIENTS.						
	Re- main- ing Dec. 31, 1919.	Admitted.		Total Patients Treated.	Trans- ferred from other Con- tagious Diseases.	Total Diseases Treated.	Trans- ferred to other Con- tagious Diseases.	Dis- charged.	Died.	Transferred to		Re- main- ing Dec. 31, 1920.			
		New.	Transferred From							Hospital.	Num- ber.		Hospital.	Num- ber.	
			Hospital.												Number.
Influenza.....	99	247	.....	247	3	250	2	169	56	Riverside	23	122		
Diphtheria.....	1	1,717	.....	1,818	36	1,854	88	1,388	256	.....	..	..
Diphtheria and mumps.....	43	656	.....	699	1	741	1	499	66	.....	..	129
Scarlet fever.....	58	907	.....	965	42	994	47	72	134	.....	..	9
Measles.....	..	22	.....	22	29	56	3	21	2	.....	..	..
Poliomyelitis.....	..	153	.....	164	4	183	2	1	1	.....	..	15
Scarlet fever and rotheln.....	11	..	.....	164	3	183	3	134	4	Kingston Avenue	20	..	
Varicella.....	..	..	.....	..	19	..	10	..	1	..	..	..
Erysipelas.....	13	1	Kingston Avenue	1	42	406	28	192	60	Riverside	123	3			
Perussis.....	..	350	.....	364	..	..	..	..	..	..	..	..
German measles.....	..	45	.....	45	5	50	2	48	..	.....	..	..
Measles and mumps.....	35	74	.....	109	3	112	1	104	1	.....	..	..
Mumps.....	..	5	.....	5	3	8	1	..	7	.....	..	..
Tuberculous meningitis.....	..	1	.....	1	..	..	..	..	..	.....	..	..
Bubonic plague.....	1	14	.....	15	4	19	4	4	10	Riverside	1	1		
Cerebro-spinal meningitis.....	2	20	.....	22	14	36	8	12	9	.....	..	7
Diphtheria and scarlet fever.....	..	1	.....	1	1	2	..	2	..	.....	..	..
Anthrax.....	..	33	.....	33	50	83	7	44	32	.....	..	..
Diphtheria and measles.....	..	1	.....	1	3	4	1	3	..	.....	..	..
Diphtheria and varicella.....	..	..	.....	..	..	..	..	..	..	.....	..	..

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

RIVERSIDE HOSPITAL
GENERAL STATEMENT FOR THE YEAR.

DISEASES.	PATIENTS.			DISEASES.			PATIENTS.				
	Re- main- ing Dec. 31, 1919.	Admitted.		Total Patients Treated.	Trans- ferred from other Con- tagious Diseases.	Total Diseases Treated.	Trans- ferred to other Con- tagious Diseases.	Dis- charged.	Died.	Transferred to	
		New.	Hospital.							Num- ber.	Hospital.	Num- ber.
Drug addiction.....	134	1,210	.....	1,344	..	1,344	..	1,334	3	.....	7
Leprosy.....	1	..	1	..	..	..	..	1
Bubonic suspects.....	1	..	1	..	1	..	..	..
Smallpox.....	..	25	..	25	..	25	..	25	..	..	..
Influenza.....	..	24	..	24	..	24	..	23	1	..	..
Influenza and drug addiction.....	..	7	..	7	..	7	..	7	..	..	..
German measles.....
Typhoid suspects.....	..	1	..	1	..	1	..	..	..	..	..
Tuberculosis.....	..	239	..	239	..	239	..	71	25	..	143
Cerebro-spinal meningitis.....
Diphtheria and scarlet.....
Diphtheria and measles.....
Diphtheria and varicella.....
Pertussis.....	143	..	143	..	84	9	..	50
Diphtheria & German measles.....
Scarlet and measles.....
Scarlet and varicella.....
Scarlet and pertussis.....
Measles and pertussis.....
Measles and varicella.....
Veneral disease.....	..	2	..	2	..	2	..	..	..	..	2
Scarlet, measles and diphtheria.....
Measles, scarlet and pertussis.....
Measles, diphtheria & pertussis.....
Scarlet, measles and varicella.....
Total.....	134	1,508	145	1,787	..	1,787	..	1,546	38	..	203
Observation.....	..	1	..	1	..	1	..	..	..	..	1
Accompanying.....

BUREAU OF HOSPITALS
MUNICIPAL SANATORIUM.

Male Unit.

General Report.

Patients in sanatorium, January 1, 1920.....	287	
“ in sanatorium, January 1, 1921.....	305	
“ admitted during the year.....	660	
“ discharged during the year.....	642	
“ remaining less than one month.....	136	
Leaving to be reported on.....	506	

Of these 506 patients admitted in all stages of the disease, there were:

Arrested	7	(1.38%)
Apparently arrested	28	(5.54%)
Quiescent	85	(16.80%)
Improved	269	(53.16%)
Unimproved	99	(19.56%)
Died	16	(3.16%)
Non-tubercular	2	(.40%)
Total	506	(100.00%)

Female Unit.

General Report.

Patients in sanatorium, January 1, 1920.....	250	
Patients in sanatorium, January 1, 1921.....	247	
Patients admitted during the year.....	377	
Patients discharged during the year.....	380	
Patients remaining less than one month.....	49	
Leaving to be reported on.....	331	

Of these 331 patients, admitted in all stages of the disease, there were:

Arrested	12	(3.62%)
Apparently arrested	18	(5.44%)
Quiescent	83	(25.08%)
Improved	168	(50.76%)
Unimproved	45	(13.59%)
Died	4	(1.21%)
Non-tubercular	1	(.30%)
Total	331	(100.00%)

BUREAU OF PUBLIC HEALTH EDUCATION.

The Bureau of Public Health Education operated to extend and to coordinate educational work being carried on by the Department of Health. During this year the Bureau conducted the following activities:

Publications.

Regular Publications: Weekly Bulletin, Monthly Bulletin, Food and Drug Bulletin, School Health News, Staff News.

Irregular: Reprints and monographs.

Occasional: Health leaflets, posters, placards, etc.

The policy adopted was to make each of the periodicals pursue a line of educational publicity that would be connected with the work for which the publication was issued.

For instance, in School Health News, the general subject of personal hygiene was discussed extensively in each issue, with sufficient new notes to make the publication readable.

The Weekly Bulletin was operated on the same line, except insofar as it amplified the policy of the Department relative to special undertakings. In this way, it endeavored to secure more general co-operation between the public and the Department, it being felt that, unless the public—and particularly the medical profession—understood thoroughly the meaning of, and the reason for, a law or regulation, as well as the existence of it, there was a distinct tendency to disregard same. It was, therefore, necessary to keep the public fully informed regarding the latest developments in public health. The Amendments to the Sanitary Code, as well as special rules and regulations, were published as early as adopted, in order to give the same better publicity.

The Monthly Bulletin continued to be the organ for the issuing of scientific articles relating to public health work, and was a valuable means of conveying some official information, not only to our own citizens, but to health authorities throughout the country.

A complete revision of the mailing list of all issues was made, bringing the same up to date and removing obsolete names, thereby saving postage and wastage.

Exhibits.

During the year the exhibit work was conducted much along same lines as heretofore. The loaning of lantern slides, motion picture film posters, and other exhibit material went on constantly, and there was a great demand for health exhibits from a large variety of local interests.

The distribution of pamphlets on milk, child welfare, as well as on industrial work and patent medicines, was in constant operation, and there was an unusually large demand.

BUREAU OF PUBLIC HEALTH EDUCATION

Experience shows that this Bureau needs more effective and more popular means of disseminating its health information, and that this could be met by a travelling motion picture outfit.

There is also need for a number of new films on child welfare, venereal diseases, infant feeding, fly, mosquito, eye and tuberculosis work.

In co-operation with other organizations, this Bureau gave publicity to literature received from federal and state organizations. It is particularly desired to call attention to the co-operation given by private societies, particularly those especially interested in the education of young people. Mention can also be made here of aid from those concerning themselves with criminal and social disease work.

A number of slides, illustrating the work of public health, were added to our Loan Library of Slides, and a number of requests for the same were filled, as well as an enormous amount of use made of the slides by our own lecturers.

Information Bureau.

During the year, we operated an Information Bureau, giving information of every kind to every one, on request, either by telephone, in person, or by letter; and this has been particularly helpful in ascertaining the reaction of the public toward public health education.

LITERATURE AND LANTERN SLIDES DISTRIBUTED.

Lantern Slides loaned to Education Societies.....	2,341
Requests for literature and photographs for exhibits.....	8,776
Pieces distributed	35,556
Pamphlets, placards, posters, etc., distributed by The Bureau of Public Health Education and Division of Industrial Hygiene.....	1,629,900

Lunch Room.

The Bureau operated a lunch room for Department employées, which also served as an exhibit in instructing how clean eating places should be operated.

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DIVISION OF INDUSTRIAL HYGIENE

The function of industrial hygiene is the securing of best possible working conditions, from health viewpoint, for the worker. To obtain this result, the inspector investigates an industrial establishment, to see that hazards of the industry are guarded against; and if they are not, it is his duty to see that they are, as soon as possible. The employer and workman do not always realize the hazards of their respective industry, and the inspector must inform them of same. A workman, well informed about the dangerous processes of his industry, is secure against occupational disease and accident, and is an asset to his employer. An employer who provides his workmen with a good sanitary workshop, safeguards machinery and who is interested in their welfare, is a shrewd business man; production is increased, sickness and accidents are eliminated, and there is very little labor turn-over.

A workman should be in good physical condition to do a good day's work, and to this end the inspector endeavors to have him submit to a physical examination. These are performed by the staff of industrial medical inspectors of this Division. Women are examined by a woman physician. A report of the physical findings is always sent to the individual, at his home address. If medical attention is necessary to correct some physical condition, the person is so advised.

The larger industries inspected during the year were as follows:

Knit goods	Printing	Ladies' waists
Millinery	Laundries	Woolens
Paper	Embroideries	Tobacco
Gowns	Furs	Machinery
Leather	Wood-turning	

GROSS SUMMARY OF THE YEAR'S WORK.

Inspections	7,238
Re-inspections	17,142
No cause for action.....	1,435
Items abated by personal effort.....	6,115

The following tabulation shows the number of persons, male and female, examined, and the industries in which they were employed:

	MALE.	FEMALE.
Artificial Flowers.....	13	52
Automobile assemblers.....	51	..
Automobile trimmers and finishers.....	89	..
Blacksmiths.....	98	..
Celluloid workers.....	44	..
Cigars and tobacco.....	72	54
Clerical occupations.....	256	58
Drugs and chemicals.....	62	..
Electricians.....	63	..
Furs and skins.....	32	..
Glass blowers.....	17	..
Iron foundry employees.....	28	..
Jewelers.....	16	..
Laborers.....	144	..

DIVISION OF INDUSTRIAL HYGIENE

	MALE.	FEMALE.
Leather goods.....	146	20
Machinists.....	243	..
Machine operators.....	54	18
Metal polishers.....	40	..
Miscellaneous occupations.....	78	54
Paper industry—boxes.....	63	20
Painters and varnishers.....	168	..
Printing and electrotyping.....	54	..
Rubber goods.....	8	..
Sheet metal workers.....	97	..
Steamfitters and plumbers.....	8	..
Stone cutters.....	48	..
Unemployed boys—examined at continuation school.....	77	..
Wood-workers.....	271	..
Total.....	2,440	276

As means of educating employer and workman, inspectors give group talks on industrial hygiene; when the industry was a large one, arrangements were made to give a series of lectures. Educational posters against spitting, unclean toilets, and hazards of the industry, etc., were left at each establishment by the inspectors. In this way education was brought to the workman, where it belongs, and where it can be applied, in the shop itself.

The following is a list of the lectures which were delivered during the year:

Anthrax.....	11
Accident prevention.....	22
Child labor.....	1
Cancer.....	8
Constipation.....	9
Common cup and towel.....	27
Drug addiction.....	16
Dust.....	13
Epidemics.....	164
Eye hygiene.....	4
Gases and fumes.....	3
Industrial hygiene.....	101
Influenza.....	5
Oral hygiene.....	3
Occupational diseases.....	10
Activities of Health Department.....	24
Personal hygiene.....	232
Physical examinations.....	124
Patent medicine.....	6
Social hygiene.....	16
Sex hygiene.....	59
Spitting.....	3
Sanitation.....	5
Tuberculosis.....	15
Teeth.....	5
Venereal disease.....	109
Wood alcohol.....	2
Total.....	997

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

Occupational Diseases Reported.

During the year the following occupational diseases were reported:

Antimony	1
Anthrax	23
Arsenic poisoning	1
Carbon di-oxide	3
Brass poisoning	1
Hydro-fluoric acid	1
Lead poisoning	22
Mercurial vapor poisoning.....	1
Metal poisoning	1
Respiratory catarrh	1
Total	55

During the past few years the number of anthrax cases, reported, has been on the increase; and with this has come a greater number of fatalities. Investigation has shown that persons chiefly affected are those who have used new shaving brushes and those who have been employed in the manufacture of same. During the war there was a great demand for shaving brushes, and to supply this demand the manufacturers used a great deal of horse hair, goat hair, hog hair, and cow hair. This kind of hair was seldom used in the manufacture of shaving brushes before the war. The hair was prepared, chemically, in such a manner as to resemble good quality of hair or bristles; and when the shaving brushes were finished they were sold as better grade brushes. The processes used in shading the hair did not remove anthrax spores. The manufacturers were not so particular about sterilizing this poor quality of hair, as they were in trying to get a shade that would imitate a good quality of hair or bristle. Since there was no real supervision over the sterilization of hair, the Superintendent of the Division of Industrial Hygiene brought to the attention of the Commissioner the urgent need of adopting preventive measures to safeguard citizens from anthrax infection. As a result the Sanitary Code was amended as follows:

Resolved, That Article 12 of the Sanitary Code be amended by adding thereto a new section to be known as Section 230 and to read as follows:

Sec. 230. The manufacture and sale of hair brushes and hair cloth.—No person shall use in the manufacture of brushes or cloth, any animal hair which has not been sterilized by a process prescribed or approved by the Board of Health, nor shall any person bring into or offer for sale, sell or deliver in the City of New York, any brush or cloth containing animal hair unless the same shall have been so sterilized.

It shall be the duty of the manufacturer of shaving brushes, tooth brushes, hair brushes, nail brushes, or other toilet brushes intended for human use, to cause his name or trade mark, the place of manufacture, and the word STERILIZED to be permanently, clearly and

DIVISION OF INDUSTRIAL HYGIENE.

legibly painted or branded upon every such brush before offering for sale, selling, or delivering the same in the City of New York; provided, however, the word STERILIZED shall not be painted or branded upon any such brush unless the animal used in the manufacture thereof shall have been sterilized by a process prescribed or approved by the Board of Health.

No person shall sell, offer for sale, or deliver, or have in his possession with intent to sell, offer for sale, or deliver in the City of New York, any shaving brush, tooth brush, hair brush, nail brush, or other toilet brush intended for human use, containing animal hair, unless the name or trade mark of the manufacturer, place of manufacture, and the word STERILIZED is permanently, clearly and legibly painted or branded thereon.

The provisions of this section shall take effect the 1st day of July, 1920, but shall not apply to brushes in stock on the 16th day of June, 1920, in the hands of dealers which have not been labelled or branded, as hereinbefore required.

Special Regulations.

Whereas, The Board has adopted Section 230 of the Sanitary Code relating to manufacture and sale of hair brushes and hair cloth and protection of the public against anthrax; and

Whereas, The provisions of said section require all hair used in the manufacture of brushes and cloth to be sterilized by a process prescribed or approved by this Board; and

Whereas, An investigation conducted by the Department of Health indicates that insofar as can be ascertained at this time only two processes have been found to be effective and adequate to properly sterilize such hair and to render the same free from anthrax bacteria and spores; and

Whereas, The two processes referred to are as follows, to wit:

1. Boiling the hair in water maintained at a temperature of 212 degrees F. for a period of at least three (3) hours.

2. The placing of the hair in an autoclave in which a ten-inch vacuum is produced. Live steam to be then turned on and kept at fifteen (15) pounds' pressure for a period of three (3) hours; be it therefore

Resolved, That the following processes for the sterilization of hair to be used in the manufacture of brushes or cloth and relating to the provisions of Section 230 of the Sanitary Code, be and the same are hereby approved, to wit:

1. Boiling the hair in water maintained at a temperature of 212 degrees F. for a period of at least three (3) hours.

2. The placing of the hair in an autoclave in which a ten-inch vacuum is produced. Live steam to be then turned on and kept at fifteen (15) pounds' pressure for a period of three (3) hours.

BUREAU OF RECORDS.

Population.

The last U. S. Census was taken as of January 1, 1920, the time covered by the enumerators being the first two weeks of that month. On June 8, 1920, the official preliminary announcement of the population of the City was received, distributed among the boroughs as follows:

U. S. CENSUS OF NEW YORK CITY FOR 1920.

AREA.	POPULATION JAN. 1, 1920.	INCREASE OVER JAN. 1, 1910.	PER CENT. INCREASE.
Borough of Manhattan.....	2,284,103	*47,439	*2.0
Borough of The Bronx.....	732,016	301,036	69.8
Borough of Brooklyn.....	2,022,262	387,911	23.7
Borough of Queens.....	466,811	182,770	64.3
Borough of Richmond.....	115,959	29,990	34.9
City of New York.....	5,621,151	854,268	17.9

*Decrease.

Subsequently, individual complaints as to failure of the enumerators to cover many residents were received at the offices of the Mayor and the Department of Health. As happens in the taking of censuses of large cities, quite a few persons were overlooked, but as a rule the numbers omitted are so few that, for practical purposes, specific omissions have very little effect upon calculations of mortality, or morbidity rates. The population as shown, above, by boroughs proved, after careful consideration, to have been well covered by census enumerators, with the exception of one borough, that of Manhattan. This borough showed a decrease of 47,439 persons in ten years from 1910 to 1920—equivalent to a decrease of 2% during that period of time. This decrease in the population of this borough did not seem to be acceptable for the following reasons: The natural increase of population in Manhattan, that is the excess of births over deaths, during ten years, was 259,640, there having been 632,585 births reported and 372,945 deaths. There was an increase in the public and parochial school population in Manhattan of over 30,000 pupils.

It should be borne in mind that while there had been city improvements made which resulted in the demolition of a few small areas as residential sections, still the total number of persons affected was comparatively small. It was, thereupon, determined that an effort should be made to check up the returns of federal authorities by choosing 100 enumeration districts in various parts of the city to be recounted. The population resident in 113 districts were furnished through courtesy of the Director of Census and,

BUREAU OF RECORDS

in the last week of June, 1920, the population of 106 districts was re-enumerated by City employees, of the Departments of Police, Education, and Health. As a result, it was found that, in 30% of the districts work of the federal enumerators was well done, only slight discrepancies being shown. In the remaining 70% the work, apparently, was not well done, as evidenced by the difference between the federal and municipal enumerators.

This re-count was made notwithstanding the fact that the resident population in the last week of June is always less than in the month of January, and it was, therefore, somewhat of a surprise to find there were 8,322 people who were not counted by the federal enumerators. One enumeration district showed an increase, by the municipal count, of over 900, no new buildings having been erected or changes in old buildings having taken place during the period from January to June, 1920. It was thought possible that a re-enumeration of the entire Borough of Manhattan could be made in October or November, but the municipal employees, especially those of the Police Department, were unable to be spared from their ordinary vocations, and the re-enumeration was postponed until 1921. It was deemed advisable, therefore, to accept, tentatively, the returns by federal authorities, with hope that, at some opportune time, steps could be taken to make a complete and thorough re-enumeration of inhabitants of the Borough of Manhattan. The crude and specific death rates are calculated upon the estimated population of the city and boroughs, based on the federal returns.

Death Rates of the City.

Crude Death Rate—During 1920 there were 73,249 deaths reported, with a rate of 12.93 per 1,000 of the population. This is the lowest the City has ever experienced. The next lowest rate being that of 1919, which was 13.35. The highest death rate during the past 20 years was in the year 1904 which was 20.01. Going back further in the records of mortality rates in the city it is evident that the most pronounced decrease has taken place during the lifetime of the present generation. The following table shows the death rates by decades since 1868:

CRUDE DEATH RATES OF THE CITY OF NEW YORK SINCE 1868.

Years.	Rate per 1,000.
1868-77	27.17
1878-87	25.27
1888-98	23.62
1898-07	19.23
1907-16	15.54
1917	14.55
1918	17.88
1919	13.35
1920	12.93

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The Board of Health was organized in March, 1866, and a glance at the above table shows that the death rate of the first decade of its existence, in which 27 out of every 1,000 inhabitants died, contrasts clearly with the rate of the year just closed, in which 13 out of every 1,000 of the population died, a decrease of over 50 per cent. In analyzing the causes of this decrease, it may be considered from the point of view of the effect of official endeavors to prevent spread of infection from certain specific diseases. It is found that the specific mortality rates of the following causes of death have been reduced to naught: smallpox, Asiatic cholera and typhus fever; while those from typhoid fever, malarial fevers, scarlet fever, diphtheria, whooping-cough, pulmonary tuberculosis, and diarrhoeal diseases of children, have been reduced to the lowest minimum possible.

Death Rate of Children Under Five Years of Age—It has been truly said that the death rates prevailing among children under 5 years of age reflect most accurately the health conditions prevailing in any community, the efficiency of local health officers, and the degree of civic pride of the population. The efforts of sanitary authorities have always been directed towards prevention of communicable diseases, and care of those contracting same, especially among children of the city. It is not surprising that the death rate at this age group is lower than most of the large cities of the world. The following table gives the death rate:

DEATH RATES UNDER 5 YEARS OF AGE.

Years.	Rate Per 1,000 Living.
1877-86	97.8
1887-96	86.2
1897-06	57.9
1907-16	43.2
1917	31.9
1918	36.1
1919	26.6
1920	28.8

It is evident there has been brought about an immense reduction in the death rate at this age group—and exceeds by far any obtained at other age groupings of the population. Comparing mortality during the first decade of the table with that of the year 1920, a decrease of 70 per cent. is obtained, a decrease in accord with the lower mortality from infectious diseases of early life—to wit, scarlet fever, whooping-cough, diphtheria, diarrhoeal diseases, and tuberculosis other than the pulmonary form.

Infant Mortality—Infant mortality is best expressed as the number dying under one year of age per 1,000 infants born alive. Unfortunately, the ratio of to-day cannot be compared with those in the early days of sanitary efforts as births were not reported in their entirety until the year 1910. However, a fairly accurate estimate of the mortality in earlier years among infants under one year may be made, based on the estimated number

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living at that age. In 1890 there occurred 228 deaths out of every 1,000 living under one year of age, as compared with 90 deaths of infants in 1920, that is to say that approximately 5 children died thirty years ago as compared with 2 in 1920. In 1910, the rate was 126 per 1,000 infants born alive, and in 1920 it was 85. Undoubtedly the lowering of infant death rate was due to control of infectious diseases and, in particular, efforts to provide a pure milk supply for infants, thus saving thousands of lives that otherwise would have succumbed to gastro-intestinal disturbances.

Typhoid Fever—There were 137 deaths reported during the year from this cause, with a death rate of 2 per 100,000 of the population, the lowest death rate on record. The following table shows deaths and death rates by decades:

TYPHOID FEVER IN NEW YORK CITY.

YEAR.	DEATHS.	DEATH RATE PER 100,000 POPULATION.
1868-77.....	4,445	31
1878-87.....	5,430	28
1888-97.....	5,207	20
1898-07.....	6,349	18
1908-17.....	4,166	8
1918.....	196	4
1919.....	121	2
1920.....	137	2

The death rates of typhoid fever in the early decades do not accurately reflect the complete mortality, as many deaths ascribed to the malarial fevers were, without doubt, from typhoid fever. Typho-malaria was a term in constant use in those days, and all deaths reported as such were considered from malaria and so assigned. It is worthy of note that there was no augmentation of deaths from typhoid fever at the end of the World War as was the case after the Spanish-American war.

Malarial Fever—This cause as a factor in mortality records has almost completely disappeared; there were reported only four deaths during the entire year, a startling contrast with the numbers reported in early years. In the decade 1868-77 the annual average of deaths was 362, in the following decades 577, 322 and 111 respectively. The ascertainment of the mode of transmission of this disease, associated with more accurate diagnosis as a result of blood examinations, and the extermination of breeding nests of mosquitoes, served to reduce the mortality to a negligible quantity.

Asiatic Cholera—In 1866 there were 1,137 deaths; in 1867 there were 82; since which time there have been no deaths reported from Asiatic cholera, with the exception of in 1892, when nine deaths occurred.

Smallpox—In 1901 and 1902 there were 617 deaths reported, this mild epidemic being the result of an importation by a band of strolling

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actors. In following years, there were few deaths reported from this cause, not exceeding four in one year, and during the past ten years not one death.

Typhus Fever—From 1868 to 1893, inclusive, typhus fever appeared constantly in the mortality records, since which time there has been practically no mortality from this cause, with the exception of an occasional death from Brill's disease, a form of very mild typhus, the so-called bastard typhus.

Measles—There were 736 deaths and a rate of 13 per 100,000 of the population reported during 1920, as compared with 218 deaths and a rate of 4 per 100,000 in 1919. This disease, by reason of its intense contagious character, is one of the most difficult infections to control, and while the rate during the year was higher than during preceding seven years, still it is far and away below that of previous decades, as shown in the following table:

DEATH RATES FROM MEASLES IN NEW YORK CITY.

Year.	Rate Per 100,000
1868-77	28
1878-87	37
1888-97	31
1898-07	20
1908-17	16
1918	14
1919	4
1920	13

Scarlet Fever—There were 220 deaths and a rate of 4 per 100,000 of the population reported during the year, as compared with 136 and a rate of 2 in the year previous. The mortality has gradually decreased since the organization of the Department of Health, fifty-five years ago, as evidenced in the following table:

SCARLET FEVER IN NEW YORK CITY.

YEARS.	AVERAGE ANNUAL DEATHS.	RATE PER 100,000 POPULATION.
1868-77	1,298	91
1878-87	1,426	74
1888-97	1,020	39
1898-07	686	20
1908-17	589	12
1918	177	3
1919	136	2
1920	220	4

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Diphtheria and Croup—This scourge of early childhood has lost most of its virulency during recent years, especially since the introduction of antitoxin as a curative and preventive measure, in 1895. The death rate as shown in the following table has fallen from 294 per 100,000 of the population in the year 1875 to a rate of 18 in the year 1920.

DEATH RATES FROM DIPHTHERIA IN NEW YORK CITY.

Year.	Rate Per 100,000 of the Population.
1868-77	154
1878-87	170
1888-97	130
1898-07	53
1908-17	28
1918	23
1919	22
1920	18

Whooping Cough—There were 615 deaths in 1920 with a rate of 11 per 100,000 of the population, as compared with 161 deaths and a rate of 3 in 1919, a considerable increase; on the other hand, comparison of the year's mortality with those of previous years shows a very much decreased death rate, as evidenced in the following table:

DEATH RATES FROM WHOOPING COUGH IN NEW YORK CITY.

Year.	Rate Per 100,000
1868-77	37
1878-87	31
1888-97	25
1898-07	11
1908-17	7
1918	12
1919	3
1920	11

Epidemic Cerebro-Spinal Meningitis—There were 123 deaths reported with a rate of 2 per 100,000 of the population, as compared with 171 and a rate of 3 in 1919. Since 1908 the rate from this cause has been exceptionally low, the average for the thirteen years being 4 per 100,000. In the decade 1877-86 the rate was 11, with the following decade showing a decrease to 10, and the next succeeding decade one of 17. In the year 1904 there were 1,403 deaths, with a rate of 36 per 100,000; in 1905 deaths increased to 2,025, and rate to 50.

Pulmonary Tuberculosis—Attention is directed to the unexpected decrease in mortality from this cause during 1919 and 1920, as compared

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with the immediately preceding years. Since 1903 the absolute mortality ranged yearly from 8020 to 8999 deaths; in 1918 there were 8,779; in 1919 the number decreased to 7,395, and in 1920 to 6,165; a decrease in 1919 of 1,147, and in 1920 of 2,614 deaths, as compared with 1918. The annual average for the twenty years, 1899 to 1919, numbered 8,542. This astonishing decrease is explainable by the betterment in living conditions among the poorer classes. Tuberculosis has always prevailed among that portion of the population unable to obtain sufficient and proper food to withstand attacks of this prolific cause of mortality. In 1919-20 a general wave of prosperity had spread throughout the country, wages were high, employment to be had for the asking; consequently the resisting power of the human body to infection reached its apogee in the two years just passed; another factor was the return of soldiers and sailors from war, bringing with them knowledge instilled of fundamentals of sound health; education of the civil community in sanitary problems has been going on for years, and the tuberculosis problem has been stressed much more than any other, but there was lacking the example of actual experience in obtaining of good health as furnished by returning men of army and navy service. The mortality from pulmonary tuberculosis in the early years is shown in the following table:

DEATH RATES FROM PULMONARY TUBERCULOSIS IN NEW YORK CITY.

Year.	Rate Per 100,000 of the Population.
1868-77	376
1878-87	358
1888-97	276
1898-07	224
1908-17	175
1918	160
1919	133
1920	109

Other Tuberculous Diseases—The rate of 17 per 100,000 of the population is the lowest on record, as 109 from pulmonary tuberculosis was the lowest for that form of the disease. The rates in previous decades were, in their chronological order, 48, 47, 38, and 27.

Diarrhoeal Diseases Under 5 Years of Age—There is no other activity of the Department that has given officials such heartening results, following the culmination of work of thirty years for the control of these conditions.

In early years, a corps of physicians was appointed to visit, during the hot weather, sick children in tenement houses. In conjunction with this line of endeavor the milk supply was carefully looked after and, in 1910, compulsory pasteurization of milk was ordered; in the meantime, entrance

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of nurses as employees of the Department, and establishment of baby health stations throughout the city, served to bring about a condition that, according to our present knowledge, is as nearly perfect as human agency can make it. The record of mortality among children from this cause is as follows:

DEATH RATES FROM DIARRHOEAL DISEASES UNDER 5 YEARS OF AGE,
NEW YORK CITY.

Year.	Rate Per 100,000 Children Living Under 5 Years of Age.
1868-77	303
1878-87	234
1888-97	197
1898-07	138
1908-17	84
1918	44
1919	42
1920	45

Roughly speaking, for every child that died from diarrhoeal disease, during the past three years, seven children died in the decade of fifty years ago.

Cancer—The number of deaths from cancer during the year was 5,317, with a rate of 94 per 100,000 of the population, as compared with 5,147 deaths and a rate of 92, in 1919. The death rate from this disease has increased steadily during the past 50 years. In the decade 1868-77, there were 39 deaths in every 100,000 of the population and then, in chronological order, the rates increased by decades to 51, 55, 67, and to 83; in 1918, it was 90.

Searches and Transcripts.

There were 180,049 searches made of records of births, deaths, and marriages during the year, as compared with 180,718 made in 1919. The searches are divided into two classes, one in which the search is made without charge, and is limited to applications for admission into the public schools and for obtaining of certificates of employment. In 1920 there were 75,373 made without cost, a decrease of 8,644 as compared with 1919; this was due to inability of the Bureau to continue in all Boroughs the procedure established fifteen years ago, to provide birth statements for admission into public schools; but there was no limitation of searches made for employment purposes. The other class is the so-called paid searches—the fee for making such search being fifty cents the first year, and ten cents for each additional year. These searches, in 1920, numbered 104,676, an increase of 7,975 as compared with 1919. The number of paid transcripts issued during the year was 103,726, as compared with 94,761, in 1919.

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CITY OF NEW YORK.
DEATHS FROM CERTAIN DISEASES WITH CONTRIBUTING CAUSES—YEAR 1920.
CONTRIBUTING CAUSES.

DETERMINING CAUSE OF DEATH.	Total Deaths.	Typhoid Fever.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria and Croup.	Influenza.	Erysipelas.	Septicæmia.	Pulmonary Tuberculosis.	Other Tuberculous.	Syphilis.	Cancer.	Acute Rheumatism.	Chronic Rheumatism.	Diabetes.	Alcoholism.	Meningitis.	Locomotor Ataxia.	Apoplexy.	Paralysis.	General Paresis.	Other Forms Mental Alienation.	Epilepsy.	Neuritis.	Other Nervous.
Typhoid fever.....	1	77	2	23	40	77	42	34	65	336	47	457	57	201	221	30	113	22	2,196	116	24	105	28	16	33	
Measles.....	137			13	8	5		1	6		1							2				1				1
Scarlet fever.....	736			1	25	7		1	1	2								6		5						2
Whooping cough.....	220			3	1	1			1									1								1
Diphtheria.....	615			1	5	1			1									26		5						2
Influenza.....	1,045			2	2	1			1	8								31		1						1
Pulmonary tuberculosis.....	3,492			40	3	1			232	7								5		1						4
Other tubercular diseases.....	6,476			1	2	1			12	67								31		6						23
Cancer.....	5,317			1	1	2			21	2			438					20		5						2
Acute rheumatism.....	236								2	1								1		5						1
Diabetes.....	1,075								5	6								1		15						1
Alcoholism.....	98								1	1								1		3						1
Locomotor ataxia.....	93								1	1								1		7						1
Pericarditis.....	50								2	7								1		1						1
Acute endocarditis.....	375								5	1								7		7						1
Organic heart disease.....	11,342								35	242								63		6						2
Angina pectoris.....	2,350								2	2								5		235						4
Diseases of arteries.....	2,374								1	2								4		1,468						2
Ischemic stroke.....	5,184								5	3								4		3						3
Lobar pneumonia.....	5,184								3	4								13		1						2
Diarrhoea, under 2 years.....	2,545								2	3								8		2						3
Appendicitis.....	2,792								1	2								10		1						5
Cirrhosis of liver.....	366								5	1								6		15						1
Acute nephritis.....	257								1	1								1		9						1
Chronic nephritis.....	4,576								2	2								4		398						1

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DEATHS FROM CERTAIN DISEASES WITH CONTRIBUTING CAUSES—YEAR 1920—Continued.
CONTRIBUTING CAUSES—Continued.

DETERMINING CAUSE OF DEATH.	CONTRIBUTING CAUSES—Continued.														No Contributing Cause.											
	Diseases of Ear.	Pericarditis.	Acute Endocarditis.	Organic Heart Disease.	Angina Pectoris.	Diseases of Arteries.	Embolism and Thrombosis.	Acute Bronchitis.	Broncho-Pneumonia.	Lobar Pneumonia.	Pleurisy.	Asthma.	Empyema.	Diarrhea.		Hernia.	Cirrhosis of the Liver.	Peritonitis.	Acute Nephritis.	Chronic Nephritis.	Congenital Debility.	Senility.	Surgical Operation.	Encephalitis Lethargica.	Others.	
Typhoid fever	90	8	609	2,203	325	2,876	392	275	3,199	1,413	465	111	118	242	42	159	332	249	2,933	138	199	590	24	2,125	30,129	
Measles	7	3	3	12	10	10	1	14	568	45	3	3	3	2	2	2	2	2	5	5	5	5	5	9	88	
Scarlet fever	7	12	4	4	14	14	1	14	406	22	1	1	1	1	1	1	1	15	13	13	13	13	13	14	37	
Whooping cough	1	0	0	0	0	0	0	0	272	17	1	1	1	1	1	1	1	13	13	13	13	13	13	16	108	
Diphtheria	2	96	13	13	13	16	3	23	1,461	1,100	13	3	3	11	11	11	2	21	24	24	24	24	24	73	524	
Pulmonary tuberculosis	6	30	90	157	13	4	1	2	28	28	17	4	2	9	9	7	1	15	86	86	86	86	86	13	73	522
Other tubercular diseases	3	7	3	11	3	11	1	1	14	8	2	4	2	9	9	7	1	13	7	7	7	7	7	30	63	5,306
Cancer	3	20	233	2	43	22	2	2	38	32	6	3	1	2	12	7	16	16	94	94	94	94	94	30	762	
Acute rheumatism	3	16	151	15	2	40	10	4	19	6	4	1	1	2	8	1	2	7	15	15	15	15	15	154	3,762	
Diabetes	3	2	6	84	2	3	2	2	3	5	4	1	1	1	1	1	1	1	7	7	7	7	7	16	31	
Alcoholism	1	1	1	3	3	3	3	3	4	1	1	1	1	1	1	1	1	1	3	3	3	3	3	120	615	
Locomotor ataxia	1	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	44	
Pericarditis	1	1	6	1	1	1	1	1	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	14	
Acute endocarditis	6	1	3	1	1	1	1	1	22	6	3	1	1	1	1	1	1	2	4	4	4	4	4	39	185	
Organic heart disease	1	35	8	24	156	1,737	197	77	145	38	49	47	85	62	7	82	71	233	8	8	8	8	8	334	5,152	
Diseases of arteries	1	3	117	3	3	117	2	2	11	1	1	1	1	1	1	1	2	71	2,298	2,298	2,298	2,298	2,298	4	176	
Broncho pneumonia	26	5	103	117	4	83	9	28	6	6	6	5	3	8	8	9	6	6	92	92	92	92	92	126	606	
Diseases of arteries	26	5	72	214	1	62	9	54	2	117	2	117	11	9	5	2	2	12	72	72	72	72	72	297	3,677	
Lobar pneumonia	21	12	90	345	28	52	3	14	10	8	227	6	11	23	1	7	6	19	103	103	103	103	103	285	3,785	
Diarrhea, under 2 years	11	3	1	3	1	1	11	1	36	79	8	2	2	2	2	2	302	1	7	7	7	7	7	163	2,131	
Appendicitis	1	1	3	7	1	1	1	1	11	11	1	1	1	1	1	1	2	2	2	2	2	2	2	2	24	134
Cirrhosis of liver	1	1	3	48	1	21	1	1	1	1	2	1	1	1	1	1	1	2	2	2	2	2	2	2	26	127
Acute nephritis	1	13	12	14	1	1	1	1	3	7	1	1	1	1	1	1	1	1	4	4	4	4	4	26	127	
Chronic nephritis	1	9	45	788	11	743	23	12	38	41	12	15	3	14	2	36	5	5	7	7	7	7	7	286	2,001	

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TABLE
CASES AND DEATHS FROM COMMUNI

	CASES REPORTED.		CASES PER 1,000 OF POP.		DEATHS.		DEATHS PER 1,000 OF POP.		CASES FATALITY %	
	1919.	1920.	1919.	1920.	1919.	1920.	1919.	1920.	1919.	1920.
Diphtheria—										
Manhattan.....	5,808	5,979	2.58	2.62	520	426	.23	.19	8.82	7.73
Bronx.....	2,253	1,781	3.14	2.38	173	105	.24	.14	7.68	5.90
Brooklyn.....	4,389	4,629	2.19	2.27	423	376	.21	.18	9.64	8.12
Queens.....	1,158	1,487	2.58	3.12	99	109	.24	.23	8.55	7.33
Richmond.....	316	290	2.76	2.47	24	29	.21	.25	7.59	10.00
City.....	14,014	14,166	2.51	2.50	1,239	1,045	.22	.18	8.84	7.38
Scarlet Fever—										
Manhattan.....	1,687	2,367	.74	1.04	59	118	.03	.05	3.50	4.99
Bronx.....	715	1,008	1.00	1.35	22	16	.03	.02	3.08	1.59
Brooklyn.....	1,636	2,301	.82	1.13	43	68	.02	.03	2.63	2.96
Queens.....	445	691	.97	1.45	12	14	.03	.03	2.70	2.03
Richmond.....	111	170	.97	1.45	.....	4	.....	.03	.....	2.35
City.....	4,594	6,537	.82	1.15	136	220	.02	.04	2.96	3.37
Measles—										
Manhattan.....	4,531	14,302	1.98	6.27	143	392	.06	.17	3.16	2.74
Bronx.....	1,385	5,198	1.94	6.95	9	61	.01	.08	.65	1.17
Brooklyn.....	1,295	12,199	.65	5.97	51	240	.02	.12	3.93	1.97
Queens.....	519	2,692	1.13	5.65	8	27	.02	.06	1.54	1.00
Richmond.....	461	692	4.03	5.89	7	16	.06	.14	1.52	2.31
City.....	8,194	35,083	1.47	6.19	218	736	.04	.13	2.66	2.10
Whooping Cough—										
Manhattan.....	575	3,883	.25	1.70	60	296	.03	.13	10.4	7.62
Bronx.....	207	1,136	.29	1.52	17	68	.02	.09	8.21	5.98
Brooklyn.....	681	2,818	.34	1.38	58	187	.03	.09	8.5	6.64
Queens.....	131	862	.29	1.81	14	49	.03	.10	10.7	5.68
Richmond.....	64	174	.60	1.48	3	15	.03	.13	4.7	8.62
City.....	1,658	8,873	.30	1.56	161	615	.03	.11	9.7	6.93

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XIII.

CABLE DISEASES—NEW YORK CITY—1920.

	CASES REPORTED.		CASES PER 1,000 OF POP.		DEATHS.		DEATHS PER 1,000 OF POP.		CASES FATALITY %	
	1919.	1920.	1919.	1920.	1919.	1920.	1919.	1920.	1919.	1920.
Cerebro-Spinal Meningitis—										
Manhattan.....	142	129	.06	.07	82	66	.04	.03	57.7	51.2
Bronx.....	34	28	.05	.04	5	13	.007	.02	14.7	46.4
Brooklyn.....	111	75	.05	.04	68	35	.03	.02	61.3	46.7
Queens.....	19	8	.04	.02	14	5	.03	.01	73.7	62.5
Richmond.....	11	4	.10	.03	2	5	.02	.03	18.2	100.0
City.....	317	244	.06	.04	171	123	....	.02	53.9	50.4
Poliomyelitis—										
Manhattan.....	18	54	.008	.02	7	14	.003	.006	38.9	25.9
Bronx.....	5	25	.007	.03	....	5	....	.006	....	20.0
Brooklyn.....	14	54	.007	.03	7	15	.003	.007	50.0	27.8
Queens.....	6	17	.001	.03	1	5	.0002	.01	16.7	29.4
Richmond.....	1	4	.01	.03	....	1	....	.008	....	25.0
City.....	41	154	.007	.03	15	40	.003	.007	35.7	26.0
Pulmonary Tuberculosis—										
Manhattan.....	7,713	7,452	3.37	3.27	3,597	2,916	1.57	1.28	46.6	39.1
Bronx.....	1,760	1,396	2.46	1.87	920	689	1.28	.92	52.3	49.4
Brooklyn.....	4,363	4,095	2.18	2.00	2,252	1,959	1.12	.96	51.6	47.8
Queens.....	542	882	1.18	1.85	474	480	1.04	1.01	87.4	54.4
Richmond.....	192	210	1.68	1.79	152	121	1.33	1.03	79.2	37.6
City.....	14,570	14,035	2.61	2.48	7,395	6,165	1.33	1.09	50.7	43.9
Typhoid Fever—										
Manhattan.....	407	437	.18	.19	51	52	.02	.02	12.5	11.9
Bronx.....	102	80	.14	.11	11	11	.02	.01	10.8	13.8
Brooklyn.....	259	342	.13	.17	43	51	.02	.02	16.6	14.9
Queens.....	65	75	.14	.16	10	15	.02	.03	15.4	20.0
Richmond.....	21	35	.18	.30	6	8	.05	.07	28.6	22.9
City.....	854	969	.15	.17	121	137	.02	.02	14.2	14.1

TUBERCULOSIS.	TOTAL CASES IN REGISTER.	CASES PER 1,000 OF POPULATION.	DEATHS.	DEATH RATE PER 1,000 POPULATION.	CASE FATALITY PER CENT.
Manhattan.....	15,505	6.80	2,916	1.28	.19
Bronx.....	3,490	4.67	689	.92	.20
Brooklyn.....	7,030	3.44	1,959	.96	.28
Queens.....	1,576	3.31	480	1.01	.30
Richmond.....	318	2.71	121	1.03	.38
City.....	27,919	4.93	6,165	1.09	.22

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

TABLE

DEATHS BY SEX, AGE, AND CAUSE OF DEATH, BY

	TOTAL BOTH SEXES.		TOTAL.		UNDER 1 YR.		1-2.		2-3.		3-4.		4-5.		UNDER 5 YRS.		5-9.		10-14.		15-19.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Typhoid fever:																							
Manhattan	52	35	17						1				2		1		2	1		1		4	1
Bronx	11	7	4												1		1		1				
Brooklyn	51	32	19						1		1				2		4	1	5		4	3	2
Queens	15	10	5																	1		1	
Richmond	8	5	3																				
City	137	89	48						1	1		1	2		1		4	6	1	7	5	8	3
Measles:																							
Manhattan	392	209	183	69	50	88	82	29	21	9	12	4	3	199	168	8	9	1	1	1	1	2	
Bronx	61	28	33	12	11	8	13	3	1	2	3	1	2	26	30	2	2					1	
Brooklyn	240	117	123	28	34	48	52	16	20	9	6	6	4	107	116	10	5						
Queens	27	16	11	4	1	7	5	2	1	2	2	1	1	16	10		1						
Richmond	16	10	6	3	2	3	2	1	1	1	1	2	1	10	5					1			
City	736	380	356	116	98	154	154	51	43	23	23	14	11	358	329	20	17	1	2	1	3	3	
Scarlet fever:																							
Manhattan	118	57	61	2	3	13	6	8	8	9	8	9	9	41	34	11	20	1	2	1	1		
Bronx	16	9	7			2	3	1	1	1	1	1		4	4	3	3	1					
Brooklyn	68	37	31	2	1	5	3	6	8	3	5	8	2	24	19	12	11	1				1	
Queens	14	5	9	1	1	1	1			1	1	1	1	3	3	1	5	1				1	
Richmond	4	3	1							1					1	1			1				
City	220	111	109	5	5	19	11	17	17	13	16	18	12	72	61	28	39	5	2	1	2	2	
Whooping cough:																							
Manhattan	296	131	165	71	83	44	51	6	14	5	6	3	3	129	157	1	7	1					
Bronx	68	32	36	15	11	7	15	6	4					30	30	2	5						
Brooklyn	187	83	104	51	50	23	27	4	11	1	5	2	5	81	98	1	6	1					
Queens	49	21	28	10	14	7	10	2	2	1	2	1		21	28								
Richmond	15	6	9	6	6	3	3							6	9								
City	615	273	342	153	164	81	106	18	31	7	13	8	8	267	322	4	18	2					
Diphtheria:																							
Manhattan	426	227	199	16	24	74	56	52	28	23	23	26	15	191	146	29	40	3	4	1	2		
Bronx	105	58	47	5	3	14	10	14	8	6	7	9	6	48	34	8	11	1					
Brooklyn	376	200	176	16	16	47	37	40	34	18	26	21	19	142	132	45	32	8	8	1	2		
Queens	109	57	52	4	2	3	8	9	8	6	7	4		30	24	23	24	3	2	1	2		
Richmond	29	16	13	2		3	3	3	2	2	2	1		12	8	3	5						
City	1,045	558	487	43	45	141	109	117	81	57	64	65	45	423	344	108	112	16	14	3	6	6	
Pulmonary tuberculosis:																							
Manhattan	2,916	1,799	1,117	12	19	12	10	4	6	5	3	1	3	34	41	9	14	7	28	86	115		
Bronx	689	404	285	1	2	0	1	0	1	0	0	0	2	1	6	1	2	3	6	21	30		
Brooklyn	1,959	1,117	842	4	3	8	2	2	3	1	2	1	0	16	10	7	3	9	24	56	108		
Queens	480	271	209	1	2	1	1					2	1	4	3	2	2	0	1	15	27		
Richmond	121	80	41	0	2	0	0							1	2	0	0	5	1	1	1		
City	6,165	3,671	2,494	15	25	21	13	6	10	7	5	4	6	56	62	19	21	19	64	179	281		
Cerebro-spinal meningitis:																							
Manhattan	66	37	29	10	7	1	4	4	1		2	2	2	17	16	4	3	1	3	4	1		
Bronx	13	8	5	2	1				1	1				3	2		1	3	1	1			
Brooklyn	35	16	19	5	3	2	4	1	1				3	8	11	3		2	2	1	1		
Queens	5	3	2	1	1				1		1	2		3	2	0							
Richmond	4	4						2						3	1								
City	123	68	55	19	11	3	8	7	4	1	3	4	5	34	31	8	4	6	6	6	2		
Poliomyelitis:																							
Manhattan	14	10	4	0		0	1		0	2		1	1	3	2	3	0	1	2	1			
Bronx	5	4	1	0		2	0		0	1		0		3	0	1	1	0	0				
Brooklyn	15	9	6	3	1	1	1		1	1	2			7	4		1	1	1	1			
Queens	5	4	1					2						3		1	1		0				
Richmond	1		1					0											1				
City	40	27	13	3	1	3	2	2	1	4	1	4	1	16	6	5	3	2	4	1	1		
Influenza:																							
Manhattan	1,512	757	755	51	27	48	33	18	8	5	9	7	8	129	85	16	10	14	4	8	21	33	
Bronx	451	213	238	18	12	8	8	3	4	2	3	0	2	51	20	4	4	4	4	11	13		
Brooklyn	1,221	590	631	40	53	43	32	8	15	13	11	6	11	110	122	23	14	13	8	22	23		
Queens	232	110	122	9	8	6	6	3						18	15	4	2	3	3	3	5		
Richmond	76	50	26	2	3	1	2							1	4	6		1	1		1	1	
City	3,492	1,720	1,772	120	103	106	81	32	27	21	23	13	23	292	257	47	31	35	23	58	75		
Broncho-pneumonia:																							
Manhattan	2,426	1,302	1,124	413	327	242	193	64	41	15	19	5	7	739	587	16	25	3	7	13	11		
Bronx	470	218	252	91	63	26	31	14	14	5	6			136	115	3	9	2	1	3	1		
Brooklyn	1,533	792	741	282	241	153	115	47	40	16	20	10	11	508	427	21	21	6	7	11	9		
Queens	369	187	173	64	43	28	29	14	12	3	5	3		112	92	6	5		1	2	3		
Richmond	85	45	40	15	14	4	10		1	1	1			20	26	2	1				1		
City	4,874	2,544	2,330	865	688	453	378	139	108	40	51	18	22	1,515	1,217	48	61	11	16	30	25		
Lobar pneumonia:																							
Manhattan	2,387	1,262	1,125	133	94	86	65	27	26	10	24	12	10	268	249	24	24	15	18	26	22		
Bronx	566	296	270	29	13	14	13	6	7	3	3	2		55	38	7	8	6	0	10	9		
Brooklyn	1,784	979	805	95	71	63	67	28	25	12	12	6	6	204	181	14	16	12	15	35	27		
Queens	356	205	151	15	7	6	6	2	4	5		3	1	31	18	3	3	6	5	2	0		
Richmond	91	59	32	6	2			1	1	1				9	3	3		1		2	1		
City	5,184	2,801	2,983	278	187	169																	

BUREAU OF RECORDS

XIV.

BOROUGH, NEW YORK CITY, 1920.

20-24.		25-29.		30-34.		35-39.		40-44.		45-49.		50-54.		55-59.		60-64.		65-69.		70-74.		75-79.		80-84.		85 AND OVER.				
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
4	4	9	3	5	3	1	3	2	2	2	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	2	3	1	2	2	3	1	5	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	...	3	...	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
10	7	16	6	11	7	6	5	9	4	4	2	9	1	3	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	
...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
2	1	1	2	2	2	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	1	2	2	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...
...	2
1	2	1	1	1	1	1	1	1	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...
148	182	161	189	196	139	226	132	206	88	225	50	226	44	120	39	76	24	44	17	22	11	7	1	4	2	2	1	1		
40	53	41	42	50	39	55	30	38	22	49	17	35	17	23	6	24	6	11	5	8	3	4	...	...	...	...	...	...	...
108	165	138	124	139	112	140	76	134	69	127	36	81	45	70	20	43	13	25	16	14	12	10	9	...	...	...	...	...	...
27	44	24	31	33	21	36	21	36	16	34	12	23	10	15	8	12	8	4	3	1	1	4	1	1	1	1	1	1	1	
11	11	10	9	13	4	9	1	4	4	9	1	4	3	6	...	3	...	5	...	1	...	2	...	1	...	...	...	...	...
334	455	374	395	431	315	466	260	418	199	444	116	369	119	234	73	158	51	89	41	46	27	27	11	6	3	2	1	1		
2	2	2	...	1	1	1	1	1	1	...	1	...	2	1	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...
...	1	0	...	1	0	0	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	1	...	...	1	...	1	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	4	3	...	2	2	1	2	1	...	1	2	1	2	1	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...
...	...	1	...	...	1	...	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
64	76	84	113	105	89	74	71	50	46	44	42	40	35	26	29	31	34	18	35	21	24	14	15	5	8	1	2	2		
15	22	24	41	26	29	26	22	11	11	12	11	17	10	8	9	7	9	7	11	3	4	5	5	2	2	2	2	2	2	
30	55	80	95	72	74	46	26	35	41	36	32	34	22	22	25	16	31	20	23	13	23	11	12	5	2	2	2	3	11	
3	7	18	19	6	15	12	7	13	8	1	9	7	7	4	8	8	5	6	4	1	4	1	3	...	1	2	...	...	...
9	2	3	5	3	5	2	3	5	2	1	3	2	1	...	1	1	1	1	1	1	1	1	5	6	...	2	1	...	...
121	162	209	273	214	210	163	128	109	107	96	96	99	74	61	72	63	79	52	74	40	55	36	35	18	13	7	8	7	8	
29	34	43	50	44	39	42	32	43	16	42	31	52	30	32	35	57	53	43	51	44	64	31	24	22	23	7	12	8	12	
16	7	2	7	5	12	5	10	2	2	4	7	8	7	10	5	8	7	13	18	4	17	4	9	7	10	2	8	...	...
1	23	24	28	28	26	22	20	12	13	21	12	24	21	22	22	21	27	19	19	16	21	11	22	7	12	3	11	...	...
1	2	6	7	3	4	8	3	5	4	6	3	2	3	5	2	10	6	7	8	5	11	4	2	5	10	...	...	...	...
1	...	2	...	3	1	1	1	...	...	2	1	1	...	3	...	...	2	4	3	1	...	...	...	1	1	3	1	...	...
47	66	77	92	83	82	78	66	62	35	75	54	87	61	72	66	96	93	84	100	72	114	50	57	42	56	15	39	...	...
57	84	97	110	95	83	124	57	76	53	88	48	78	64	75	52	78	61	64	58	43	55	28	40	17	31	9	16	...	...
16	23	23	41	23	23	23	16	20	11	20	14	17	10	22	15	19	11	15	11	9	11	8	12	3	9	...	...	...	...
52	57	61	85	74	50	70	49	52	37	61	32	72	41	58	50	70	42	53	33	41	41	33	23	10	16	7	10	...	...
4	7	13	16	21	15	20	14	6	17	7	20	8	12	7	17	9	14	7	4	11	8	5	1	3	2	1	...	...	...
2	2	4	2	10	1	5	1	3	2	5	2	2	1	2	3	1	1	3	4	3	...	1	6	2	3	1	...	...	...
131	173	198	254	233	172	242	137	161	109	191	103	189	124	169	127	185	124	149	113	100	118	78	86	33	62	19	29	

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TABLE XV.
TYPHOID FEVER IN NEW YORK CITY DURING 1920.

	MAN-HATTAN.		THE BRONX.		BROOK-LYN.		QUEENS.		RICH-MOND.		CITY.	
	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920
1. Total cases reported as typhoid...	460	495	112	97	273	366	66	76	22	35	933	1069
a. No. erroneously reported...	53	58	10	17	14	24	1	1	1	0	79	100
b. Corrected total of cases...	407	437	102	80	259	342	65	75	21	35	854	969
c. Diagnosis confirmed by:												
1. Widal.....	257	228	49	51	180	242	44	36	10	19	540	576
2. Blood culture.....	18	14	4	0	0	1	0	1	0	0	22	16
3. Stool.....	20	10	7	2	5	13	2	9	1	1	35	35
4. Widal and stool.....	24	36	13	5	21	24	4	6	4	4	66	75
5. Stool and blood culture	1	3	0	0	1	0	0	0	0	0	2	3
6. Widal and blood culture	20	28	8	8	2	3	0	0	0	0	30	39
7. Stool, widal and blood culture.....	5	1	0	0	2	0	0	0	0	0	7	1
8. Operation.....	1	2	0	0	0	0	0	0	0	0	1	2
9. Autopsy.....	1	1	0	0	2	0	0	0	0	0	3	1
10. No confirmation.....	60	114	21	14	46	59	15	23	6	11	148	221
Total cases.....	407	437	102	80	259	342	65	75	21	35	854	969
Percent confirmed.....	85	74	79	82.5	82	82.7	77	69	71	68.6	80	77.2
2. Deaths.....	51	52	11	11	43	51	10	15	6	8	121	137
3. Percentage of cases in which probable mode of infection was traced	39	43.5	31.4	21.2	34.8	33.3	32.3	37.3	23.8	17	35.9	35.6
4. Probable mode of infection:												
a. Contact with active cases...	24	32	4	1	22	35	11	7	0	2	61	77
b. Contact with chronic car...	5	5	0	1	3	3	0	2	0	0	8	11
c. Contact with carriers in incubation period.....	4	0	0	0	0	0	0	0	0	0	4	0
Total contact cases.....	33	37	4	2	25	38	11	9	0	2	73	88
d. Flies.....	17	0	0	0	0	0	1	0	0	0	18	0
e. Out-of-town infection.....	97	117	26	14	55	67	8	16	4	4	190	218
f. Doubtful out-of-town infect.	12	11	2	1	10	9	1	3	1	0	26	24
g. Milk contamination.....	0	25	0	0	65	0	0	0	5	0	0	25
5. Immunization performed by Dept.:												
a. Persons exposed.....	247	195	30	9	84	54	63	28	15	36	439	322
b. Persons not exposed.....	97	185	10	45	10	68	3	35	12	95	132	428
Total complete immunizations..	344	380	40	54	94	122	66	63	27	131	571	750
6. Patients treated:												
a. Hospital.....	243	304	53	44	135	203	31	42	10	16	472	609
b. At home.....	164	133	49	36	124	139	34	33	11	19	382	360
Percentage of cases treated in Hospital.....	60	70	62	66	62	62	48	57	48	46	56	68
Percent case fatality.....	12.5	12	10.8	13.7	16.6	14.9	15.4	20	29	22.8	14.2	14.1
Case rate 100,000 population...	15	15.5	17	15	13	16.2	16	18	21	33	14	15.8
Death rate 100,000 population..	1.9	1.8	1.9	1.6	2.1	2.4	2.5	3.6	6	7.6	2	2

BUREAU OF RECORDS

TABLE XVI.

STUDY OF TYPHOID FEVER BY AGE AND SEX GROUPS IN NEW YORK CITY—1920.

	TOTAL MALE AND FEMALE.		TOTAL				UNDER 5				5-9				10-14			
	C. D.		C. D.		C. D.		C. D.		C. D.		C. D.		C. D.		C. D.			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
Manhattan.....	437	52	249	188	35	17	13	10	1	2	33	25	1	...	52	20	1	...
Bronx.....	80	11	49	31	7	4	6	1	...	...	11	6	1	...	12	2	1	...
Brooklyn.....	342	51	204	138	32	19	10	10	...	...	31	22	4	1	29	26	5	4
Queens.....	75	15	43	32	10	5	2	...	...	...	6	5	...	...	8	2	...	1
Richmond.....	35	8	19	16	5	3	...	...	...	...	1	2	...	...	7	1	...	...
City.....	969	137	564	405	89	48	31	21	1	4	82	60	6	1	108	51	7	5
Total by age groups.....	...	...	...	...	...	...	...	...	52	5	142	7	...	...	159	12	...	...
Percent of total cases by age group.	100	100	...	...	...	...	...	...	5 plus 3	...	14.6	5	...	...	16 plus 9	...	...	...
Percent case fatality by age group.	...	14.1	...	...	...	...	...	...	10	...	5	...	...	...	8	...	...	...
Percent of total by sex cases and deaths.....	...	...	57	43	65	35	60	40	20	80	50	58	42	84	68	32	56	44

15-19				20-24				25-29				30-34				35-39				40-44				45 AND OVER			
C.		D.		C.		D.		C.		D.		C.		D.		C.		D.		C.		D.		C.		D.	
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
30	16	4	1	28	33	4	4	36	23	9	3	20	26	5	3	19	18	1	3	9	7	2	...	9	10	7	1
4	4	...	...	2	7	1	1	4	4	1	1	6	4	...	...	1	1	1	1	1	...	1	...	2	2	1	...
26	19	3	2	28	12	3	2	20	10	3	1	24	16	2	2	15	8	3	1	7	3	5	1	14	12	4	3
4	6	1	...	4	4	...	...	8	5	3	...	2	4	2	1	1	2	1	...	4	2	...	2	4	2	3	1
4	5	...	...	...	...	2	...	1	4	...	1	2	1	2	...	...	...	...	2	1	1	1	1	2	2	...	1
68	50	8	3	62	56	10	7	69	46	16	6	54	51	11	7	36	29	6	5	23	13	9	4	31	28	15	6
118	11	118	17	115	22	105	18	65	11	36	13	59	21	...	...	...	...	...	...	...	...	...	...	...	...	...
12 plus 8	9	12 plus 12	15	11.8	16	10.8	13	6.7	8	3.7	10	6 plus 15	36	...	...	...	...	...	...	...	...	...	...	...	...	...
58	42	72	28	53	47	60	40	60	40	80	20	52	48	56	44	57	43	54	46	64	36	70	30	53	47	70	30

Key: C.—Cases. D.—Deaths. M.—Male. F.—Female.

TABLE XVII.
ENCEPHALITIS LETHARGICA IN NEW YORK CITY DURING 1920.
CASES AND DEATHS.

AGES.	MANHATTAN.			BRONX.			BROOKLYN.			QUEENS.			RICHMOND.			CITY.											
	Cases.		Deaths.	Cases.		Deaths.	Cases.		Deaths.	Cases.		Deaths.	Cases.		Deaths.	Cases.		Deaths.									
	M.	F.	M. F.	M.	F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.									
Under 5 years.....	10	14	5	5	2	1	10	8	5	2	1	1	1	1	1	23	24	47	10	8	18						
5-9.....	14	6	4	2	1	1	17	7	4	1	1	1	1	1	1	26	14	40	10	2	12						
10-14.....	15	11	2	5	2	2	11	4	1	1	1	1	1	1	1	32	18	50	6	5	11						
15-19.....	13	10	4	4	1	1	9	11	1	1	1	1	1	1	1	23	24	47	5	5	10						
20-24.....	26	19	11	7	3	4	11	8	9	1	3	2	2	2	2	37	34	71	13	11	24						
25-29.....	16	15	7	7	2	3	11	7	3	2	2	2	2	2	2	29	27	56	11	14	25						
30-34.....	15	8	3	4	6	4	14	5	1	3	1	1	1	1	1	33	18	53	8	8	16						
35-39.....	14	9	7	6	4	1	3	8	5	4	2	1	1	1	1	30	18	48	17	11	27						
40-44.....	12	8	10	3	3	1	1	8	5	2	3	1	1	1	1	24	13	35	13	7	20						
45-49.....	5	6	4	2	1	1	1	4	1	2	1	1	1	1	1	15	8	23	8	3	11						
50-54.....	9	4	4	2	1	1	1	2	1	1	1	1	1	1	1	8	3	11	6	1	7						
55-59.....	4	3	2	2	1	1	2	2	1	1	1	1	1	1	1	7	7	14	3	5	8						
60-69.....	2	4	2	1	1	1	1	1	1	1	1	1	1	1	1	4	4	8	2	1	3						
70-74.....	2	2	1	1	1	1	1	2	1	1	1	1	1	1	1	3	2	5	2	1	3						
75-79.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
80-84.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
85 and plus.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Total.....	171	125	68	56	33	28	16	13	102	60	29	21	8	3	4	1	2	7	1	2	316	233	549	118	93	211	
Sexes or ages not given.....	49									41			1														
Grand total.....	345		124		75		29		213		350		12		5		9		3		654		105		211		

BUREAU OF RECORDS

TABLE XVIII.
REGISTRATION OF TUBERCULOSIS CLINICS, NEW YORK CITY—1920.

Unit.	Admited to Register.				Removed from Register.				Cases Remaining in Register.										Total Cases Remaining in Register.			
	New Cases.		Total New Cases.		Deaths.	Recovered.	Other Cases.	Total Cases Removed.	Private Physician.	Non-Dept. Clinics.	City Institution.	Out of Town.	Homeless and Not Found.	At Home and Dept. Clinics.	Adults.	Under 5 Years.	5 to 16 Years.					
	Adults.	Under 5 Years.	5 to 16 Years.	Total New Cases.																		
	In Register of Week.	Beginning	Ending	Beginning	Ending	Beginning	Ending	Beginning	Ending	Beginning	Ending	Beginning	Ending	Beginning	Ending	Beginning	Ending					
Riverside.....	1,523	656	29	704	33	104	841	336	58	461	558	248	54	162	316	343	383	1,413	15	78	1,506	
Citico.....	3,172	987	6	33	10	16	733	1,273	136	1,273	1,366	919	761	329	253	619	761	2,953	33	138	2,124	
Jefferson.....	3,049	1,585	15	1,650	97	35	1,824	659	71	470	1,418	905	264	378	264	407	1,771	2,308	32	283	3,041	
Yorkville.....	2,393	876	22	965	161	36	1,862	398	71	353	1,518	883	264	371	264	407	1,771	2,308	32	283	3,041	
Stuyvesant.....	2,186	763	4	42	809	208	943	366	209	943	1,518	169	153	271	184	338	566	1,628	12	101	1,741	
Corlears.....	1,378	631	10	53	604	137	617	892	59	396	615	99	109	186	179	281	801	1,491	14	150	1,641	
Washington.....	2,277	1,035	4	25	1,064	381	2	1,447	503	25	841	1,369	147	79	492	187	715	735	32	169	2,355	
Cases not found.....	2,467	326	320	2,705	82	82
Manhattan.....	17,419	6,543	88	301	6,932	1,123	697	8,752	2,049	528	7,219	10,696	1,334	1,186	2,170	1,077	3,627	5,511	14,106	159	1,180	15,506
West Haven.....	1,280	470	9	25	504	18	34	556	201	74	222	587	170	104	143	175	650	1,174	6	71	1,251	
Tremont.....	2,301	808	6	10	829	27	45	901	350	89	524	963	400	159	279	137	1,204	2,136	80	2,235
Bronx.....	3,583	1,274	15	44	1,333	45	79	1,457	641	163	746	1,550	570	293	422	372	1,863	3,333	6	151	3,490	
East, Dist.....	1,036	601	16	43	660	51	32	743	329	260	709	185	480	140	127	138	480	977	10	83	1,070	
Bedford.....	1,960	877	6	57	940	69	210	1,219	542	118	642	1,197	279	164	225	318	996	1,836	5	141	1,982	
Brownsville.....	1,493	335	8	18	361	24	57	442	195	123	284	602	141	70	103	301	718	1,220	4	100	1,333	
Bay Ridge.....	592	375	1	25	401	17	215	633	202	52	203	457	77	84	145	126	336	706	5	57	768	
Prospect.....	1,539	1,070	21	62	1,153	120	295	1,668	603	81	638	1,321	267	313	164	339	703	1,573	23	190	1,786	
Parkville.....	501	570	1	54	5	1	560	33	2	526	561	16	6	10
Cases not found.....	91
Brooklyn.....	7,212	3,311	52	306	3,560	286	810	4,065	1,904	491	2,452	4,847	1,003	787	770	1,232	3,238	6,411	47	572	7,030	
Jamaica.....	464	294	1	3	298	10	21	329	145	21	152	318	108	42	44	40	241	454	1	20	475	
Plaza.....	507	193	2	5	200	1	13	214	143	7	41	191	63	33	41	28	365	485	1	44	530	
Corona.....	283	119	3	3	125	1	9	135	93	6	42	141	20	13	31	22	185	239	5	33	277	
Ridgewood.....	271	171	2	8	181	4	11	196	98	22	53	173	53	14	20	20	187	262	2	30	294	
Queens.....	1,325	777	8	19	804	16	54	874	479	56	298	823	250	402	136	110	978	1,440	9	127	1,570	
Richmond.....	267	199	2	12	213	7	10	239	94	16	78	188	30	72	30	22	158	207	2	10	318	
City.....	39,436	12,104	165	582	12,851	1,477	1,659	15,957	6,667	1,254	10,783	18,104	3,193	1,186	3,394	3,035	11,748	25,647	223	2,049	27,919	

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

TABLE XVIII.—Continued.
REGISTRATION OF TUBERCULOSIS CLINICS, NEW YORK CITY—1920—Continued.

UNIT.	Number of Cases with Pos. Sputum.	Deaths Not Previously Reported.	Under Sanitary Supervision.	Voluntary Renovations.	Enforced Renovations.	ADDED TO REGISTER.				REMOVED FROM REGISTER.					REMAINING IN REGISTER.					
						In Register of Week.	New Admitted.	Readmit. for Diagnosis.	Total Added.	Discharged—Not Tuberc.	Transfer to Dept. Chinc.	Transf. to Non-Dept. Cl.	Discout. for Non-Attend.	Died.	Found Tuberculous.	Total Cases Removed.	Adults.	Children.	Total.	
NON-DIAGNOSED CASES.																				
Riverside.....	608	74	1	75		107	354	96	450	182		43	146	5	96	472	18	67	85	
Chelsea.....	336	122	14	125		539	790	511	1,301	1,035		1	356		203	1,600	83	157	240	
Jefferson.....	415	148	22	161		473	1,701	1,574	3,275	3,037		18	272	3	167	3,498	114	136	250	
Yorkville.....	518	90	5	542		64	516	321	837	657		8	144		144	857	22	44	44	
Stuyvesant.....	679	103	29	112		157	1,237	424	1,661	1,380		3	168	2	156	1,709	66	43	109	
Corleone.....	392	66	41	146		274	1,285	1,260	2,545	1,988		28	259	1	232	2,509	146	104	250	
Washington.....	537	131	70	81		314	574	400	1,034	334		3	674	4	143	1,165	49	134	153	
Cases not found.....																				
Manhattan.....	3,485	734	182	1,242		1,925	6,457	4,646	11,103	8,613		50	1,950	15	1,141	11,870	498	663	1,161	
Mott Haven.....	432	20	20	240	1	142	802	200	1,002	853		2	8	1	166	1,028	60	50	116	
Tremont.....	691	73		100		101	782	358	1,140	690			121	1	163	977	109	155	204	
Bronx.....	1,123	93	29	340	1	243	1,554	558	2,142	1,543		2	129	2	329	2,005	175	205	380	
East, Dist.....	367	73		75		33	1,397	392	1,759	1,518		8	1		198	1,715	65	12	77	
Bedford.....	660	109	221	143		45	688	373	1,299	980			75		235	1,916	21	17	38	
Brownsville.....	384	35	52	103	4	98	266	31	297	213		7	508		146	1,241	85	43	128	
Bay Ridge.....	391	34	42	190	66	129	1,853	51	1,934	1,410		1	19		58	291	11	3	14	
Corona.....	710	129	42	190		17	7	3	10	7		8			337	1,925	85	53	138	
Parkville.....		21		9																
Cases not found.....																				
Brooklyn.....	2,412	2	393	633	70	330	5,109	1,071	6,180	4,326		199	614		975	6,115	267	128	395	
Jamaica.....	144		3	322		24	101	17	208	117		2	32	1	25	177	4	51	55	
Plaza.....	137	19		29		46	321	15	275	193		50	50		30	282	8	7	15	
Corona.....	77	34	16	74		44	207	55	265	14		3	182	1	17	217	25	63	88	
Ridgewood.....	78	34		48	3	83	211	23	234	191		5	4	2	47	249	17	53	70	
Queens.....	436	63	19	473	3	167	876	110	986	515		10	268	4	128	925	54	174	278	
Richmond.....	103	5	7	132		42	107	12	119	68			4		45	117	20	24	44	
City.....	7,459	4	1,288	2,820	74	2,710	14,133	6,397	20,530	15,065		261	102	2,965	21	2,618	21,032	1,014	1,194	2,208

BUREAU OF RECORDS

TABLE XVIII.—Continued.
REGISTRATION OF TUBERCULOSIS CLINICS, NEW YORK CITY—1920—Continued.

UNIT.	DIAGNOSED CASES.																					
	ADDED TO REGISTER.					REMOVED FROM REGISTER.					REMAINING IN REGISTER.											
	In Register of Week.	New Cases.	Old Cases Readmitted.	Total Added.	Disch. App. Arrested.	Transf. to Clinic.	Transf. to Non-Dep't. Cl.	Entered Hospital.	Entered Sanitarium.	Discont. for Non-Attend.	Died.	Total Removed.	Pos. Spnt.	Neg. Spnt.	ADULTS.	Pos. Spnt.	Neg. Spnt.	CHILDREN.	Pos. Spnt.	Neg. Spnt.	TOTAL.	
Riverside.....	51	96	49	145	4	4	11	42	31	55	3	150	25	19	25	1	1	2	22	1	26	46
Chelsea.....	139	203	244	447	5	3	1	82	97	239	12	660	46	70	460	2	2	48	102	2	102	339
Jefferson.....	138	143	155	293	36	22	2	69	33	115	4	304	34	63	34	5	1	34	76	1	76	113
Stuyvesant.....	152	156	259	415	19	10	24	74	45	127	6	413	59	93	11	1	1	60	94	1	94	154
Corleaves.....	200	237	372	609	137	33	24	88	35	233	10	560	43	190	43	1	16	43	206	249	206	249
Washington.....	56	148	183	331	19	14	2	58	23	190	11	317	27	31	27	12	12	27	43	7	43	70
Cases not found.....																						
Manhattan.....	854	1,163	1,738	2,900	718	85	84	511	282	1,106	54	2,840	277	554	277	9	74	9	286	628	914	
Mott Haven.....	183	159	144	303	29	7		68	40	137	14	295	57	110	57	4	20	61	130	191	191	
Tremont.....	169	168	343	508	16	6	1	57	42	381	12	515	35	115	35	1	11	36	126	162	162	
Bronx.....	332	324	487	811	45	13	1	125	82	518	26	810	92	225	92	5	31	97	256	353		
East, Dist.....	107	243	195	438	86	14	1	54	52	195	9	411	40	79	40		15	40	94	134	134	
Bedford.....	230	235	278	513	57	35		58	64	305	12	531	51	133	51	2	26	53	53	159	212	
Brownsville.....	254	149	499	648	69	10	2	45	68	482		676	34	182	34	2	8	36	190	226	226	
Bay Ridge.....	37	89	58	147	23	3		34	23	46		129	20	28	20		2	5	22	33	55	
Prospect.....	266	337	94	431	19	93	3	115	44	114	19	407	98	174	98	3	15	101	189	280	280	
Parkville.....	29	1	3	4		14			2	16	1	33										
Cases not found.....																						
Brooklyn.....	923	1,054	1,127	2,181	254	169	6	306	253	1,158	41	2,187	243	596	243	9	69	9	252	665	917	
Jamaica.....	35	27	19	46	16	4		9	5	30	2	66	3	11	3		1	3	12	15	15	
Plaza.....	45	41	28	69	4			15	6	36	7	68	7	30	7		6	7	39	46	46	
Corona.....	32	52	18	70	3			9	6	5.5	1	74	7	15	7		1	7	21	28	28	
Ridgewood.....	30	47	16	63	7	3		4	8	23	8	53	30	19	30		1	20	20	40	40	
Queens.....	142	167	81	248	30	7		37	25	144	18	261	37	75	37		17	37	92	129	129	
Richmond.....	16	45	11	56	4			15	7	19	1	46	4	15	4		7	4	92	26	26	
City.....	2,287	2,752	3,444	6,196	1,051	274	91	994	649	2,945	140	6,144	653	1,465	653	23	198	23	676	1,063	2,339	

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

REGISTRATION OF TUBERCULOSIS CLINICS, NEW YORK CITY—1920—Continued.

UNR.	BONE JOINT AND MISCELLANEOUS CASES OF TUBERCULOSIS.		Number of Clinic Phys.	Number of Clinic Sessions.	Number of Clinic Hours.	NUMBER OF VISIT OF PATIENTS.			No. of Visits per Cl. Hour.	NUMBER OF PHYSICAL EXAMINATIONS.			No. of Exam. per Cl. Hour.	Number of Prescriptions.	VISITS BY CLINIC PHYSICIANS.		
	Adults.	Children.				Primary.	Revisits.	Total.		Primary.	Re-Examination.				Branch Office Cases.	Clinic Cases.	Total Visits.
											Re-Examination.	Total.					
Riverside.....	1	1	3	435	816	359	2,198	2,557	.....	359	2,458	2,517	.....	2,787	43	125	168
Chelsea.....	6	4	10	406	850	790	3,768	4,558	.....	798	2,736	3,534	.....	4,738	20	62	82
Jefferson.....	2	2	4	407	882	1,720	5,322	7,042	.....	1,836	6,292	8,128	.....	9,930	92	150	237
Yorkville.....	2	4	6	410	970	511	3,240	2,801	.....	1,803	3,945	3,999	.....	4,490	52	598	650
Bay Ridge.....	1	1	2	407	763	1,293	5,407	6,700	.....	1,301	5,481	4,782	.....	6,332	58	239	247
Prospect.....	2	3	5	404	763	3,578	3,062	3,640	.....	759	2,240	2,999	.....	4,831	29	109	138
Washington.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cases not found.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manhattan.....	6	4	36	3,046	5,818	6,498	25,996	32,494	.....	7,467	21,363	28,830	.....	37,601	331	1,708	2,699
Mott Haven.....	1	4	6	359	668	802	6,780	7,582	.....	804	3,692	4,496	.....	5,117	4	26	30
Tremont.....	1	1	5	404	759	786	5,226	6,012	.....	1,403	3,771	5,174	.....	6,305	18	29	47
Bronx.....	2	5	11	763	1,427	1,988	12,006	13,594	.....	2,297	7,463	9,670	.....	11,622	22	55	77
East Dist.....	.....	.....	5	355	714	1,366	3,071	4,437	.....	2,429	2,036	4,465	.....	3,459	23	127	150
Bedford.....	.....	.....	6	356	712	688	4,106	4,794	.....	1,212	2,240	3,452	.....	6,587	23	311	334
Brownsville.....	.....	.....	7	355	710	888	3,717	4,605	.....	1,762	2,776	4,538	.....	4,986	61	330	391
Bay Ridge.....	.....	.....	1	154	308	302	659	961	.....	297	248	545	.....	1,289	3	2	5
Prospect.....	.....	.....	7	454	696	1,887	6,163	8,052	.....	3,781	3,411	7,192	.....	8,767	.....	464	464
Parkville.....	.....	.....	.....	41	78	7	56	63	.....	6	25	31	.....	138	.....	.....	.....
Cases not found.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brooklyn.....	25	10	79	1,715	3,218	5,138	17,774	22,912	.....	9,487	10,736	20,223	.....	25,326	110	1,234	1,344
Jamaica.....	.....	.....	2	211	422	193	698	891	.....	192	313	505	.....	1,091	.....	3	3
Plaza.....	.....	.....	1	2	379	268	697	965	.....	266	459	725	.....	954	6	6	12
Corona.....	.....	.....	1	202	355	239	1,466	1,227	.....	229	483	712	.....	1,333	2	6	2
Ridgewood.....	.....	.....	1	245	438	211	2,533	2,744	.....	207	378	585	.....	3,483	1	.....	1
Queens.....	.....	.....	1	862	1,594	911	5,155	6,066	.....	891	1,633	2,527	.....	6,861	9	9	18
Richmond.....	.....	.....	1	156	306	105	631	737	.....	106	391	407	.....	1,062	11	28	39
City.....	9	10	79	6,542	12,363	14,241	61,562	75,803	.....	20,161	41,496	61,637	.....	77,372	483	3,034	3,517

BUREAU OF RECORDS

TABLE XIX.
 VENEREAL DISEASE REPORTED IN NEW YORK CITY—1919 AND 1920.
 SYPHILIS.

Source of Report.	MANHATTAN.			BRONX.			BROOKLYN.			QUEEN'S.			RICHMOND.			CITY.			Total.
	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	
January.....	742	135	106	106	24	31	189	121	69	34	4	13	20	1	4	1,101	285	220	1,606
February.....	774	72	5	79	22	5	284	42	3	27	3	8	3	4	7	1,144	473	8	1,323
March.....	737	142	19	135	62	4	160	147	38	15	2	7	17	6	1	1,064	364	26	1,454
April.....	670	195	10	65	36	3	148	227	5	16	3	1	5	..	..	1,019	108	287	1,414
May.....	591	90	6	170	60	2	247	99	3	19	2	2	7	1	1	984	461	20	1,385
June.....	643	182	252	188	17	55	300	212	111	29	6	15	14	1	6	1,037	252	445	1,712
July.....	734	92	23	58	17	55	270	137	118	30	4	1	29	1	1	1,031	417	380	1,774
August.....	624	142	16	70	20	2	133	145	118	30	7	16	29	1	1	864	270	27	1,161
September.....	607	122	33	40	53	14	177	109	25	17	20	15	10	3	3	1,008	65	305	1,438
October.....	639	590	33	111	43	20	230	186	30	13	9	8	10	8	9	1,009	306	77	1,236
November.....	629	785	350	70	49	16	146	309	45	22	5	3	22	2	8	1,026	118	345	1,347
December.....	627	1,226	145	56	13	209	141	57	23	38	40	10	9	14	..	1,040	318	251	1,609
Year.....	8,703	44	140	71	12	27	287	101	63	30	1	10	11	6	2	1,055	179	230	1,464
1919.....	8,088	3,176	511	1,977	524	129	2,641	2,248	275	239	110	42	102	41	14	13,147	6,096	971	19,214
1920.....	8,703	2,166	1,011	1,300	380	380	2,955	1,150	961	279	99	139	202	9	64	13,150	2,572	3,720	19,442

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

TABLE XIX.—Continued.
 VENEREAL DISEASE REPORTED IN NEW YORK CITY—1919 AND 1920—Continued.
 GONORRHOEA.

Source of Report.	MANHATTAN.			BRONX.			BROOKLYN.			QUEENS.			RICHMOND.			CITY.			
	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	Laboratory.	Institute.	Physician.	
January.....	80	11	18	20	25	3	85	50	12	12	8	3	9	..	215	94	36	315	
February.....	120	48	5	19	6	10	50	30	7	3	10	4	3	1	197	83	5	285	
March.....	102	37	10	10	38	10	30	57	26	1	..	..	3	..	130	208	76	293
April.....	76	93	15	14	7	2	30	43	12	1	..	..	..	..	121	240	60	456
May.....	186	36	18	17	7	52	46	12	14	8	1	3	1	..	169	225	19	413	
June.....	10	18	16	3	67	81	6	25	2	9	1	1	1	..	109	161	76	346	
July.....	30	37	8	10	10	3	36	34	6	2	2	2	2	3	176	233	78	487	
August.....	52	60	48	21	26	18	37	30	14	7	3	3	3	..	197	127	66	390	
September.....	115	42	36	18	6	8	44	66	18	14	3	2	2	..	142	111	63	316	
October.....	32	102	12	8	10	3	96	40	6	5	2	2	2	2	146	154	21	321	
November.....	64	34	33	19	8	7	54	115	24	6	3	6	7	2	150	172	72	393	
December.....	45	33	33	18	13	9	37	50	22	5	3	3	4	2	138	109	68	302	
Total.....	65	45	33	18	13	9	37	50	22	5	3	3	6	1	279	122	15	416	
1919.....	159	45	8	15	28	2	95	37	5	3	6	2	2	..	133	223	74	428	
1920.....	90	55	46	10	2	5	27	165	21	7	11	2	3	2	117	347	25	499	
1919.....	77	143	6	10	37	3	20	160	17	2	3	2	3	6	168	160	67	395	
1920.....	90	73	35	10	7	2	31	148	21	3	3	2	1	..	146	140	25	311	
1919.....	100	92	33	10	5	9	30	38	5	6	..	..	2	..	142	72	37	251
1920.....	157	82	14	7	2	2	62	459	13	9	11	..	4	..	252	1,451	76	1,779	
1919.....	139	47	56	24	80	7	45	22	12	7	..	..	1	1	198	92	32	322
1920.....	115	71	25	17	2	3	50	19	2	10	..	2	6	..	1,896	1,846	793	4,535	
Year.....	1,034	717	452	198	153	90	549	925	217	78	43	29	37	8	2,178	3,115	384	5,677	
1919.....	1,279	1,723	224	154	225	40	654	1,108	109	62	41	7	29	18	3	71	145	6,381	19,200
1920.....	1,034	717	452	198	153	90	549	925	217	78	43	29	37	8	1,896	1,846	793	4,535	

Veneral Disease Laboratory Summary.

Total Number of Blood Specimens sent to the Laboratory for Wassermann tests.....	80,822	19,190	71,145	19,190	80,822	71,145	19,190	80,822	71,145	19,190	80,822	71,145	19,190	80,822	71,145	19,190	80,822	71,145
Total Number of Blood Specimens sent to the Laboratory for Wassermann tests not examined (not suitable for examination).....	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381	6,381
Total Number of Blood Specimens sent to the Laboratory for Wassermann tests found positive.....	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668	73,668
Total Number of Blood Specimens sent to the Laboratory for Gonorrhoea Complement Fixation Test.....	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688	12,688
Total Number of Blood Specimens sent to the Laboratory for Gonorrhoea Complement Fixation Test (not suitable for examination).....	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776	9,776
Total Number of Blood Specimens sent to the Laboratory for Gonorrhoea Complement Fixation Test found positive.....	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401
Total Number of Gonorrhoeal Smears sent to the Laboratory for Examination.....	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540	11,540
Total Number of Gonorrhoeal Smears sent to the Laboratory for Examination found positive.....	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904	1,904
Duplicates.....	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977	23,977
Total V. D. Cases reported for 1920.....	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891
Total V. D. Cases reported for 1919.....	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891	24,891

BUREAU OF RECORDS

TABLE XX.
WORK PERFORMED BY THE MANHATTAN VENEREAL TREATMENT CLINIC FOR 1920.

	NUMBER OF NEW CASES ADMITTED.				NUMBER OF TREATMENTS GIVEN TO NEW PATIENTS.				NUMBER OF TREATMENTS GIVEN TO OLD PATIENTS.				Total.	
	Syphilis.	Gonorrhoea.	Chan- croid.	Non- Veneral.	Mercury.	Salvar- san.	Gonor- rhoea Treat- ments.	Chan- croid Treat- ments.	Total.	Mercury.	Salvarsan.	Gonor- rhoea.		Chan- croids.
January.....	28	12	11	1	11	2	9	1	25	132	61	123	9	448
February.....	16	10	10	3	7	5	1	1	27	146	68	113	2	493
March.....	39	10	12	2	19	5	3	5	51	149	85	145	7	512
April.....	37	16	9	2	17	4	5	1	40	185	77	113	8	524
May.....	22	8	42	3	12	7	2	6	44	203	73	104	10	545
June.....	31	14	13	1	14	6	4	1	34	225	71	152	3	675
July.....	40	5	16	3	21	6	7	5	56	246	69	116	62	682
August.....	40	16	23	6	31	9	6	4	78	219	83	119	51	652
September.....	19	10	11	3	10	4	3	3	34	152	89	105	33	534
October.....	31	3	16	1	16	8	5	3	48	123	48	95	29	402
November.....	30	3	25	2	24	3	1	14	41	137	60	133	5	389
December.....	28	2	52	3	13	2	6	3	35	187	80	101	65	659
Year.....	401	74	210	31	197	57	50	28	516	2,177	862	1,308	561	6,676

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TABLE XXI.
 VENEREAL DISEASE WORK AMONG COURT AND PRISON CASES, NEW YORK CITY—1920.

	SYPHILIS.										GONORRHEA.									
	Total Examinations.	Males.	Females.	Total Males with Positive Wassermann.	Total Females with Positive Wassermann.	No. with Clinical Syphilis.	Total No. of Syphilis.	No. of Positive Smears.	No. with Pos. Gon. Smears Fix. Test.	Total No. of Pos. Laboratory Gon.	Clinical Gon.	No. of Cl. Gon. with Positive Smears.	No. of Cl. Gon. with Gon. Fix. Test.	No. with Both.	No. with Neither.	Total No. of Gon.	Total with Chancroids.	Total No. with and Syphilis.	Total No. with Diseases.	Total No. with Pos. Gon. Fix. Test.
Jefferson Court.....	1,955	24	1,931	5	564	33	574	167	19	231	89	15	4	12	58	289	4	109	862	83
1920.....	1,157	26	1,131	9	324	6	333	38	2	64	354	23	12	...	314	378	1	96	604	35
1919.....	10	10	...	3	...	...	3	1	...	1	...	...	...	...	1	...	...	...	4	...
Fourth Dist. Prison.....	12	...	...	2	...	...	2	...	...	2	1	...	...	...	1	3	...	...	7	...
1920.....	12	...	...	2	...	...	2	...	...	2	1	...	...	...	1	...	...	...	2	...
1919.....	23	...	...	6	...	...	6	1	...	1	...	...	...	...	1	...	...	...	7	...
Seventh Dist. Prison.....	32	...	...	9	...	...	9	...	...	1	...	...	...	...	1	...	...	...	10	...
1920.....	32	...	...	9	...	...	9	...	...	1	...	...	...	...	1	...	...	...	10	...
1919.....	1	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Third Dist. Prison.....	2	...	...	1	...	...	2	1	1	2	...	...	...	...	2	...	1	...	1	...
1920.....	2	...	...	1	...	...	2	1	1	2	...	...	...	...	2	...	1	...	4	...
1919.....	3	...	...	1	...	...	3	...	...	...	...	...	...	...	...	...	...	...	1	...
District Attorney.....	1,919	1	2	1	1	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...
1920.....	1	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
1919.....	4	...	...	4	...	...	4	...	...	...	...	...	...	...	...	...	...	...	1	...
Children's Court.....	4	2	2	1	1	...	4	...	...	...	...	...	...	...	...	...	...	...	1	...
1920.....	4	2	2	1	1	...	4	...	...	...	...	...	...	...	...	...	...	...	1	...
1919.....	6	3	3	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...	2	...
Domestic Relation.....	3	3	...	1	...	...	3	1	1	1	1	1	1	1	1	1	...	...	1	...
1920.....	3	3	...	1	...	...	3	1	1	1	1	1	1	1	1	1	...	...	1	...
1919.....	5	5	...	1	...	...	5	...	...	...	...	...	...	...	...	...	...	...	2	...
Fifth Dist. Prison.....	3	3	...	1	...	...	3	1	1	1	1	1	1	1	1	1	...	...	1	...
1920.....	3	3	...	1	...	...	3	1	1	1	1	1	1	1	1	1	...	...	1	...
1919.....	4	2	2	1	1	...	4	...	...	...	...	...	...	...	...	...	...	...	2	...
Twelfth Dist. Prison.....	1,919	2	218	1	76	...	77	3	1	16	1	...	...	...	1	17	1	5	95	14
1920.....	220	14	218	1	76	...	77	3	1	16	1	...	...	...	1	17	1	5	95	14
1919.....	151	14	137	6	48	...	54	...	...	10	7	...	...	...	5	16	7	63	...	...
Raymond St. Jail.....	151	14	137	6	48	...	54	...	...	10	7	...	...	...	5	16	7	63	...	...
1920.....	151	14	137	6	48	...	54	...	...	10	7	...	...	...	5	16	7	63	...	...
1919.....	2	2	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2	...
Harlem Court.....	2	2	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2	...
1920.....	2	2	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2	...
1919.....	7	7	...	5	...	...	7	1	1	1	2	1	1	1	1	1	1	1	6	...
Tombs Prison.....	7	7	...	5	...	...	7	1	1	1	2	1	1	1	1	1	1	1	6	...
1920.....	7	7	...	5	...	...	7	1	1	1	2	1	1	1	1	1	1	1	6	...
1919.....	7	7	...	5	...	...	7	1	1	1	2	1	1	1	1	1	1	1	6	...
4th Dist. Prison, Queens.....	4	1	3	1	1	...	2	1	1	2	...	...	...	...	2	...	...	...	3	...
1920.....	4	1	3	1	1	...	2	1	1	2	...	...	...	...	2	...	...	...	3	...
1919.....	2,238	71	2,167	19	642	33	661	175	21	253	91	16	4	12	59	312	5	115	978	99
Totals.....	1,378	104	1,274	33	374	...	407	40	2	79	366	24	13	...	322	304	1	105	699	47
1920.....	1,378	104	1,274	33	374	...	407	40	2	79	366	24	13	...	322	304	1	105	699	47

BUREAU OF RECORDS

TABLE XXII.

WORK OF OCCUPATIONAL CLINIC, NEW YORK CITY—1920.

	MANHATTAN.	BRONX.	BROOKLYN.	QUEENS.	RICHMOND.	CITY.
Total examinations.	5,000	2,767	6,071	2,757	548	17,143
Foodhandlers examined.	3,641	2,321	4,359	2,157	433	12,911
Bakers examined.	1,139	416	1,709	598	75	3,937
Miscellaneous examinations.	220	30	3	2	40	295
Physically defective foodhandlers.	988 (30%)	368 (15%)	617 (32%)	517 (25%)	126 (37%)	2,616 (28%)
Foodhandlers free physical defects.	2,653	1,953	3,742	1,640	307	10,295
Defective bakers.	411	25	284	198	38	956
Bakers free from defects.	728	391	425	400	37	1,981
Sputum examined.	104	111	99	12	4	330
Positive sputum.	9	6	10	1	...	26
Negative sputum.	95	105	89	11	4	304
Wassermann tests taken.	43	17	72	...	...	132
Positive.	23	1	9	...	...	33
Gonorrhoea tests taken.	23	...	2	...	...	25
Positive.	5	1	...	...	...	7
Negative.	18	1	...	...	...	19

TABLE XXIII.

RATES OF PREVALENCE OF COMMUNICABLE DISEASE PER 10,000 FOODHANDLERS EXAMINED.

	Manhattan.	Rate per 10,000.	Bronx.	Rate per 10,000.	Brooklyn.	Rate per 10,000.	Queens.	Rate per 10,000.	Richmond.	Rate per 10,000.	City	Rate per 10,000.
On probation because of suspected or arrested tuberculosis.	123	257	3	10	20	33	2	3	...	...	148	87
Excluded, tuberculosis.	8	17	4	14	10	16	1	3.6	...	...	23	13
Probation, syphilis cases.	66	138	...	...	64	154	1	3.6	...	...	131	77
Excluded for syphilis.	10	20	1	3	37	60	...	...	...	...	48	28
Probation, chronic gonorrhoea.	28	58	...	...	...	...	...	...	...	...	28	16
Excluded for acute gonorrhoea.	3	6	...	...	4	6	...	...	...	...	7	4
Probation, known or suspected typhoid carrier.	137	286	15	54	41	67	...	...	...	...	193	121
Excluded as chronic carrier.	1	2	...	...	...	...	...	...	...	...	...	...

TABLE XXIV.

ESTIMATED PREVALENCE OF COMMUNICABLE DISEASES AMONG 750,000 FOODHANDLERS IN NEW YORK CITY.

(Based on Results of 4,780 Examinations Made in Manhattan Occupational Clinic.)

Estimated number of foodhandlers in city with positive sputum.	1,252
Estimated number of foodhandlers in city with arrested or probably tuberculosis.	19,275
Estimated number of foodhandlers in city with actively infectious syphilis.	1,500
Estimated number of foodhandlers in city with latent syphilis.	10,350
Estimated number of foodhandlers in city with acute gonorrhoea.	450
Estimated number of foodhandlers in city with chronic gonorrhoea.	...
Estimated number of foodhandlers in city suspected as typhoid carriers.	21,450
Estimated number of foodhandlers in city known typhoid carriers.	150

BUREAU OF RECORDS

	BOROUGH OF					CITY OF NEW YORK.
	Manhattan.	The Bronx.	Brooklyn.	Queens.	Richmond.	
Deaths in institutions.....	16,399	3,595	7,780	1,226	1,112	30,112
Deaths in tenements.....	14,245	2,947	9,568	1,003	71	27,837
Deaths in dwellings.....	1,088	1,432	6,376	2,710	831	12,487
Deaths in hotels.....	725	3	90	19	20	957
Deaths in streets, rivers, etc.....	939	146	500	195	70	1,856

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BIRTHS REPORTED

MONTH.	TOTAL.	WHITE.		NEGRO.		CHINESE.		JAPANESE.	
		M.	F.	M.	F.	M.	F.	M.	F.
January.....	11,280	5,621	5,306	175	172	2	..	2	2
February.....	11,255	5,586	5,355	161	151	..	..	..	2
March.....	12,147	6,097	5,679	187	172	2	2	5	3
April.....	11,206	5,692	5,192	153	159	3	2	4	1
May.....	10,364	5,201	4,851	163	146	..	1	1	1
June.....	11,810	5,878	5,530	204	187	5	2	3	1
July.....	11,616	5,718	5,464	222	207	2	1	1	1
August.....	11,150	5,554	5,276	159	157	..	..	4	..
September.....	10,869	5,397	5,106	173	191	1	..	1	..
October.....	10,350	5,130	4,877	165	174	2	1	1	..
November.....	9,932	4,998	4,622	167	133	1	1	5	5
December.....	10,877	5,529	4,987	184	167	1	2	2	5
Total.....	132,856	66,401	62,245	2,113	2,016	19	12	29	21

CITY OF NEW YORK—MARRIAGE

DATE.	TOTAL.	WHITE.		BLACK.		CHINESE.		JAPANESE.		SINGLE.		WIDOWED	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
January.....	5,829	5,586	5,586	243	243	..	..	..	..	5,247	5,268	500	465
February.....	4,224	4,094	4,094	130	130	..	..	..	..	3,816	3,890	365	293
March.....	4,641	4,454	4,456	186	185	1	..	..	..	4,009	4,039	528	490
April.....	5,532	5,197	5,199	332	330	3	3	..	..	4,874	4,960	527	436
May.....	4,515	4,301	4,305	213	208	1	2	..	..	3,935	4,020	461	390
June.....	9,368	8,944	8,949	422	419	2	..	..	..	8,411	8,517	808	711
July.....	6,338	6,027	6,037	307	300	..	..	4	1	5,676	5,705	578	534
August.....	4,095	3,933	3,932	160	163	1	..	1	..	3,583	3,627	457	409
September...	4,441	4,288	4,290	152	150	..	..	1	..	3,926	4,005	441	360
October.....	4,942	4,764	4,768	174	174	1	..	3	..	4,428	4,458	444	415
November.....	5,568	5,344	5,353	220	214	..	..	4	1	4,969	5,028	533	463
December...	4,929	4,641	4,642	288	287	..	..	..	..	4,334	4,386	524	459
Total...	64,422	61,573	61,611	2,827	2,803	9	5	13	3	57,208	57,904	6,166	5,425

BUREAU OF RECORDS

—YEAR 1920.

NATIVE PARENTS.		FOREIGN PARENTS.		MIXED PARENTAGE.		UNKNOWN PARENTAGE.		ATTENDED BY		
M.	F.	M.	F.	M.	F.	M.	F.	PHYSICIANS.	MIDWIVES.	OTHERS.
1,885	1,829	2,829	2,573	1,065	1,060	21	18	7,927	3,351	2
1,878	1,735	2,766	2,709	1,083	1,046	20	18	7,930	3,323	2
2,098	1,964	2,949	2,748	1,222	1,126	22	18	8,684	3,461	2
1,932	1,799	2,749	2,530	1,153	1,011	18	14	8,119	3,085	2
1,863	1,684	2,399	2,284	1,088	1,001	15	30	7,665	2,697	2
2,041	1,889	2,821	2,654	1,208	1,158	20	19	8,470	3,337	3
2,087	1,926	2,631	2,596	1,212	1,135	13	16	8,637	2,878	1
1,901	1,822	2,713	2,530	1,089	1,067	14	14	8,208	2,941	1
1,792	1,765	2,665	2,466	1,106	1,052	9	14	7,799	3,070	..
1,778	1,704	2,453	2,425	1,058	914	9	9	7,730	2,620	..
1,693	1,623	2,460	2,239	1,006	888	12	11	7,370	2,562	..
1,932	1,651	2,652	2,445	1,117	1,049	15	16	7,933	2,944	..
22,880	21,391	32,087	30,199	13,407	12,507	188	197	96,472	36,369	15

REPORTED DURING YEAR 1920.

DIVORCED.		NATIVE.		FOREIGN.		RELIGIOUS MARRIAGES.				CIVIL MARRIAGES.	
M.	F.	M.	F.	M.	F.	Catholic.	Prot- estant.	Jewish.	Ethical Culture.	Alder- manic.	Judicial.
82	96	2,689	3,001	3,140	2,828	1,264	1,310	1,610	2	1,633	10
43	41	2,150	2,412	2,074	1,812	1,196	860	1,187	..	976	5
104	112	2,256	2,581	2,385	2,060	619	845	1,417	3	1,749	8
131	136	2,949	3,248	2,583	2,284	1,261	1,154	1,110	2	1,991	14
119	105	2,160	2,329	2,355	2,186	1,070	879	874	1	1,680	11
149	140	5,356	5,426	4,012	3,942	1,684	1,835	2,105	3	3,719	22
84	99	3,463	3,860	2,875	2,478	1,800	1,368	1,203	2	1,956	9
55	59	2,163	2,312	1,932	1,783	1,436	897	938	8	812	4
74	75	2,489	2,677	1,952	1,764	1,347	1,353	902	7	825	7
70	69	2,591	2,840	2,351	2,102	1,358	1,608	1,126	..	844	6
66	77	2,748	2,956	2,820	2,582	1,381	1,388	1,268	4	1,512	15
71	84	2,420	2,704	2,509	2,225	1,095	1,199	1,251	3	1,376	5
1,048	1,093	33,434	36,376	30,988	28,046	15,511	14,696	14,991	35	19,073	116

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MORTALITY FROM THE PRINCIPAL CAUSES, WITH AGES OF DECEASED, BIRTHS, MARRIAGES AND STILLBIRTHS FOR THE YEAR 1920.

CAUSE OF DEATH.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Total, all causes.....	8,330	11,523	7,128	6,321	5,798	4,863	4,566	4,830	4,640	4,646	5,045	5,559	73,249
1. Typhoid fever.....	7	4	7	5	5	1	15	25	31	15	10	12	137
2. Typhus fever.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4
3. Malarial fevers.....	.....	.....	1	.....	.....	.....	1	1	.....	.....	.....	.....	.....
4. Small pox.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5. Measles.....	111	185	125	136	90	45	14	6	4	5	3	12	736
6. Scarlet fever.....	12	21	15	19	26	16	11	11	10	14	14	51	220
7. Whooping cough.....	42	98	74	50	50	44	55	65	69	32	19	17	615
8. Diphtheria and croup.....	136	149	136	113	81	79	41	35	29	44	86	116	1,045
9. Influenza.....	711	2,220	256	94	62	24	17	16	15	18	22	37	3,492
10. Poliomyelitis.....	2	.....	.....	.....	.....	1	4	1	6	15	8	3	40
11. Cholera nostras.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12. Other epidemic diseases.....	29	27	32	38	24	26	13	17	14	12	6	19	257
13. Tuberculosis pulmonalis.....	596	692	651	575	573	482	465	438	409	405	436	443	6,165
14. Tuberculous meningitis.....	53	49	43	52	54	50	49	37	25	37	33	27	509
15. Other forms of tuberculosis.....	30	37	55	51	37	40	36	44	37	32	22	40	461
16. Cancer, malignant tumors.....	458	441	486	436	444	413	409	428	422	447	466	467	5,317
17. Meningitis, simple.....	42	36	43	36	34	18	22	22	17	23	28	26	347
17a. (of which) Cerebro-spinal meningitis.....	15	12	8	10	16	8	8	10	7	4	12	13	123
18. Apoplexy and softening of brain.....	61	85	69	58	69	40	51	51	56	65	54	66	725
19. Organic heart disease.....	1,261	1,268	1,065	990	958	799	733	760	742	782	965	1,019	11,342
20. Acute bronchitis.....	98	168	105	100	65	37	26	17	25	31	51	63	786
21. Chronic bronchitis.....	15	30	12	21	8	6	3	2	11	9	7	8	132
22. Pneumonia (excluding broncho-pneumonia).....	996	1,580	484	460	323	192	117	115	135	162	247	373	5,184
22a. Broncho-pneumonia.....	676	1,528	607	423	307	197	142	147	131	189	230	297	4,874
23. Other respiratory diseases.....	67	76	65	62	49	35	28	20	24	19	31	49	525
24. Diseases of stomach (cancer excepted).....	33	25	38	26	34	28	21	35	24	30	40	25	359
25. Diarrheal diseases (under 5 years).....	142	159	184	157	115	153	319	583	378	248	147	109	2,694
26. Appendicitis and typhlitis.....	54	51	86	60	87	63	78	94	46	58	56	59	792
27. Hernia and intestinal obstruction.....	55	61	62	74	55	47	42	50	58	52	46	51	653
28. Cirrhosis of the Liver.....	41	41	28	43	23	31	24	25	21	24	33	32	366
29. Bright's disease and acute nephritis.....	562	555	510	459	434	365	314	264	324	352	338	356	4,833
30. Diseases of women (not cancerous).....	35	17	36	36	25	30	28	19	26	26	31	32	341
31. Puerperal septicaemia.....	14	17	24	22	22	17	11	13	4	7	9	14	174
32. Other puerperal diseases.....	63	42	43	42	46	46	33	45	36	37	41	60	534
33. Congenital debility and malformations.....	353	395	341	326	336	277	278	240	244	255	274	312	3,631
34. Old age.....	42	43	30	17	24	17	13	19	23	18	14	29	289
35. Violent deaths (suicide excepted).....	369	248	322	292	303	339	336	328	387	312	363	345	3,944
a. Suastroke.....	.....	.....	.....	.....	.....	4	3	4	.....	.....	.....	.....	11
b. Other accidents.....	348	230	300	274	277	319	312	308	319	277	333	311	3,608
c. Homicides.....	21	18	22	18	26	16	21	16	16	38	35	34	325
36. Suicides.....	54	46	47	58	60	59	50	61	49	61	62	63	670
37. Other causes.....	1,105	1,119	1,044	986	967	840	764	788	802	804	847	921	10,987
38. Causes not known or ill-defined.....	5	10	2	4	8	6	3	8	5	6	6	6	69
Under 1 year.....	1,048	1,540	1,174	972	892	764	821	1,025	831	769	700	804	11,340
1 year, under 2 years.....	354	801	379	332	275	169	133	176	147	136	144	159	3,205
Total under 5 years.....	1,707	2,826	1,874	1,554	1,392	1,091	1,130	1,382	1,134	1,034	1,009	1,155	17,288
65 years and over.....	1,749	2,099	1,511	1,357	1,286	998	872	900	1,017	1,061	1,202	1,288	15,340
70 years and over.....	1,259	1,456	1,018	949	904	677	597	601	696	736	827	880	10,600
Males.....	4,369	5,763	3,689	3,261	3,047	2,506	2,422	2,593	2,529	2,476	2,685	2,930	38,270
Females.....	3,961	5,760	3,439	3,060	2,751	2,357	2,144	2,237	2,111	2,170	2,360	2,629	34,979
Colored.....	357	458	322	281	254	214	208	216	194	211	221	218	3,214
Chinese.....	14	24	11	12	7	8	11	5	10	14	11	6	133
Institutions.....	3,104	4,157	2,999	2,621	2,468	2,147	2,036	2,217	2,064	1,960	2,108	2,231	30,112
Tenements.....	3,498	5,672	2,667	2,370	2,097	1,656	1,598	1,644	1,592	1,708	1,838	2,067	27,837
Dwellings.....	1,461	2,029	1,198	1,108	991	818	711	764	752	775	868	1,012	12,487
Hotels, etc.....	114	134	101	96	71	53	50	38	60	58	84	98	957
Others.....	153	131	133	126	171	189	171	167	172	145	147	151	1,856
Non-residents.....	244	341	203	212	180	132	125	147	134	152	171	168	2,209

BUREAU OF RECORDS

DEATHS FROM ACCIDENTS AND NEGLIGENCE
YEARS 1920-1919.

	BOROUGH OF										CITY OF NEW YORK.	
	MANHATTAN.		THE BRONX.		BROOKLYN.		QUEENS.		RICHMOND.		1920.	1919.
	1920.	1919.	1920.	1919.	1920.	1919.	1920.	1919.	1920.	1919.		
Fractures and Contusions:												
Crushed by elevator	44	40	2	..	8	2	3	2	..	1	57	45
Crushed by machinery	10	15	..	1	12	8	1	1	4	1	27	26
Crushed by derricks, stones.	10	13	2	1	7	10	1	2	2	2	22	28
Crushed by falling bodies.	15	13	6	7	19	32	6	4	1	2	47	58
Not specified.	3	7	3	3	4	7	3	3	10	5	23	25
Falls:												
Down shaft, holds of vessels.	39	41	..	2	36	40	2	3	5	5	82	91
Down stairs.	63	63	8	11	32	38	7	9	4	..	114	121
From buildings.	34	44	7	3	15	16	6	1	2	..	64	64
From fire-escapes.	22	35	1	7	15	13	1	..	..	..	39	55
From scaffolds.	21	17	6	1	18	13	6	3	..	..	51	34
From windows.	73	92	14	18	38	18	1	1	..	..	126	129
From wagons, cars, etc.	15	16	4	2	14	12	7	9	..	2	40	41
On streets and sidewalks.	13	13	6	1	25	18	5	2	2	2	51	36
Other falls.	110	115	21	13	44	49	14	18	4	10	193	205
Street Vehicles:												
Wagons and trucks.	30	51	..	9	9	23	2	2	1	3	42	88
Automobiles.	378	380	75	60	244	260	49	48	17	19	763	767
Other vehicles.	2	5	2	..	..	4	2	..	..	..	6	9
Railroads:												
Electric surface cars.	26	37	6	9	41	46	9	8	..	..	82	100
Steam.	13	21	5	8	7	7	13	15	12	5	50	56
Elevated.	22	6	..	7	6	5	4	3	..	..	17	21
Subways.	15	22	3	2	4	12	..	..	..	..	22	36
Burns and Scalds:												
By stoves.	46	34	9	6	55	36	11	9	2	2	123	87
By lamp.	5	8	..	..	5	6	1	..	..	2	11	14
By steam.	1	..	..	..	1	1	1	..	1	1	4	2
By fluids.	69	86	13	17	49	48	12	11	4	6	147	168
Playing with matches.	12	28	9	6	18	18	3	2	2	3	44	57
From bonfires.	10	21	17	7	15	22	6	6	..	1	48	57
Other methods.	42	24	2	..	8	14	2	4	1	..	55	42
Conflagration.	55	13	1	..	11	11	4	4	..	2	71	30
Wounds:												
By firearms.	8	8	1	8	6	7	..	4	2	..	17	27
By cutting and piercing instruments.	9	6	..	1	13	5	..	1	1	1	23	14
Drowning.	124	160	24	30	111	137	52	49	20	44	331	420
Poison:												
By food.	1	3	6	4	3	2	2	1	1	..	13	10
By alcohol. . . . .	..	..	..	..	..	1	..	..	..	..	..	1
By bichloride of mercury.	4	2	..	..	2	1	1	1	..	..	7	4
By carbolic acid. . . . .	..	2	..	1	..	..	..	..	..	..	..	3
By cocaine.	1	..	..	..	..	..	..	..	..	..	1	..
By lysol.	1	2	1	..	1	1	..	..	..	..	3	..
By opium and morphine.	3	6	1	1	5	5	..	1	..	..	9	12
By wood alcohol.	21	29	3	2	2	4	2	2	1	1	29	38
Other poisonings.	23	16	2	1	6	4	1	3	..	1	32	25
Illuminating gas.	192	234	15	13	186	156	32	8	14	10	439	420
Chloroform or ether.	7	7	2	2	2	1	..	..	..	..	11	10
Coal gas.	7	7	..	1	2	3	1	3	1	..	11	14
Ammonia luma. . . . .	..	3	..	1	1	..	..	..	1	..	2	4
Sewer gas. . . . .	..	..	..	..	..	1	..	..	..	..	..	1
Other gases.	8	18	11	6	14	13	5	3	3	7	41	47
Explosions.	2	1	1	..	11	7	..	3	2	..	16	11
Freezing.	1	1	..	..	2	2	..	1	1	1	4	5
Lightning. . . . .	..	..	..	..	2	..	2	..	..	..	4	..
Electric current.	2	5	6	4	9	6	3	3	2	2	22	20
Foreign body in larynx.	12	16	1	2	7	3	1	..	2	1	23	22
Sunstroke.	3	11	3	5	3	18	2	1	..	..	11	35
Criminal abortion.	25	30	5	4	13	9	7	..	..	..	50	50
Animal injury by (not snake bites or hydrophobia)	4	4	1	2	2	4	1	..	1	..	9	10
Other violence.	54	74	4	4	26	38	1	..	5	12	90	128
Tetanus.	10	7	4	2	6	5	1	4	..	..	21	18
Hydrophobia.	1	4	..	1	1	5
Total.	1,705	1,912	313	294	1,196	1,226	296	265	131	152	3,641	3,849

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*DEATHS BY SUICIDE—1920.

	Austria-Hungary		Bohemia		England		France		Germany		Ireland		Italy		Russia		Other Foreign		United States		Unknown		Total by Sexes		Total Both			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
Cuts and stabs.....	1	1	1	1	2	1	1	1	3	1	3	1	1	1	1	1	2	1	14	3	3	3	39	6	35	7	20	
Drowning.....	6	4	1	1	2	1	1	1	1	1	1	1	1	1	3	2	2	3	37	2	5	4	14	14	108	84		
Gunshot.....	5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	7	5	1	59	25	84	70		
Hanging.....	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	13	2	1	38	32	70	11		
Leaps.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	1	1	9	3	2	5	12	
Railroads.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
Arsenic.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Bichloride of Mercury.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cyanide of Potassium.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Opium.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Oxalic Acid.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Other poisons.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Other Methods.....	16	9	3	1	4	3	1	1	33	18	5	2	6	6	19	17	8	49	41	14	14	180	100	280	210	670		
Illuminating Gas.....	30	19	5	2	10	5	4	3	73	35	12	7	35	3	57	28	52	22	149	85	33	1	460	210	670			
Total by Sexes.....	49	7	15	7	108	7	38	85	74	234	34	670																

*The 670 suicides occurred in the Boroughs as follows: Manhattan 338, The Bronx 75, Brooklyn 193, Queens 50, Richmond 14.

BUREAU OF RECORDS

NUMBER OF DEATHS FROM INFECTIOUS AND CERTAIN OTHER PREVENTABLE DISEASES BY WARD OF RESIDENCE OF DECEASED FOR THE YEAR 1920.

BOROUGH OF MANHATTAN.

Wards.	Area in Acres.	Population U. S. Census 1910.	Number of Persons to the Acre.	Typhoid Fever.	Smallpox.	Measles.	Scarlet Fever.	Diphtheria and Croup.	Pulmonary Tuberculosis.	Lobar Pneumonia.	Broncho-Pneumonia.	Diarrhoeal Diseases.	All Causes.	Deaths of Children Under 5 Years.
1	254.0	9,750	63.0	..	..	3	..	2	39	39	24	12	333	73
2	81.0	933	11.5	..	..	..	..	1	2	4	1	..	4	4
3	95.0	1,915	20.2	..	..	..	..	..	..	1	2	1	46	5
4	83.0	21,336	257.1	1	..	5	..	5	35	27	35	26	357	134
5	168.0	5,666	33.7	..	..	..	..	..	4	4	3	3	67	14
6	86.0	19,670	228.7	1	..	5	..	4	67	28	31	12	353	71
7	198.0	102,101	515.6	5	..	16	8	4	75	86	99	52	948	324
8	183.0	33,182	181.4	..	..	..	1	6	59	34	38	24	451	126
9	322.0	64,909	201.6	2	..	11	..	5	101	51	75	34	936	182
10	110.0	66,439	604.0	..	..	12	4	10	43	52	56	17	559	174
11	196.0	133,548	696.7	1	..	14	3	13	60	54	81	30	835	259
12	6,154.0	806,648	131.1	18	..	116	43	152	1,016	1,012	821	465	12,451	2,944
13	107.0	64,651	604.3	2	..	6	4	5	20	37	37	16	474	145
14	96.0	38,321	399.3	4	..	14	5	18	52	64	62	45	594	250
15	198.0	30,584	154.5	1	..	4	..	3	45	18	26	7	349	75
16	349.0	55,926	160.2	2	..	10	2	7	108	66	65	34	1,022	194
17	331.0	172,334	520.6	2	..	31	15	44	184	147	171	112	2,017	637
18	450.0	62,821	139.6	2	..	23	7	26	104	60	107	69	1,206	313
19	1,481.0	292,950	197.7	4	..	82	15	57	355	223	288	158	3,966	931
20	444.0	73,308	165.1	3	..	9	4	14	105	62	85	44	1,046	225
21	411.0	62,345	151.7	2	..	9	3	18	107	79	91	41	1,176	247
22	1,529.0	209,154	136.8	2	..	18	4	32	330	239	228	142	3,327	653
Total.	13,226.0	2,331,491	176.3	52	..	392	118	426	2,916	2,387	2,426	1,344	32,557	7,980

BOROUGH OF THE BRONX.

23	4,267.0	268,880	63.0	5	..	45	6	59	394	300	239	130	4,161	925
24	22,255.8	162,062	7.3	6	..	16	10	46	295	266	231	94	3,734	734
Total.	26,522.8	430,942	16.2	11	..	61	16	105	689	566	470	224	7,895	1,659

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BOROUGH OF BROOKLYN.

Wards.	Area in Acres.	Population U. S. Census 1910.	Number of Persons to the Acre.	Typhoid Fever.	Smallpox.	Measles.	Scarlet Fever.	Diphtheria and Croup.	Pulmonary Tuberculosis.	Lobar Pneumonia.	Broncho-Pneumonia.	Diarrhoeal Diseases.	All Causes.	Deaths of Children Under 5 Years.
1	233.0	21,851	93.8	1	1	2	2	24	23	22	8	337	68	
2	97.7	6,894	70.6	1	1	1	1	21	9	7	6	118	30	
3	161.4	15,910	98.6	1	1	1	1	20	24	16	11	278	43	
4	111.3	10,477	94.1	1	1	1	1	52	14	13	8	235	54	
5	119.4	19,401	162.5	1	1	1	1	19	31	39	20	279	116	
6	302.9	46,437	153.3	5	21	17	43	59	75	43	746	270		
7	458.5	44,037	96.0	10	10	16	53	52	40	35	756	167		
8	1,843.2	82,687	44.9	7	15	3	32	122	119	88	62	1,551	386	
9	623.6	50,501	81.0	3	14	12	62	78	58	42	950	245		
10	318.7	41,238	129.4	12	2	9	51	44	36	36	602	195		
11	252.6	21,659	85.7	4	4	5	38	54	56	21	498	128		
12	663.1	29,262	44.1	2	15	11	20	91	62	64	45	1,038	277	
13	230.3	30,091	130.7	2	2	7	23	27	36	22	360	118		
14	282.6	33,329	117.9	2	2	1	15	48	41	48	50	451	193	
15	244.8	35,887	146.6	4	2	9	34	33	32	27	384	142		
16	244.8	68,244	278.7	3	3	3	14	46	41	53	43	639	207	
17	823.3	70,346	85.5	2	15	5	19	112	85	73	82	1,173	332	
18	873.0	35,708	40.9	2	4	2	14	59	44	37	43	594	192	
19	413.8	44,860	108.4	2	6	1	8	46	37	37	25	571	131	
20	461.4	27,463	59.5	9	1	7	34	42	28	17	491	107		
21	483.2	78,741	163.0	10	10	10	42	56	59	38	838	249		
22	1,361.6	81,283	59.7	1	11	6	16	111	97	50	65	1,498	287	
23	736.0	65,561	89.1	1	2	1	16	102	79	54	29	1,237	165	
24	1,198.5	80,466	67.2	1	7	18	87	97	58	43	1,203	242		
25	567.8	63,597	112.0	1	3	1	7	82	51	41	32	801	131	
26	3,590.2	177,963	49.5	7	22	8	38	160	147	125	84	2,312	560	
27	400.7	76,000	189.6	1	4	2	6	52	43	52	33	683	191	
28	884.4	77,451	87.6	3	11	3	26	115	88	68	32	1,536	255	
29	3,800.0	72,351	19.0	1	11	4	10	80	68	45	33	1,083	194	
30	5,401.1	76,406	14.1	5	11	6	19	93	106	89	56	1,695	330	
31	6,312.3	30,988	4.9	3	3	3	3	26	26	30	16	477	90	
32	5,479.5	17,419	3.2	1	1	1	1	11	7	4	13	138	29	
Total.	38,977.8	1,634,508	41.9	51	240	68	376	1,959	1,784	1,533	1,120	25,552	6,124	

BOROUGH OF QUEENS.

1	4,650.0	61,763	13.3	2	14	4	14	97	74	111	45	1,069	292
2	4,700.0	105,219	7.2	4	6	2	25	143	97	91	50	1,583	342
3	2,000.0	37,171	1.7	2	1	6	30	52	52	58	14	85	147
4	36,600.0	67,412	1.8	6	3	2	40	174	101	81	44	1,690	324
5	3,770.0	12,476	3.3	1	3	3	14	32	32	19	15	333	58
Total.	81,720.0	284,041	3.5	15	27	14	109	480	356	360	168	5,530	1,163

BOROUGH OF RICHMOND.

1	3,340.0	27,201	8.1	1	4	2	9	40	21	23	16	559	118
2	4,130.0	16,871	4.1	6	4	7	34	19	16	19	19	368	72
3	10,050.0	19,812	2.0	1	6	8	18	26	23	19	388	100	
4	8,180.0	10,662	1.3	2	1	3	24	12	15	11	259	50	
5	10,900.0	11,423	1.0	1	1	2	5	13	8	5	141	22	
Total.	36,600.0	85,969	2.3	8	16	4	29	121	91	85	70	1,715	362

BUREAU OF RECORDS

CITY OF NEW YORK.

DEATHS OF NON-RESIDENTS FROM CERTAIN CAUSES FOR YEAR 1920.

Cause of Death

Typhoid fever	16
Pulmonary tuberculosis	177
Other tuberculous diseases	43
Cancer	255
Alcoholism	3
Heart diseases	260
Acute respiratory diseases	332
Diarrhoeal diseases	69
Appendicitis	39
Cirrhosis of liver	11
Diseases of women	24
Congenital debility	95
Accidents	74
Suicides	26
Other causes	785
Total	2,209
Under 1 year	218
1 to 4 years.....	93
5 to 14 years.....	58
15 to 24 years.....	265
25 to 44 years.....	648
45 to 64 years.....	598
65 years and over.....	329
Total	2,209
Institutions	1,581
Hotels	134
Other places	494
Total	2,209

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CITY OF
MARRIAGES, BIRTHS, DEATHS, AND

	TOTAL.	WHITE.		NEGRO.		OTHER.		NATIVE PARENTS.		FOREIGN PARENTS.		PARENTAGE OF MIXED NATIVITIES.		PARENTAGE UNKNOWN OR NOT STATED.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Marriages.	64,422	61,573	61,611	2,827	2,803	22	8	33,434	36,376	30,988	28,046	.....	.....	.....	.....
Births.	132,856	66,401	62,245	2,113	2,016	48	33	22,880	21,391	32,087	30,199	13,407	12,507	188	197
Deaths.	73,249	36,485	33,379	1,631	1,583	154	17	8,254	7,810	25,015	23,106	3,602	3,379	1,399	684
Stillbirths.	*6,234	3,232	2,411	229	189	1	1	1,208	844	1,688	1,307	420	321	146	129

*Sex undetermined, 171.

BUREAU OF RECORDS

NEW YORK.

STILLBIRTHS, REPORTED YEAR 1920.

SINGLE.		MARRIED.		WIDOWED.		DIVORCED.		NOT STAT-ED.		MONTHS OF UTERO-GESTATION.											
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	1	2	3	4	5	6	7	8	9	10	Not Stated.	
57,208	57,904	6,166	5,425	1,048	1,093												
18,168	13,800	15,165	11,482	4,437	9,561	89	81	411	55	14	62	180	380	575	700	760	657	2,480	233	193	

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

CITY OF NEW YORK.

BIRTHS BY NATIVITIES OF PARENTS.

COUNTRY.	NATIVITY OF BOTH PARENTS.	NATIVITY OF MOTHERS ONLY. MIXED PARENTAGE.
Austria-Hungary	7,074	3,559
Bohemia	321	184
British America	58	224
England	365	891
France	139	352
Germany	915	716
Ireland	3,950	1,817
Italy	23,856	1,039
Russia and Poland	18,499	3,271
Scotland	161	255
Sweden	377	222
Switzerland	49	77
United States	43,844	13,085
Other foreign	5,634	1,922
Unknown .....	.....	.....
Total	105,242	27,614

WHITE AND NEGRO BIRTHS AND DEATHS REPORTED—RATE PER 1,000 POPULATION—YEARS 1890, 1900, 1910, 1920.

	*1890.	1900.	1910.	1920.
White:				
Population	1,489,627	3,377,122	4,687,300	5,412,069
Births	38,818	80,367	127,041	128,727
Deaths	39,300	68,929	74,439	70,035
Birth rate	26.06	23.80	27.11	23.79
Death rate	26.38	20.41	15.88	12.94
Negro:				
Population	23,601	62,068	91,709	153,088
Births	432	1,354	2,039	4,129
Deaths	930	1,895	2,303	3,214
Birth rate	18.30	21.83	22.23	26.97
Death rate	39.40	30.55	25.11	21.00

*Old City of New York.

BUREAU OF RECORDS

DEATHS FROM ALL CAUSES ACCORDING TO NATIVITY OF DECEASED AND PARENTS OF DECEASED, NEW YORK CITY, YEAR 1920.

COUNTRY.	NATIVITY OF DECEASED.	NATIVITY OF PARENTS OF DECEASED.
United States.....	43,121	16,064
Ireland.....	5,680	10,600
Germany.....	5,411	8,382
Italy.....	4,225	9,445
Russia.....	4,862	7,014
England.....	1,255	1,372
Austria-Hungary.....	2,824	4,045
Scotland.....	432	534
British America.....	421	307
Switzerland.....	187	201
France.....	363	413
Bohemia.....	311	435
Roumania.....	404	465
Poland.....	657	1,220
Syria.....	55	85
Sweden.....	441	560
Norway.....	334	445
Denmark.....	134	147
Finland.....	103	140
Holland.....	109	139
Cuba.....	82	84
Other West Indies.....	571	908
Belgium.....	39	35
Spain.....	138	195
Greece.....	161	259
China.....	120	122
Australia.....	12	8
Other foreign.....	447	561
Unknown.....	350	2,083
Mixed nationalities.....	.....	6,981
Total.....	73,249	73,249

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS ACCORDING TO CAUSE, ANNUAL RATE PER 1,000 AND AGE, DEATH RATE UNDER ONE YEAR PER 1,000 BIRTHS FOR THE 52 WEEKS OF 1920.

	Jan. 3.	Jan. 10.	Jan. 17.	Jan. 24.	Jan. 31.	Feb. 7.	Feb. 14.	Feb. 21.	Feb. 28.	Mar. 6.	Mar. 13.	Mar. 20.	Mar. 27.	Mar. 31.	Apr. 3.	Apr. 10.	Apr. 17.	Apr. 24.	May 1.	May 8.	May 15.	May 22.	May 29.	June 5.	June 12.	June 19.	June 26.	
Total Deaths	1,401	1,534	1,461	1,949	2,803	3,562	3,613	2,480	1,823	1,712	1,676	1,554	1,535	1,445	1,523	1,553	1,479	1,358	1,385	1,332	1,324	1,261	1,266	1,129	1,171	1,026	946	
Annual Death Rate	12.90	14.13	13.46	17.95	25.82	32.35	32.35	22.84	16.79	15.77	15.44	14.34	14.14	13.31	14.03	14.30	13.62	12.51	12.76	12.27	12.20	11.60	11.60	10.40	10.78	9.46		
*Acute Infectious Diseases	65	60	81	73	86	109	135	121	96	76	87	88	81	71	72	93	90	67	65	70	54	58	44	36	37	44	36	37
Pul. Tuberculosis	127	149	114	121	169	177	180	147	119	147	153	166	119	147	121	141	137	129	138	145	119	123	113	115	123	109	113	109
Influenza	11	12	18	116	557	965	731	360	151	82	74	46	44	30	21	13	16	15	13	8	4	8	4	8	4	8	4	4
Lobar Pneumonia	103	118	141	240	467	548	571	294	159	121	110	88	106	98	115	107	107	80	78	57	56	53	57	56	53	33	33	
Broncho Pneumonia	60	67	81	103	284	475	498	263	166	122	128	127	134	103	88	81	75	81	65	58	66	49	47	48	47	28	28	
Typhoid Deaths	84	104	72	83	75	58	57	32	23	25	23	18	17	15	16	13	12	11	10	9	8	7	6	7	6	7	6	6
Deaths under 1 year	180	217	191	276	286	356	432	409	313	285	272	279	242	297	228	241	205	206	198	201	208	202	176	192	118	118	118	
Rates per 1,000 births	71.7	86.2	75.8	109.4	113.5	141.6	170.9	160.9	123.4	110.1	108.3	95.8	93.8	90.0	95.3	81.1	82.6	78.2	79.4	82.0	79.7	76.9	69.4	75.7	58.1	58.1	58.1	
Deaths under 5 years	337	333	333	436	485	725	834	721	505	443	433	374	370	388	374	337	331	299	304	303	299	304	303	256	261	214	214	
Deaths, 5-65 years	777	855	789	1,091	1,814	2,165	2,045	1,339	947	939	877	813	777	813	751	824	838	799	752	741	691	733	690	692	619	647	608	
Deaths, 65 years and over	345	346	339	422	504	612	644	420	371	345	363	344	325	306	325	355	297	292	307	307	292	270	271	224	263	204	204	

* * * Acute Infectious Diseases include Typhoid Fever, Scarlet Fever, Measles, Diphtheria, Whooping Cough, Influenza, Smallpox and Cerebro-spinal Meningitis.
† Does not include suicides.

DEATHS ACCORDING TO CAUSE, ANNUAL RATE PER 1,000 AND AGE, DEATH RATE UNDER ONE YEAR PER 1,000 BIRTHS FOR THE 52 WEEKS OF 1920—Continued.

	July 3.	July 10.	July 17.	July 24.	July 31.	Aug. 7.	Aug. 14.	Aug. 21.	Aug. 28.	Sept. 4.	Sept. 11.	Sept. 18.	Sept. 25.	Sept. 30.	Oct. 6.	Oct. 13.	Oct. 20.	Oct. 27.	Nov. 3.	Nov. 10.	Nov. 17.	Nov. 24.	Nov. 31.	Dec. 7.	Dec. 14.	Dec. 21.	Dec. 28.
Total Deaths	1,034	1,023	977	1,000	1,118	1,050	1,153	1,023	1,088	1,054	1,090	1,040	1,087	1,054	1,006	1,080	1,091	1,082	1,114	1,128	1,166	1,232	1,280	1,444	1,268	1,208	1,113
Annual Death Rate	9.52	9.42	9.00	9.21	10.30	9.95	10.61	9.97	10.02	9.71	10.01	9.58	10.01	9.71	9.27	9.95	10.05	9.97	10.26	10.39	10.73	11.34	11.78	10.54	11.67	11.13	
*Acute Infectious Diseases	34	34	26	29	41	34	40	33	29	44	45	32	27	33	25	26	28	27	22	32	32	41	34	53	44	54	41
Pul. Tuberculosis	102	117	94	96	109	101	105	99	96	94	108	81	97	81	69	95	91	93	104	83	97	114	100	86	125	93	93
Influenza	3	1	4	4	6	3	2	4	2	2	4	2	2	3	2	5	6	5	5	5	5	5	8	9	11	3	3
Lobar Pneumonia	26	21	27	27	25	20	26	23	38	27	27	38	43	29	31	43	44	44	52	32	65	70	81	64	90	81	81
Broncho Pneumonia	40	34	37	33	22	37	41	29	26	28	32	33	36	41	46	44	46	43	60	50	59	59	50	56	62	61	61
Typhoid Deaths	76	93	63	63	81	62	76	74	81	90	80	86	102	74	57	72	80	75	82	82	97	82	78	66	76	78	78
Deaths under 1 year	151	167	150	208	231	244	233	237	220	213	205	177	204	169	185	170	165	166	157	167	154	168	187	160	163	202	
Rates per 1,000 births	59.2	65.6	58.8	81.3	90.9	94.8	90.4	88.1	86.3	91.5	89.2	82.9	86.2	79.1	86.3	87.1	84.8	84.8	81.4	83.4	80.5	85.2	73.5	62.9	64.1	79.5	
Deaths under 5 years	213	236	236	273	308	332	311	318	304	287	278	263	293	238	250	258	250	248	229	248	240	270	270	221	247	277	
Deaths, 5-65 years	622	589	559	535	613	554	625	560	573	544	566	566	554	588	555	591	590	602	633	627	640	700	680	580	719	684	
Deaths, 65 years and over	199	198	192	191	197	194	214	204	211	223	226	235	232	240	213	207	245	240	266	266	283	294	301	264	272	282	

* * * Acute Infectious Diseases include Typhoid Fever, Scarlet Fever, Measles, Diphtheria Whooping Cough, Influenza, Smallpox and Cerebro-spinal Meningitis.
† Does not include suicides.

BUREAU OF RECORDS

CASES OF REPORTABLE INFECTIOUS DISEASES.

	Jan. 3.	Jan. 10.	Jan. 17.	Jan. 24.	Jan. 31.	Feb. 7.	Feb. 14.	Feb. 21.	Feb. 28.	Mar. 6.	Mar. 13.	Mar. 20.	Mar. 27.	Apr. 3.	Apr. 10.	Apr. 17.	Apr. 24.	May 1.	May 8.	May 15.	May 22.	May 29.	June 5.	June 12.	June 19.	June 26.	
Tuberculosis.....	196	230	341	150	648	113	407	170	473	318	442	274	369	331	313	292	318	300	399	275	205	281	260	489	335		
Diphtheria.....	329	327	322	332	766	339	327	321	243	360	339	232	296	289	304	321	290	309	318	297	283	362	289	284	273	279	
Measles.....	1,246	1,636	1,577	1,984	4,671	2,035	1,899	2,160	1,990	1,636	1,441	1,184	1,441	1,184	1,184	1,304	1,279	1,253	1,032	944	979	743	665	476	324	253	
Scarlet Fever.....	129	123	154	147	367	145	154	145	125	259	135	173	134	119	140	162	170	162	184	176	140	112	113	99	75		
Chickenpox.....	167	181	216	154	499	95	141	131	119	99	69	86	99	108	90	125	99	130	120	161	165	161	172	163	122		
Influenza.....	42	109	384	3,699	30,486	21,388	8,991	3,039	1,069	489	581	353	446	398	501	68	51	36	22	25	16	11	7	5	2	4	
Pneumonia.....	331	528	713	1,044	4,708	4,353	3,569	1,765	891	538	451	523	446	398	501	8	345	353	253	273	279	277	151	112	81		
Typhoid Fever.....	133	147	185	180	435	183	225	943	203	250	261	248	303	157	153	144	150	153	146	139	166	154	126	137	174	137	
Whooping Cough.....	380	332	443	362	435	351	376	485	325	254	262	325	322	371	338	411	420	306	298	339	406	321	486	300	659		
Gonorrhoea.....	49	48	28	86	72	43	28	190	138	16	25	27	24	136	70	56	91	23	33	35	139	30	59	108	91	45	
Poliomyelitis.....	3	11	3	4	14	7	6	9	9	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Cerebro-spinal Meningitis.....	3	11	3	4	14	7	6	9	9	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total.....	2,998	3,675	4,385	10,113	43,117	29,239	14,966	8,506	6,287	4,114	3,759	3,762	3,729	3,694	3,433	3,199	3,239	3,059	2,698	2,653	3,062	2,511	2,263	2,200	2,118	1,911	

CASES OF REPORTABLE INFECTIOUS DISEASES—Continued.

	July 10.	July 17.	July 24.	July 31.	Aug. 7.	Aug. 14.	Aug. 21.	Aug. 28.	Sept. 4.	Sept. 11.	Sept. 18.	Sept. 25.	Oct. 2.	Oct. 9.	Oct. 16.	Oct. 23.	Oct. 30.	Nov. 6.	Nov. 13.	Nov. 20.	Nov. 27.	Dec. 4.	Dec. 11.	Dec. 18.	Dec. 25.		
Tuberculosis.....	187	217	193	217	250	350	262	178	171	192	211	202	357	293	403	259	301	318	235	362	292	149	261	265	218	218	
Diphtheria.....	213	231	171	160	152	135	92	121	98	94	83	106	132	158	164	188	255	288	264	361	381	377	373	449	408	329	
Measles.....	163	98	61	75	48	38	49	39	20	18	13	14	17	23	25	29	33	43	40	39	62	39	55	84	65	48	
Scarlet Fever.....	72	53	36	44	41	43	40	20	39	28	33	42	41	67	61	109	115	92	105	138	179	196	214	273	282	255	
Chickenpox.....	102	60	84	36	22	22	28	10	17	10	7	13	24	20	34	19	14	93	78	86	112	147	189	213	209	104	
Influenza.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Pneumonia.....	15	60	62	55	63	46	63	59	45	44	45	44	188	131	111	114	128	183	226	258	338	351	373	370	383	285	
Typhoid Fever.....	25	10	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22		
Whooping Cough.....	144	102	192	156	195	184	164	178	155	172	111	145	97	76	57	76	64	89	59	56	56	79	70	74	83		
Syphilis.....	378	368	571	469	392	436	276	447	315	299	395	458	404	344	405	474	424	397	358	306	448	356	331	280			
Gonorrhoea.....	73	88	67	197	59	92	37	47	80	76	76	149	74	110	75	110	84	56	75	45	49	67	95	68	65		
Poliomyelitis.....	2	4	4	5	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
Cerebro-spinal Meningitis.....	3	4	4	2	4	5	3	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Total.....	1,440	1,292	1,461	1,444	1,397	1,664	1,176	1,035	1,149	942	1,119	1,355	1,398	1,418	1,264	1,666	1,684	1,563	1,744	1,779	1,706	2,114	2,251	2,065	1,717		

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

CITY OF NEW YORK.

DEATHS OF CHILDREN UNDER ONE YEAR OF AGE BY NATIVITIES OF BOTH PARENTS—DEATH RATE PER 1,000 BIRTHS REPORTED BY NATIVITIES OF BOTH PARENTS—YEAR 1920.

	BIRTHS REPORTED BY NATIVITIES OF BOTH PARENTS.	DEATHS UNDER ONE YEAR BY NATIVITIES OF BOTH PARENTS.	DEATH RATE PER 1,000 BIRTHS REPORTED BY NATIVITIES OF BOTH PARENTS.
Austria Hungary	7,074	486	69
Bohemia	321	24	75
England	365	32	88
France	139	11	79
Germany	915	95	104
Ireland	3,950	372	94
Italy	23,856	2,353	99
Russia and Poland	18,499	1,185	64
Scotland	161	7	43
Sweden	377	22	58
United States	43,844	3,949	90
Other foreign	33,355	2,804	84
Mixed, native and foreign			
Unknown			
Total	132,856	11,340	85

BUREAU OF RECORDS

DEATHS FROM ALL CAUSES AND DIARRHOEAL DISEASES UNDER ONE YEAR OF AGE, BY WEEKS, CITY OF NEW YORK—YEAR 1920.

WEEK ENDING.	ALL CAUSES.							DIARRHOEAL DISEASES.						
	Under 1 Month.	1 Month and Under 2 Months.	2 Months and Under 3 Months.	3 Months and Under 6 Months.	6 Months and Under 9 Months.	9 Months and Under 12 Months.	Total Under 1 Year.	Under 1 Month.	1 Month and Under 2 Months.	2 Months and Under 3 Months.	3 Months and Under 6 Months.	6 Months and Under 9 Months.	9 Months and Under 12 Months.	Total Under 1 Year.
January 3.....	96	10	17	25	25	7	180	1	2	3	7	3	1	17
January 10.....	98	20	20	33	19	27	217	4	5	6	4	3	6	28
January 17.....	89	20	16	21	16	29	191	4	1	7	5	4	5	26
January 24.....	118	22	21	38	40	36	276	8	6	2	10	3	2	31
January 31.....	112	20	26	46	38	44	286	1	2	5	6	1	2	12
February 7.....	127	24	16	59	57	73	356	2	5	5	7	4	4	27
February 14.....	119	31	19	58	100	105	432	2	5	4	10	7	7	32
February 21.....	156	30	24	63	69	67	409	5	3	...	5	7	5	25
February 28.....	110	24	21	45	55	58	313	5	6	3	6	8	6	34
March 6.....	108	28	18	33	33	38	258	6	9	1	4	3	2	25
March 13.....	101	34	18	28	47	45	273	6	4	4	6	4	6	30
March 20.....	96	25	22	45	44	47	279	3	1	5	12	9	7	37
March 27.....	89	26	17	37	41	39	249	3	4	3	5	9	3	27
April 3.....	89	20	19	46	38	30	242	5	3	2	7	17	9	39
April 10.....	94	25	12	34	38	34	237	5	2	2	17	9	4	31
April 17.....	102	22	10	29	32	33	228	4	2	1	9	3	4	16
April 24.....	105	23	16	39	28	30	241	...	5	4	12	3	4	28
May 1.....	89	19	18	22	27	30	205	7	3	6	8	7	3	34
May 8.....	109	17	13	23	25	22	209	5	1	1	4	6	4	17
May 15.....	89	14	10	24	32	29	198	4	1	1	5	3	4	17
May 22.....	86	15	18	37	22	23	201	3	3	3	10	5	2	26
May 29.....	111	16	9	20	32	20	208	1	5	...	6	6	3	21
June 5.....	103	16	12	29	24	18	202	5	7	4	14	4	3	37
June 12.....	91	7	7	24	30	17	176	5	1	1	8	10	1	26
June 19.....	93	14	15	19	29	22	192	7	1	3	6	5	3	25
June 26.....	82	9	12	21	16	8	148	7	1	3	11	6	2	30
July 3.....	76	17	10	21	10	17	151	6	2	3	6	3	5	25
July 10.....	77	17	7	18	25	23	167	1	4	3	7	14	7	36
July 17.....	69	8	6	28	20	19	150	2	3	2	17	8	7	39
July 24.....	86	12	15	35	40	20	208	3	7	7	22	23	10	79
July 31.....	70	16	12	46	47	40	231	6	8	8	8	25	29	103
August 7.....	71	20	22	54	49	28	244	4	9	10	39	36	19	117
August 14.....	71	13	16	51	37	46	234	2	4	9	38	25	29	107
August 21.....	64	8	23	49	52	41	237	6	4	15	32	36	25	118
August 28.....	58	20	19	55	45	23	220	3	9	8	39	38	16	113
September 4.....	65	19	13	53	42	21	213	1	9	6	35	28	11	90
September 11.....	75	23	16	31	34	26	205	4	13	8	19	20	18	81
September 18.....	68	5	11	42	30	21	177	4	3	4	18	15	10	54
September 25.....	73	22	12	34	39	24	204	3	8	7	17	31	14	80
October 2.....	68	16	9	32	25	19	169	4	6	4	17	16	8	55
October 9.....	69	10	15	43	25	23	185	5	3	6	22	11	9	56
October 16.....	71	13	12	22	33	19	170	2	3	4	10	18	6	43
October 23.....	79	10	12	36	28	20	185	3	4	8	19	10	10	54
October 30.....	77	16	10	24	25	14	166	2	2	4	7	9	3	27
November 6.....	78	15	13	25	10	16	157	1	5	5	8	3	8	30
November 13.....	84	15	14	29	10	15	167	4	2	6	17	5	5	39
November 20.....	72	16	6	30	18	12	154	1	7	2	10	5	3	28
November 27.....	86	13	11	23	12	23	168	2	...	3	6	1	3	15
December 4.....	96	14	14	29	18	16	187	1	3	6	7	4	2	23
December 11.....	88	11	15	30	7	9	160	3	1	3	5	...	2	14
December 18.....	87	14	16	25	9	12	163	3	5	6	5	2	1	22
December 25.....	109	20	15	25	17	16	202	5	4	3	10	4	1	27
Total, 52 weeks	4,650	914	770	1,788	1,664	1,494	11,280	189	214	229	656	528	350	2,166

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

SEARCHES MADE AND TRANSCRIPTS ISSUED—YEAR 1920.

SEARCHES.	BOROUGH OF					CITY OF NEW YORK.
	Manhattan.	The Bronx.	Brooklyn.	Queens.	Richmond.	
Free searches of birth records for school, mercantile purposes, etc.	29,460	7,625	32,482	4,144	1,662	75,373
Paid searches of birth records.....	23,027	1,956	13,238	800	396	39,417
Paid searches of marriage records.....	3,597	121	1,525	81	50	5,374
Paid searches of death records.....	27,338	6,346	20,976	3,008	1,317	59,885
Total free and paid searches.....	83,422	16,048	68,221	8,933	3,425	180,049
TRANSCRIPTS.						
Paid transcripts of births issued.....	15,491	1,744	9,414	709	353	27,711
Paid transcripts of marriages issued.....	2,101	83	1,233	62	42	3,521
Paid transcripts of deaths issued.....	31,424	8,211	23,733	5,622	1,504	72,494
Total transcripts issued.....	49,016	10,038	36,380	6,393	1,899	103,726

BUREAU OF RECORDS

DEATHS IN INSTITUTIONS, YEAR 1920.

MANHATTAN.

Babies Hospital	397	N. Y. Nursery and Child's Hospi- tal	263
Bellevue Hospital	3,139	N. Y. Polyclinic Hospital.....	5
Beth Israel Hospital	186	Park Hospital	52
Central and Neurological Hospital	605	Post Graduate Hospital.....	467
City Hospital	541	Presbyterian Hospital	384
Columbus Hospital	59	Reception Hospital	10
Flower Hospital	208	Roosevelt Hospital	334
Foundling Hospital	384	St. Francis Home	76
French Hospital	119	St. Gregory's Hospital.....	95
Gouverneur Hospital	451	St. Luke's Hospital	394
Hahnemann Hospital	80	St. Mark's Hospital.....	160
Harlem Hospital	1,064	St. Mary's Hospital.....	57
Home for Aged (Little Sisters of Poor)	70	St. Vincent's Hospital.....	423
House of Relief	19	St. Rosa's Home	203
Jewish Maternity Hospital.....	44	Skin and Cancer Hospital.....	34
Knickerbocker Hospital	139	Sloane Hospital for Women.....	82
Lenox Hill Hospital	282	Sydenham Hospital	63
Lying-in Hospital	142	Washington Heights Hospital	123
Manhattan Maternity Hospital.....	42	Willard Parker Hospital.....	738
Manhattan State Hospital.....	744	Women's Hospital	77
Metropolitan Hospital	789	Workhouse Hospital	15
Misericordia Hospital	131	Other Institutions	1,541
Mount Sinai Hospital	693		
New York Hospital	421	Total	16,399
New York City School and Hospi- tal	54		

THE BRONX.

Fordham Hospital	542	St. Francis Hospital	391
Home for Incurables	97	St. Joseph's Hospital	545
House of Calvary	191	Seton Hospital	334
Lebanon Hospital	227	Other Institutions	256
Lincoln Hospital	572		
Montefiore Hospital	381	Total	3,595
Riverside Hospital	59		

BROOKLYN.

Brooklyn Hospital	391	New York City Home for Aged and Infirm	5
Bushwick Hospital	93	Norwegian Hospital	186
Consumptive Home	94	Samaritan Hospital	45
Cumberland Street Hospital	191	St. Catharine's Hospital.....	379
Coney Island Hospital.....	116	St. Christopher's Hospital.....	111
German Hospital	295	St. John's Hospital	147
Greenpoint	223	St. Mary's Hospital	293
Home for Aged (Little Sisters of the Poor)	15	St. Peter's Hospital	239
Jewish Hospital	417	Swedish Hospital	106
Kings County Hospital.....	1,852	Williamsburg Hospital	139
Kingston Avenue Hospital.....	357	Other Institutions	1,049
Long Island College Hospital.....	420		
Long Island State Hospital.....	343	Total	7,780
Lutheran Hospital	25		
Methodist Episcopal Hospital....	249		

QUEENS.

Flushing Hospital	181	Queensborough	35
Jamaica Hospital	103	Other Institutions	123
St. Anthony's Hospital.....	361		
St. John's Hospital	227	Total	1,226
St. Joseph's Hospital.....	73		
St. Mary's Hospital.....	123		

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

RICHMOND.

City Farm Colony.....	63	St. Vincent's Hospital.....	133
Marine Hospital.....	88	Other Institutions.....	90
Sailor's Snug Harbor.....	89		
Sea View Hospital.....	421	Total.....	1,112
Staten Island Hospital.....	228		

RECAPITULATIONS.

Borough of Manhattan.....	16,399	Borough of Richmond.....	1,112
Borough of The Bronx.....	3,595		
Borough of Brooklyn.....	7,780	City of New York.....	30,112
Borough of Queens.....	1,226		

DISPOSITION OF THE DEAD AND ALL STILL-BORN INFANTS OF THE CITY OF NEW YORK.

MANHATTAN.

Marble.....	14	Trinity.....	68
St. John's the Divine (Vault)....	1		
St. Mark's.....	2	Total.....	85

THE BRONX.

City.....	5,347	Woodlawn.....	3,082
Pelham.....	14		
St. Peter's.....	63	Total.....	11,088
St. Raymond's.....	2,582		

BROOKLYN.

Canarsie.....	73	National.....	158
Cypress Hills.....	517	New Utrecht.....	11
Evergreen.....	1,167	Salem Fields.....	283
Friends.....	21	United Jewish.....	81
Greenwood.....	3,445	Washington.....	1,795
Holy Cross.....	4,217		
Holy Trinity.....	1,339	Total.....	13,379
Maimonides.....	134		
Mount Hope.....	138		

QUEENS.

Acacia.....	285	Mt. Hebron.....	2,148
Ahaweth Chesed.....	65	Mt. Lebanon.....	553
Bayside.....	348	Mt. Neboh.....	207
Bethel.....	94	Mt. Olivet.....	3,375
Calvary.....	17,550	Mt. St. Mary's.....	434
Cedar Grove.....	501	Mt. Zion.....	3,270
Cypress Hills.....	668	New Mt. Carmel.....	149
Evergreen.....	3,161	Presbyterian.....	5
Flushing.....	387	Prospect.....	23
Fresh Pond.....	1,305	St. John's.....	4,729
Grace Church Cemetery.....	8	St. Michael's.....	2,592
Highland View.....	709	St. Monica's.....	22
Hungarian.....	72	Springfield.....	54
Lawrence Burial Grounds.....	1	Shereth Israel.....	22
Linden Hill.....	2,143	Union Fields.....	465
Lutheran.....	4,112	Zion Churchyard.....	11
Machpelah.....	99		
Maple Grove.....	904	Total.....	52,890
Montefiore.....	1,610		
Mt. Carmel.....	809		

BUREAU OF RECORDS

RICHMOND.

A. M. E. Zion	18	Silver Lake	31
Baron Hirsch	537	Silver Mount	76
Bethel	46	St. Andrew's	2
Fairview	98	St. John's	7
Fountain	21	St. Joseph's	17
Hillside	1	St. Luke's	4
Lake	65	St. Mary's 3rd W.....	103
Merrell	2	St. Mary's 4th W.....	115
Moravian	452	St. Michael's	2
Mt. Loretta	2	St. Peter's	284
Mt. Richmond	542	United Hebrew	191
National Polish	7	West Baptist	4
New Springville	5	Woodland	119
Ocean View	58	Woodrow	7
S. S. Harbor	58		
Staten Island	44	Total	<u>2,918</u>

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920.

GENERAL DISEASER.

	1		2		3		4		5		6		7		8		9		10		11	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Typhoid Fever.	89	48	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Both Sexes.	137		...		...		4		...		736		220		615		1,045		3,492		...	
Total all ages..																						
Total by sexes..																						
Under 1 year...	6	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1 to 4 years...	7	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 to 9 years...	8	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 to 14 years...	10	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15 to 19 years...	10	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 to 24 years...	11	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25 to 29 years...	16	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30 to 34 years...	9	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35 to 39 years...	9	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40 to 44 years...	4	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45 to 49 years...	9	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
50 to 54 years...	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55 to 59 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
60 to 64 years...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 to 69 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
70 to 74 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
75 to 79 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
80 to 84 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
85 years and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colored.....	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinese.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

GENERAL DISEASES.—Continued.

	12		13		14		15		16		17		18		19		20		21		22		
	Asiatic Cholera.		Cholera Nostras.		Dysentery.		Plague.		Yellow Fever.		Leprosy.		Erysipelas.		Other Epidemic Diseases.		Pyæmia, Septicæmia.		Glanders.		Malignant Pustule.		
Both Sexes.	Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		
...	...		30			1		203		23		75		...		3		
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total all ages...
Total by sexes...
Under 1 year...
1 year...
2 years...
3 years...
4 years...
5 years...
6 to 10 years...
11 to 14 years...
15 to 19 years...
20 to 24 years...
25 to 29 years...
30 to 34 years...
35 to 39 years...
40 to 44 years...
45 to 49 years...
50 to 54 years...
55 to 59 years...
60 to 64 years...
65 to 69 years...
70 to 74 years...
75 to 79 years...
80 to 84 years...
85 yrs. and over
Colored
Chinese
Japanese

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

GENERAL DISEASES—Continued.

	34		35		36		37		38A		38B		39		40		41		42		43				
	Tuberculosis of Other Organs.		General Tuberculosis.		Rachitis.		Syphilis.		Soft Chanere.		Gonococic Infection.		Cancers, &c., of the Mouth.		Cancer of Stomach, Liver.		Cancer of Intestines, Rectum.		Cancer of Female Genital Organs.		Cancer of Breast.				
Both Sexes.	M.	F.	Both Sexes.	M.	F.	Both Sexes.	M.	F.	Both Sexes.	M.	F.	Both Sexes.	M.	F.	Both Sexes.	M.	F.	Both Sexes.	M.	F.	Both Sexes.	M.	F.		
Total all ages...	73	48	25	38	24	62	41	470	2	30	187	1,986	836	643	458	393	910	836	643	458	393	910	836	643	458
Total by sexes...	48	25	38	24	19	62	306	164	1	6	172	1,076	393	443	4	454	910	393	643	4	454	393	910	458	
Under 1 year...	3	1	9	4	15	12	75	68	...	...	6	1	1	...	...	...	1	1	...	...	...	...	...	...	...
1 year...	1	2	2	1	5	5	4	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 years...	2	1	1	1	1	1	1	3	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 years...	...	2	2	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4 years...	...	2	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 to 9 years...	3	1	2	2	2	2	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 to 14 years...	3	1	2	2	2	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15 to 19 years...	2	1	2	3	2	2	5	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 to 24 years...	5	5	3	3	1	3	8	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25 to 29 years...	5	1	3	1	1	1	18	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30 to 34 years...	4	3	5	2	...	...	30	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35 to 39 years...	1	2	2	2	...	...	35	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40 to 44 years...	4	3	2	1	...	...	31	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45 to 49 years...	3	2	1	...	...	...	35	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
50 to 54 years...	5	2	2	2	...	...	38	19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55 to 59 years...	5	1	2	2	...	...	28	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
60 to 64 years...	2	3	...	...	...	...	14	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 to 69 years...	...	1	...	...	...	...	11	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
70 to 74 years...	...	1	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
75 to 79 years...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
80 to 84 years...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
85 yrs. and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colored	6	3	8	4	6	4	47	31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinese	...	1	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

GENERAL DISEASES—Continued.

	44		45		46		47		48		49		50		51		52		53		54		
	Cancer of Skin.		Cancer of Other Organs.		Other Tumors (except of Female Genital Organs).		Acute Articular Rheumatism.		Chronic Rheumatism and Gout.		Scurvy.		Diabetes.		Exophthalmic Goitre.		Addison's Disease.		Leukaemia.		Anaemia Chlorosis.		
Both Sexes.	74		1,133		19		236		48		5		1,075		67		16		159		229		
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total all ages...	47	27	726	407	9	10	106	130	13	35	3	2	411	664	7	60	9	7	91	68	102	127	
Under 1 year...	2	2	...	...	27	23	1	...	2	...	12	5	...	...	...	...	3	1	4	3	
1 to 4 years...	3	4	...	...	13	29	1	...	...	...	5	9	...	...	...	...	2	1	2	2	
5 to 9 years...	8	4	...	...	17	12	1	...	...	...	3	18	...	...	...	...	5	4	3	4	
10 to 14 years...	12	16	...	...	9	14	1	...	...	...	10	14	...	...	...	...	9	9	2	5	
15 to 19 years...	17	22	...	...	6	3	1	...	...	...	12	11	...	...	...	...	8	5	4	7	
20 to 24 years...	22	27	...	...	3	9	2	...	...	...	14	12	...	...	...	...	5	4	4	5	
25 to 29 years...	27	32	...	...	3	9	2	...	...	...	14	11	...	...	...	...	8	5	4	5	
30 to 34 years...	32	37	...	...	2	3	...	...	...	...	19	31	...	...	...	...	7	8	10	7	
35 to 39 years...	37	42	...	...	3	9	...	...	...	...	19	31	...	...	...	...	7	7	10	7	
40 to 44 years...	42	48	...	...	3	9	...	...	...	...	38	50	...	...	...	...	7	8	10	7	
45 to 49 years...	48	54	...	...	5	11	...	...	...	...	47	82	...	...	...	...	7	7	10	16	
50 to 54 years...	54	61	...	...	3	11	...	...	...	...	47	82	...	...	...	...	7	7	10	16	
55 to 59 years...	61	68	...	...	3	11	...	...	...	...	47	82	...	...	...	...	7	7	10	16	
60 to 64 years...	68	75	...	...	3	11	...	...	...	...	47	82	...	...	...	...	7	7	10	16	
65 to 69 years...	75	82	...	...	3	11	...	...	...	...	48	102	...	...	...	...	11	4	10	17	
70 to 74 years...	82	90	...	...	3	11	...	...	...	...	48	102	...	...	...	...	11	4	10	17	
75 to 79 years...	89	97	...	...	3	11	...	...	...	...	48	102	...	...	...	...	11	4	10	17	
80 to 84 years...	97	105	...	...	2	10	...	...	...	...	36	99	...	...	...	...	4	1	9	6	
85 to 89 years...	105	113	...	...	2	10	...	...	...	...	36	99	...	...	...	...	4	1	9	6	
90 to 94 years...	113	121	...	...	2	10	...	...	...	...	25	87	...	...	...	...	...	...	...	1	
95 to 99 years...	121	129	...	...	2	10	...	...	...	...	25	87	...	...	...	...	...	...	...	1	
100 years and over	129	137	...	...	2	10	...	...	...	...	25	87	...	...	...	...	...	...	...	1	
Colored	10	9	...	...	2	8	...	...	...	...	8	13	...	...	...	...	1	2	...	...
Chinese	1	1	...	...	2	2	...	...	...	...	2	2	...	...	...	...	...	...	...	...
Japanese	

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1930—Continued.

		GENERAL DISEASES—Continued.										DISEASES OF NERVOUS SYSTEM AND ORGANS OF SENSE.											
		55		56		57		58		59		60		61		61A		62		63		63A	
		Other General Diseases.		Alcoholism Acute and Chronic.		Lead Poisoning.		Other Chronic Poisonings of Occupation.		Other Chronic Poisonings.		Eencephalitis.		Simple Meningitis (of which)		Cerebro-Spinal Meningitis.		Locomotor Ataxia.		Other Diseases of Spinal Cord. (of which)		Anterior Poliomyelitis.	
		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
		58		98		7		2		36		44		347		123		93		205		40	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total all ages...		24	34	74	24	7	...	2	...	25	11	29	15	195	152	68	55	75	18	111	94	27	13
Total by sexes.		9	11	...	...	...	...	...	...	...	...	2	1	45	41	19	11	...	1	4	1	3	1
Under 1 year...		1	3	...	...	...	...	...	...	...	...	1	2	19	15	8	8	...	...	3	4	3	2
1 year...		2	2	...	...	...	...	...	...	...	...	1	2	12	8	7	4	...	...	2	1	2	1
2 years...		...	...	...	...	...	...	...	...	...	...	...	...	7	4	1	3	...	...	6	2	4	1
3 years...		1	...	...	...	...	...	...	...	...	...	...	...	9	4	4	5	...	...	4	2	4	1
4 years...		13	18	...	...	...	...	...	...	...	...	4	5	9	7	4	5	...	...	4	2	4	1
5 to 9 years...		2	2	...	...	...	...	...	...	...	...	2	1	10	23	8	4	...	...	6	4	5	3
10 to 14 years...		1	1	...	...	...	...	...	...	...	...	2	2	18	14	6	2	...	...	3	1	1	2
15 to 19 years...		...	...	...	...	...	...	...	...	...	...	...	...	12	9	4	4	...	...	...	3	3	...
20 to 24 years...		...	...	...	...	...	...	...	...	...	...	...	...	7	6	3	4	...	...	...	3	4	...
25 to 29 years...		...	...	...	...	...	...	...	...	...	...	...	...	9	4	3	2	...	...	...	6	5	...
30 to 34 years...		...	...	...	...	...	...	...	...	...	...	...	...	1	2	2	2	...	...	...	6	5	...
35 to 39 years...		...	...	...	...	...	...	...	...	...	...	...	...	2	5	1	2	...	...	...	6	5	...
40 to 44 years...		...	...	...	...	...	...	...	...	...	...	...	...	8	6	1	2	...	...	...	6	5	...
45 to 49 years...		...	...	...	...	...	...	...	...	...	...	...	...	2	2	1	1	...	...	...	8	6	...
50 to 54 years...		...	...	...	...	...	...	...	...	...	...	...	...	4	3	1	2	...	...	...	3	5	...
55 to 59 years...		...	...	...	...	...	...	...	...	...	...	...	...	5	2	1	1	...	...	...	5	7	...
60 to 64 years...		...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	1	...	...	...	9	12	...
65 to 69 years...		...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	1	...	...	...	14	2	...
70 to 74 years...		...	...	...	...	...	...	...	...	...	...	...	...	2	5	1	1	...	...	...	2	17	...
75 to 79 years...		...	...	...	...	...	...	...	...	...	...	...	...	1	3	1	1	...	...	...	10	4	...
80 to 84 years...		...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1	...	...	...	6	3	...
85 yrs. and over		...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	4	7	...
Colored		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinese		2	1	...	...	...	...	...	...	...	...	...	...	6	12	1	1	...	...	...	3	1	...
Japanese		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

DISEASES OF NERVOUS SYSTEM AND ORGANS OF SENSE—Continued.

	64		65		66		67		68		69		70		71		72		73A		73B		
	Apoplexy Cerebral Hemorrhage.		Softening of Brain.		Paralysis, Unspecified.		General Paralysis.		Other Forms of Insanity.		Epilepsy.		Convulsions (not Puerperal).		Convulsions of Infants.		Chorea.		Hysteria.		Neuralgia and Neuritis.		
Both Sexes.	718		7		44		332		112		118		...		39		10		3		5		
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total all ages...	292	426	2	5	18	26	267	65	27	85	60	58	...	...	24	15	4	6	1	2	4	1
Total by sexes...	2	3	...	...	...	...	...	...	...	...	1	1	...	...	18	8	...	...	...	...	...	...
Under 1 year...	1	1	...	...	...	...	...	...	...	...	1	1	...	...	5	5	...	...	...	...	...	...
1 year...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	2	...	...	...	...	...	...
2 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 years...	3	4	...	...	...	...	...	...	...	...	4	2	...	...	...	1	...	...	...	...	...	...
T ^l under 5 yrs.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 to 9 years...	...	...	...	...	...	...	...	...	...	...	3	6	...	...	...	1	...	...	...	...	...	...
10 to 14 years...	2	...	...	...	...	...	...	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...
15 to 19 years...	...	...	...	...	...	...	...	...	...	...	1	8	...	...	...	1	...	...	...	...	...	...
20 to 24 years...	...	...	...	...	...	...	...	...	...	...	12	11	...	...	...	...	...	...	...	...	...	...
25 to 29 years...	...	...	...	...	...	...	...	...	...	...	7	7	...	...	...	...	...	...	...	...	...	...
30 to 34 years...	4	5	...	...	...	...	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...
35 to 39 years...	7	6	...	...	...	...	...	...	...	...	3	7	...	...	...	...	...	...	...	...	...	...
40 to 44 years...	15	18	...	...	...	...	...	...	...	...	4	4	...	...	...	...	...	...	...	...	...	...
45 to 49 years...	11	23	...	...	...	...	...	...	...	...	4	4	...	...	...	...	...	...	...	...	...	...
50 to 54 years...	30	29	...	...	...	...	...	...	...	...	11	4	...	...	...	...	...	...	...	...	...	...
55 to 59 years...	31	38	...	...	...	...	...	...	...	...	2	4	...	...	...	...	...	...	...	...	...	...
60 to 64 years...	54	51	...	...	...	...	...	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...
65 to 69 years...	39	64	...	...	...	...	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...
70 to 74 years...	33	41	...	...	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...
75 to 79 years...	36	47	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
80 to 84 years...	33	37	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
85 yrs. and over	10	30	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Colored...	12	18	...	...	...	...	...	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...
Chinese...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

		DISEASES OF NERVOUS SYSTEM AND ORGANS OF SENSE—Continued.										DISEASES OF CIRCULATORY SYSTEM.											
		74		75A		75B		75C		76		77		78		79		80		81		82	
		Other Nervous Diseases.		Follicular Conjunctivitis.		Trachoma.		Other Diseases of Eye and Appendages.		Diseases of Ear.		Pericarditis.		Acute Endocarditis.		Organic Heart Disease.		Angina Pectoris.		Diseases of Arteries, Aneurism, &c.		Embolism Thrombosis.	
		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
Total all ages..		191		...		...		5		287		50		375		11,342		350		2,824		140	
Total by sexes..		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year...	10	5	5	...	...	...	...	3	33	14	19	1	2	13	6	25	12	...	...	1	...	...	...
1 year.....	6	1	5	...	...	...	...	...	11	11	11	1	3	3	3	6	7	...	...	...	1	...	...
2 years.....	12	5	7	...	...	...	...	...	5	4	9	...	1	3	4	3	3	...	...	...	...	...	...
3 years.....	2	2	0	...	...	...	...	...	3	4	7	...	...	2	1	3	4	...	...	...	...	...	...
4 years.....	3	3	0	...	...	...	...	...	1	1	2	...	...	3	4	3	4	...	...	...	...	...	...
Under 5 yrs.	33	24	9	...	...	...	...	3	55	34	21	2	4	24	17	44	35	...	...	1	...	...	...
5 to 9 years...	5	4	1	...	...	...	...	...	22	20	2	2	2	16	17	54	86	...	...	...	...	...	...
10 to 14 years...	8	4	4	...	...	...	...	...	7	10	1	3	1	13	12	86	111	...	...	...	...	...	...
15 to 19 years...	2	3	0	...	...	...	...	...	9	9	2	1	1	9	16	76	88	...	...	...	...	...	...
20 to 24 years...	4	4	0	...	...	...	...	...	13	8	1	...	...	10	12	92	87	...	...	...	...	...	...
25 to 29 years...	5	4	1	...	...	...	...	...	9	10	1	3	1	11	18	72	127	...	...	...	...	...	...
30 to 34 years...	11	8	3	...	...	...	...	...	6	3	1	1	1	17	13	114	147	...	...	...	...	...	...
35 to 39 years...	12	8	4	...	...	...	...	...	10	5	1	2	2	20	14	195	208	...	...	...	...	...	...
40 to 44 years...	9	3	6	...	...	...	...	...	9	6	...	...	...	5	6	285	246	...	...	...	...	...	...
45 to 49 years...	6	3	3	...	...	...	...	...	5	3	...	...	...	21	10	391	341	...	...	...	...	...	...
50 to 54 years...	9	7	2	...	...	...	...	...	17	3	...	...	...	14	12	554	482	...	...	...	...	...	...
55 to 59 years...	5	3	2	...	...	...	...	...	13	3	...	...	...	13	9	637	36	...	...	...	...	...	...
60 to 64 years...	3	2	1	...	...	...	...	...	2	1	...	...	...	5	5	637	749	...	...	...	...	...	...
65 to 69 years...	2	1	1	...	...	...	...	...	1	1	...	...	...	7	5	672	737	...	...	...	...	...	...
70 to 74 years...	2	1	1	...	...	...	...	...	1	1	...	...	...	1	1	572	726	...	...	...	...	...	...
75 to 79 years...	...	...	...	...	...	...	...	...	1	1	...	...	...	1	1	467	607	...	...	...	...	...	...
80 to 84 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	249	414	...	...	...	...	...	...
85 yrs. and over	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	161	293	...	...	...	...	...	...
Colored.....	3	1	2	...	...	...	...	...	4	5	...	3	5	7	141	189	7	3	40	42	...	...	...
Chinese.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	19	...	1	...	...	...	...	...
Japanese.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

		DISEASES OF RESPIRATORY SYSTEM.																					
		DISEASES OF CIRCULATORY SYSTEM—Continued.																					
		83		84		85		86		87		88		89		90		91		92		93	
		Diseases of Veins (Haemorrhoids, Varices, Phlebitis, &c.)		Diseases of Lymphatics (Lymphangitis, &c.)		Diseases of Haemorrhage.		Diseases of Nasal Fossae.		Diseases of Larynx.		Diseases of Thyroid Glands.		Acute Bronchitis.		Chronic Bronchitis.		Broncho Pneumonia.		Lobar Pneumonia.		Pleurisy.	
		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
		29		78		7		8		26		40		786		132		4,874		5,184		222	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total all ages..		16	13	47	31	6	1	6	2	14	12	7	33	374	412	50	82	2,544	2,330	2,801	2,383	125	97
Total by sexes..																							
Under 1 year..		...	...	20	20	1	1	3	...	4	5	...	...	210	208	1	3	865	688	278	187	3	11
1 year..		...	...	3	1	...	...	1	...	2	...	...	...	453	378	...	...	453	378	169	181	21	7
2 years..		...	...	...	...	...	...	...	...	...	...	...	...	23	18	1	1	139	108	64	63	3	6
3 years..		...	...	...	...	...	...	...	...	...	...	...	...	4	8	...	...	40	51	31	39	5	5
4 years..		...	...	...	...	...	...	...	...	...	...	...	...	3	2	...	...	18	22	25	19	1	2
5 to 9 yrs.		...	...	32	22	...	...	4	...	8	10	...	...	305	298	4	4	1,515	1,247	567	489	33	31
10 to 14 years..		...	...	3	4	...	...	...	...	1	...	...	...	6	6	1	2	48	61	51	51	3	9
15 to 19 years..		...	...	1	1	...	...	...	...	1	...	...	...	3	3	...	...	11	16	40	44	5	2
20 to 24 years..		...	...	4	2	...	...	1	...	...	...	...	...	...	...	...	...	30	25	75	98	5	3
25 to 29 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	77	66	131	153	10	...
30 to 34 years..		...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	53	82	223	172	6	7
35 to 39 years..		...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	78	62	242	137	17	8
40 to 44 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	62	35	161	109	8	5
45 to 49 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	65	54	191	103	5	4
50 to 54 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	75	61	189	124	11	5
55 to 59 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	87	66	169	127	9	4
60 to 64 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	96	93	185	124	7	3
65 to 69 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	84	100	149	113	2	4
70 to 74 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	72	114	160	118	2	4
75 to 79 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	57	78	89	1	2
80 to 84 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13	26	36	29	5	2
85 yrs. and over		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	39	19	29	...	2
Colored..		1	...	6	1	...	...	...	...	2	1	...	...	22	15	1	2	180	141	192	150	5	3
Chinese..		...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	5	2	11	...	...	...
Japanese..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

		DISEASES OF RESPIRATORY SYSTEM—Continued.										DISEASES OF DIGESTIVE SYSTEM.											
		94 Congestion of Lungs Pulmonary Apoplexy.		95 Gangrene of Lung.		96 Asthma.		97 Pulmonary Emphy- sacema.		98 Other Diseases of Respiratory System.		99A Diseases of Tubercu- lous Guns.		99B Other Diseases of Mouth.		100 Angina and other Diseases of Pharynx.		101 Diseases of Esophagus.		102 Ulcer of the Stomach.		103 Other Stomach (Cancer excepted).	
		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
Total all ages...		34		7		94		25		69		41		4		159		7		242		117	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total by sexes...		19	15	4	3	44	50	15	10	52	17	22	19	1	3	87	72	6	1	183	59	61	56
Under 1 year...		3	...	...	...	1	1	1	1	3	1	3	...	...	...	15	4	...	...	...	...	28	17
1 year...		...	...	...	...	1	1	1	1	1	1	...	...	...	...	6	8	...	...	...	...	4	3
2 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	8	1	...	...	...	3	4
3 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	...	...	...	...	...	1
4 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	3	...	...	...	...	...	1
5 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals under 5 yrs.		3	...	2	3	2	3	2	2	4	1	4	1	1	2	35	26	1	...	...	...	35	26
5 to 9 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 to 14 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15 to 19 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 to 24 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25 to 29 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30 to 34 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35 to 39 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40 to 44 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45 to 49 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
50 to 54 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55 to 59 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
60 to 64 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 to 69 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
70 to 74 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
75 to 79 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
80 to 84 years...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
85 yrs. and over.		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colored.		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinese.		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese.		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

DISEASES OF DIGESTIVE SYSTEM—Continued.

	104		105		106		107		108		109		110a		110b		111		112		113	
	Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total all ages...	2,545	381	...	...	792	653	22	51	14	2	366	...	...	...	...	...	...	...	...	...	...	...
Total by sexes...	1,432	1,113	190	191	445	347	15	7	9	5	248	118	...	...	...	...	...	...	...	...	...	...
Under 1 year...	1,225	949	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1 year...	207	164	...	...	2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 years...	...	...	...	...	3	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 years...	...	...	...	...	3	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4 years...	...	...	...	...	9	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 years...	...	...	...	...	21	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tt, under 5 yrs.	1,432	1,113	74	75	91	68	36	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...
5 to 9 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 to 14 years...	...	...	...	...	23	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15 to 19 years...	...	...	...	...	32	29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 to 24 years...	...	...	...	...	39	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25 to 29 years...	...	...	...	...	45	31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30 to 34 years...	...	...	...	...	47	29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35 to 39 years...	...	...	...	...	46	36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40 to 44 years...	...	...	...	...	36	55	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45 to 49 years...	...	...	...	...	37	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
50 to 54 years...	...	...	...	...	34	26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55 to 59 years...	...	...	...	...	24	19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
60 to 64 years...	...	...	...	...	24	19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 to 69 years...	...	...	...	...	17	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
70 to 74 years...	...	...	...	...	8	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
75 to 79 years...	...	...	...	...	9	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
80 to 84 years...	...	...	...	...	10	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
85 yrs. and over.	...	...	...	...	3	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colored	67	47	2	4	15	17	11	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinese	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

		DISEASES OF DIGESTIVE SYSTEM—Continued.										DISEASES OF GENITO URINARY SYSTEM.											
		114		115		116		117		118		119		120		121		122		123		124	
		Biliary Calculi.		Other Diseases of Liver.		Diseases of Spleen.		Simple Peritonitis (Non-Puerperal).		Other Diseases of Digestive System (except Tuberculosis and Cancer).		Acute Nephritis.		Bright's Disease.		Chyluria.		Other Diseases of the Kidneys and Appendages.		Calculi of Urinary Tract.		Diseases of Bladder.	
		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
		217		230		7		51		57		257		4,576		...		130		46		48	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total all ages...	47	170	98	132	3	4	14	37	20	37	124	2,163	2,413	58	72	34	12	29	19				
Under 1 year...	1	...	2	...	1	...	5	5	...	1	5	3	2	5	2	...	...	5	2	...	...	...	...
1 year...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 years...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4 years...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 to 9 years...	...	...	4	2	...	1	1	5	1	...	6	10	8	1	1	...	...	1	1	...	...	...	...
10 to 14 years...	...	...	4	2	...	...	...	...	...	...	5	9	12	1	2	...	...	1	2	...	...	...	...
15 to 19 years...	...	...	5	5	...	...	...	...	...	...	4	4	27	20	...	...	...	2	6	...	...	...	...
20 to 24 years...	...	...	4	4	...	...	...	...	...	...	10	6	34	35	...	...	...	1	4	...	...	...	...
25 to 29 years...	...	...	1	4	...	...	...	...	...	...	2	6	47	65	...	...	...	1	7	...	...	...	...
30 to 34 years...	...	...	3	14	...	...	...	...	...	...	7	8	75	90	...	...	...	1	6	...	...	...	...
35 to 39 years...	...	...	5	9	...	...	...	...	...	...	9	7	87	90	...	...	...	7	6	...	...	...	...
40 to 44 years...	...	...	10	2	...	...	...	...	...	...	9	12	108	126	...	...	...	8	4	...	...	...	...
45 to 49 years...	...	...	25	11	...	...	...	...	...	...	7	12	161	172	...	...	...	3	5	...	...	...	...
50 to 54 years...	...	...	5	29	...	...	...	...	...	...	6	7	193	228	...	...	...	3	7	...	...	...	...
55 to 59 years...	...	...	10	17	...	...	...	...	...	...	3	6	207	228	...	...	...	5	5	...	...	...	...
60 to 64 years...	...	...	26	11	...	...	...	...	...	...	9	3	264	275	...	...	...	7	6	...	...	...	...
65 to 69 years...	...	...	18	9	...	...	...	...	...	...	3	10	254	300	...	...	...	2	4	...	...	...	...
70 to 74 years...	...	...	6	12	...	...	...	...	...	...	6	8	247	267	...	...	...	5	4	...	...	...	...
75 to 79 years...	...	...	1	2	...	...	...	...	...	...	3	6	187	221	...	...	...	3	2	...	...	...	...
80 to 84 years...	...	...	...	3	...	...	...	...	...	...	2	3	117	146	...	...	...	3	1	...	...	...	...
85 yrs. and over.	...	...	1	1	...	...	...	...	...	...	2	3	71	84	...	...	...	...	...	...	...	...	...
Colored...	...	...	1	2	...	...	...	...	...	...	5	10	43	83	...	...	...	3	3	...	...	...	...
Chinese...	...	...	...	1	...	...	...	...	...	...	1	...	3	...	...	...	...	...	...	...	...	...	...
Japanese...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

DISEASES OF GENITO URINARY SYSTEM—Continued.												Puerperal Diseases.										
	125		126		127		128		129		130A		130b		131		132		133		134	
	Diseases of Urethra, Urinary Abscess, &c.		Diseases of the Prostate.		Non-Veneral Diseases of Male Genital Organs.		Uterine Hemorrhage (not Puerperal).		Uterine Tumor (not Cancer).		Metritis.		Other Diseases of Uterus.		Ovarian Cysts and Tumors.		Salpingitis and Other Diseases of Female Genital Organs.		Diseases of Breast (not Puerperal or Cancer).		Accidents of Pregnancy.	
	Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
Total all ages...	34		169		9		...		156		27		15		55		88		5		107	
Total by sexes...	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year...
1 year...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 years...
3 years...
4 years...
5 to 9 years...
10 to 14 years...
15 to 19 years...
20 to 24 years...
25 to 29 years...
30 to 34 years...
35 to 39 years...
40 to 44 years...
45 to 49 years...
50 to 54 years...
55 to 59 years...
60 to 64 years...
65 to 69 years...
70 to 74 years...
75 to 79 years...
80 to 84 years...
85 yrs. and over...
Colored...	5	1	2	...	2	...	...	...	31	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinese...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese...

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

		PUERPERAL DISEASES—Continued.										DISEASES OF SKIN AND CELLULAR TISSUE.										
		135	136		137		138		139A		139B		140A	140B		141		142		143		
		Puerperal Hemorrhage.	Other Accidents of Labor.		Puerperal Septicæmia.		Puerperal Albuminuria and Convulsions.		Puerperal Pblegmiasia Alba Dolens.		Puerperal Embolism and Sudden Death.		Sequel of Delivery.	Puerperal Insanity.		Puerperal Diseases of Breast.		Gangrene.		Carbuncle.		
		Both Sexes.	Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		
		91	110		174		190		10		24		...	...		2		38		56		
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Total all ages..		
Total by sexes..		...	91	...	110	...	174	...	190	...	10	...	24	...	...	...	2	...	18	20	42	14
Under 1 year...	
1 year.....	
2 years.....	
3 years.....	
4 years.....	
T ¹ under 5 yrs.	
5 to 9 years...	
10 to 14 years..	
15 to 19 years..	
20 to 24 years..	
25 to 29 years..	
30 to 34 years..	
35 to 39 years..	
40 to 44 years..	
45 to 49 years..	
50 to 54 years..	
55 to 59 years..	
60 to 64 years..	
65 to 69 years..	
70 to 74 years..	
75 to 79 years..	
80 to 84 years..	
85 yrs. and over	
Colored.....	
Chinese.....	
Japanese.....	

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

	DISEASES OF SKIN AND CELLULAR TISSUE—Contd.				DISEASES OF LOCOMOTORY SYSTEM.				MALFORMATIONS.		DISEASES OF INFANCY.											
	144		145		146		147		148		149		150		151		152		152A		153	
	Phlegmon, Acute Abscess.		Other Diseases of Skin and Adnexa.		Diseases of Bones (non-Tuberculous).		Arthritis, Other Diseases of Joints (except Tuberculosis and Rheumatism).		Amputation.		Other Diseases of Organs of Locomotion.		Congenital Malformations.		Congenital Deblity, Icterus and Sclerema.		Other Diseases Peculiar to Infancy (of which).		Injury During Birth.		Neglect.	
Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		
Total all ages..	83		33		106		17		...		1		649		2,982		1,106		494		3	
Total by sexes..	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year...	45	38	14	19	70	36	9	8	...	...	...	1	380	269	1,730	1,252	683	423	303	191	2	1
1 year.....	10	14	6	5	8	2	1	1	...	...	...	...	354	248	1,730	1,252	683	423	303	191	2	1
2 years.....	...	...	...	...	3	1	2	...	...	...	...	...	9	8	...	...	...	...	...	...	...	...
3 years.....	3	...	...	...	2	1	...	...	...	...	...	...	6	2	...	...	...	...	...	...	...	...
4 years.....	1	...	...	...	2	1	...	...	...	...	...	...	1	6	...	...	...	...	...	...	...	...
5 to 9 years..	14	14	6	5	16	7	1	3	...	...	...	...	2	1	...	...	...	...	...	...	...	...
10 to 14 years..	1	2	...	...	10	7	1	3	...	...	...	...	3	1	...	...	...	...	...	...	...	...
15 to 19 years..	...	...	...	...	5	2	1	...	...	...	...	...	3	2	...	...	...	...	...	...	...	...
20 to 24 years..	3	1	...	...	9	5	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
25 to 29 years..	3	2	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30 to 34 years..	3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35 to 39 years..	1	3	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40 to 44 years..	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45 to 49 years..	3	3	2	3	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
50 to 54 years..	2	3	2	2	6	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55 to 59 years..	4	...	2	2	6	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
60 to 64 years..	2	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 to 69 years..	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
70 to 74 years..	1	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
75 to 79 years..	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
80 to 84 years..	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
85 yrs. and over	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colored.....	2	4	...	...	2	1	...	...	...	...	...	...	10	6	85	66	41	17	5	...	...	...
Chinese.....	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Japanese.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	1	...	...	...	...	...	...

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

Old Age.	EXTERNAL CAUSES.																						
	154		155		156		157		158		159		160		161		162		163		164		
Senile Debility.	Both Sexes.		Suicide by Poison.		Suicide by Asphyxia.		Suicide by Hanging or Strangulation.		Suicide by Submersion.		Suicide by Firearms.		Suicide by Cutting Instruments.		Suicide by Precipitation from Height.		Suicide by Crushing.		Suicide by Other Methods.		Poisoning by Food.		
	Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Total all ages..	289	59	281	84	20	108	35	70	11	2	13												
Total by sexes..	98	191	36	23	181	100	59	25	13	7	94	14	29	6	38	32	9	2	1	1	10	3	
Under 1 year.....
1 year.....
2 years.....
3 years.....
4 years.....
5 yrs. and over.....
5 to 9 years.....
10 to 14 years.....
15 to 19 years.....
20 to 24 years.....
25 to 29 years.....
30 to 34 years.....
35 to 39 years.....
40 to 44 years.....
45 to 49 years.....
50 to 54 years.....
55 to 59 years.....
60 to 64 years.....
65 to 69 years.....
70 to 74 years.....
75 to 79 years.....
80 to 84 years.....
85 yrs. and over.....
Colored.....	2	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinese.....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese.....

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

		EXTERNAL CAUSES—Continued.																					
		175		176		177A		177B		178		179		180		181		182		183		184	
		Deaths by Crushing Agencies, Wagons, etc.		Deaths by Animals Not Snakebites, Hydrophobia or Stings.		Physical Exhaustion.		Hunger and Thirst.		Excessive Cold.		Sunstroke.		Lightning.		Other Electrical Accidents.		Homicides by Firearms.		Homicides by Cutting or Piercing Instruments.		Homicides by Other Methods.	
		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
		1,074		9			4		11		4		22		177		39		109	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total all ages..		813	261	8	1	...	...	4	...	10	1	2	2	2	22	...	151	26	34	5	84	25
Total by sexes..		2	5	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	4	6
Under 1 year....		1	9	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	1	1
1 year.....		25	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 years.....		39	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 years.....		76	33	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...
4 years.....		185	56	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
5 to 9 years...		84	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 to 14 years..		48	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15 to 19 years..		43	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 to 24 years..		38	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25 to 29 years..		47	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30 to 34 years..		40	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35 to 39 years..		42	18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40 to 44 years..		48	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45 to 49 years..		31	18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
50 to 54 years..		31	16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
55 to 59 years..		27	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
60 to 64 years..		16	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65 to 69 years..		6	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
70 to 74 years..		4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
75 to 79 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
80 to 84 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
85 yrs. and over		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colored.....		12	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinese.....		1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese.....		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

		EXTERNAL CAUSE—Continued.										ILL DEFINED CAUSES									
		186A		186B		186C		186D		186E		186F		186G		187		188		189	
		Criminal Abortion.		Foreign Body in Larynx.		Explosions.		Other External Violences.		Shrapnel Wounds.		Salvarsan Poisoning.		Protein Poisoning.		Organic Lesions Not Defined.		Sudden Death.		Ill Defined Causes.	
		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.		Both Sexes.	
		50		23		16		33		2		9		1		...		...		69	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total by sexes..		38	7	13	10	13	3	27	6	2	...	3	6	1	...	...	...	...	...	38	31
Under 1 year....		1	1	2	3	...	...	2	1	...	...	...	...	...	...	...	...	...	...	5	14
1 year.....		...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	12	1
2 years.....		...	...	...	3	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	1
3 years.....		...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
4 years.....		...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
5 yrs. under 5 yrs.		1	2	...	2	...	...	5	1	...	...	...	...	1	...	...	...	...	20	15	
5 to 9 years....		1	1	2	1	1	...	3	1	...	...	...	1	...	...	...	...	...	...	...	1
10 to 14 years..		...	...	...	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...
15 to 19 years..		1	...	...	...	1	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...
20 to 24 years..		...	...	...	...	1	...	3	2	...	...	...	...	...	...	...	...	...	...	3	2
25 to 29 years..		3	...	...	...	2	1	2	1	...	...	...	...	...	...	...	...	...	...	3	3
30 to 34 years..		...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	3	3
35 to 39 years..		...	...	...	...	1	...	5	1	...	...	...	...	...	...	...	...	...	...	3	3
40 to 44 years..		5	...	...	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	1
45 to 49 years..		4	...	...	2	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	1
50 to 54 years..		4	1	4	4	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2
55 to 59 years..		2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
60 to 64 years..		...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
65 to 69 years..		...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
70 to 74 years..		3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
75 to 79 years..		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
80 to 84 years..		1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
85 yrs. and over		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colored.....		...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4
Chinese.....		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japanese.....		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3

BUREAU OF RECORDS

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

SUMMARY.

	I. General Diseases.		A. Tuberculous Diseases.		B. Cancer.		II. Diseases of the Nervous System and Organs of Sense.		III. Diseases of Circulatory System.		IV. Diseases of Respiratory System.		V. Diseases of Digestive System.		VI. Diseases of Genito Urinary System.		VII. Puerperal Diseases.		VIII. Diseases of the Skin and Cellular Tissue.		IX. Diseases of Locomotory System.	
	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	Both Sexes.	
Total all ages..	21,964	7,135	5,317	2,560	7,389	7,806	11,501	5,960	210	708	210	124	708	210	124	708	210	124	708	210	124	
Total by sexes..	11,193	4,211	2,924	1,393	1,167	1,167	6,055	3,234	2,726	2,986	1,341	2,986	1,341	2,986	1,341	2,986	1,341	2,986	1,341	2,986	1,341	
Under 1 year.....	684	78	4	115	77	41	1,372	1,104	1,004	28	13	13	13	13	13	13	13	13	13	13	13	
1 year.....	616	80	60	47	41	18	716	630	229	182	12	7	7	7	7	7	7	7	7	7	7	
2 years.....	304	268	50	32	22	10	232	197	61	78	9	6	6	6	6	6	6	6	6	6	6	
3 years.....	157	182	27	21	19	5	80	107	31	27	8	3	3	3	3	3	3	3	3	3	3	
4 years.....	149	134	21	21	15	12	48	45	27	24	1	2	2	2	2	2	2	2	2	2	2	
5 to 9 years.....	1,910	1,797	258	174	166	81	2,448	2,083	1,689	1,315	58	31	31	31	31	31	31	31	31	31	31	
10 to 14 years.....	357	325	77	59	56	75	1,192	1,004	67	62	16	18	18	18	18	18	18	18	18	18	18	
15 to 19 years.....	131	187	50	43	40	101	128	56	40	43	19	11	11	11	11	11	11	11	11	11	11	
20 to 24 years.....	554	442	209	303	34	90	1,038	1,12	100	63	44	17	30	30	30	30	30	30	30	30	30	
25 to 29 years.....	719	817	405	445	44	109	1,038	1,21	246	83	68	37	70	70	70	70	70	70	70	70	70	
30 to 34 years.....	810	681	456	428	40	95	154	289	367	90	78	53	92	92	92	92	92	92	92	92	92	
35 to 39 years.....	848	643	506	473	49	159	171	325	271	94	76	54	126	126	126	126	126	126	126	126	126	
40 to 44 years.....	779	674	436	407	58	257	242	335	219	122	80	96	154	154	154	154	154	154	154	154	154	
45 to 49 years.....	911	673	466	424	62	344	253	348	158	136	105	154	184	184	184	184	184	184	184	184	184	
50 to 54 years.....	974	584	386	336	84	68	533	594	286	181	165	130	185	240	240	240	240	240	240	240	240	
55 to 59 years.....	751	419	248	174	68	53	594	514	208	160	137	222	279	279	279	279	279	279	279	279	279	
60 to 64 years.....	521	281	146	102	87	52	538	421	215	143	119	133	161	161	161	161	161	161	161	161	161	
65 to 69 years.....	578	317	161	112	87	52	538	421	215	143	119	133	161	161	161	161	161	161	161	161	161	
70 to 74 years.....	528	275	141	86	90	99	556	356	173	116	93	116	133	133	133	133	133	133	133	133	133	
75 to 79 years.....	375	405	49	53	63	82	1,004	1,004	151	271	60	93	297	313	313	313	313	313	313	313	313	
80 to 84 years.....	217	250	29	51	63	83	831	151	63	63	229	231	231	231	231	231	231	231	231	231	231	
85 yrs. and over	94	113	7	12	15	26	46	368	581	149	29	25	138	151	151	151	151	151	151	151	151	
Colored.....	510	331	205	42	48	200	245	405	317	192	61	147	147	147	147	147	147	147	147	147	147	
Chinese.....	63	41	2	2	...	...	...	19	2	3	1	5	5	5	5	5	5	5	5	5	5
Japanese.....	11	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH

DEATHS BY SEX, AGE, AND CAUSE OF DEATH FOR YEAR ENDING DECEMBER 31, 1920—Continued.

SUMMARY—Continued.

X.	Malformations.		XI.		XII.		XIII.		A.		B.		C.		XIV.		Total Males.	Total Females.	Total Both Sexes.
	Both Sexes.	4,091	Both Sexes.	289	Both Sexes.	4,614	Both Sexes.	670	Both Sexes.	325	Both Sexes.	3,619	Both Sexes.	69	Both Sexes.	34,979				73,249
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Males.	Females.	Both Sexes.
Total all ages...	350	269	2,415	1,676	98	191	3,248	1,366	460	210	269	56	2,519	1,100	33	31	38,270	34,979	73,249
Total by sexes..	350	269	2,415	1,676	98	191	3,248	1,366	460	210	269	56	2,519	1,100	33	31	38,270	34,979	73,249
Under 1 year...	354	248	2,415	1,676	...	...	42	40	...	...	5	6	37	34	5	14	6,447	4,893	11,340
1 year.....	9	8	...	...	...	...	53	38	...	...	1	1	52	38	12	14	1,713	1,492	3,205
2 years.....	6	2	...	...	...	...	55	46	...	...	1	1	54	45	1	1	1,719	1,630	3,349
3 years.....	6	6	...	...	...	...	66	54	...	...	3	3	66	51	1	...	373	404	777
4 years.....	1	1	...	...	...	...	69	50	...	...	...	...	69	50	1	...	332	285	617
5 to 9 years...	372	265	2,415	1,676	...	...	285	228	...	...	7	10	278	218	20	15	9,584	7,704	17,288
10 to 14 years...	3	1	...	...	...	...	239	129	...	...	2	2	237	127	1	...	990	814	1,804
15 to 19 years...	3	2	...	...	...	...	197	40	...	...	1	1	193	30	1	...	575	528	1,103
20 to 24 years...	1	...	...	...	...	...	242	79	...	...	14	6	166	50	...	...	1,370	1,493	2,863
25 to 29 years...	1	...	...	...	...	...	274	90	...	...	32	22	188	54	3	...	1,575	1,846	3,421
30 to 34 years...	...	...	...	...	...	...	264	67	...	...	53	9	158	54	3	...	1,794	1,629	3,423
35 to 39 years...	...	...	...	...	...	...	285	91	...	...	44	4	170	43	3	...	2,058	1,629	3,687
40 to 44 years...	...	...	...	...	...	...	238	70	...	...	35	6	191	53	3	...	2,018	1,658	3,676
45 to 49 years...	...	...	...	...	...	...	234	82	...	...	17	4	164	45	2	...	2,496	1,590	4,086
50 to 54 years...	1	1	...	...	...	...	228	71	...	...	16	1	173	57	1	...	2,496	1,506	4,002
55 to 59 years...	...	...	...	...	...	...	173	61	...	...	10	3	167	54	2	...	2,703	2,053	4,756
60 to 64 years...	...	...	...	...	...	...	119	55	...	...	11	11	119	44	1	...	2,744	2,438	5,182
65 to 69 years...	...	...	...	...	...	...	119	55	...	...	2	2	99	52	...	...	2,900	2,766	5,666
70 to 74 years...	...	...	...	...	...	...	73	70	...	...	2	2	58	67	1	...	2,900	2,966	5,866
75 to 79 years...	...	...	...	...	...	...	34	53	...	...	...	...	...	...	...	...	1,442	1,709	3,151
80 to 84 years...	...	...	...	...	...	...	35	35	...	...	1	1	41	48	...	...	1,797	1,533	3,330
85 yrs. and over	...	...	...	...	...	...	23	26	...	...	...	...	19	26	...	...	495	1,838	2,333
Colored.....	10	6	126	83	2	5	116	47	12	1	28	7	76	39	4	3	1,631	1,533	3,214
Chinese.....	1	1	6	1	1	1	7	1	2	...	5	125	8	131
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