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The Anthrone Blood Sugar Method Adapted to Diabetes Case Finding in a Multiple Screening Program

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With the decrease in the incidence of communicable diseases, and the resulting extension of the average life span in the United States, greater attention has been focused recently on the degenerative conditions commonly encountered in older age groups. Statistics show that heart disease, cancer, cerebral hemorrhage, nephritis, arteriosclerosis, and diabetes account for over half the deaths in this country today (*1*). Public health authorities have in the last decade become increasingly aware that diabetes, conveniently placed in the class of degenerative diseases, should be regarded as a major public health problem (*2*).

Much data are available concerning the prevalence of diabetes, and this phase of the subject is not extensively reviewed; however, certain statistics stand out and should be emphasized. In 1935–36, the National Health Survey (*3*) found that approximately 367 out of 100,000 individuals were known to have diabetes. Based upon a study made in Oxford, Mass., in 1947 by the Diabetes Section of the Public Health Service, it was found that the prevalence of diabetes was 2 percent of the individuals tested (*4*). Recent statistics published by the Metropolitan Life Insurance Company (*5*) indicate that the onset rate of diabetes is such that 4,350,000 of our present population will eventually have the disease. It is common knowledge that the early discovery of diabetes is desirable for the successful control and treatment of the disease. With these facts in view, the Georgia Department of Public Health in conjunction with the State and local medical associations and the Public Health Service has embarked on a program of diabetes case finding.

In order that the greatest number of individuals with impaired carbohydrate metabolism be found, it was desirable that a simple, accurate, and rapid method for the determination of blood sugar be

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provided, one that could be easily adapted to Georgia's county-wide mass tuberculosis and venereal disease screening program (*6, 7*).

After study of some of the blood sugar methods available (*8–12*), it appeared that the anthrone method recently developed by Dreywood (*13*) and modified by Durham et al. (*14*) might be most suitable for our purposes. The latter authors have established the reliability of the method by recovery experiments with blood and also by correlation with the Nelson-Somogyi "true glucose" method (*11*). Their findings have been reproducible in our laboratory. Hence, we accept as trustworthy their statement that the anthrone method "fulfills at least two criteria for an acceptable quantitative procedure: It allows the practically complete recovery of glucose added to blood specimens; and it gives results comparable with those obtained by the use of a standard and generally accepted method. . . . (It) represents a rare combination of ease and rapidity of operation with high precision in results."

Field Studies and Results

In the fall of 1949, the first field trials of this screening test were carried out in Twiggs and Lowndes Counties in industries where routine chest X-ray and blood serology surveys had previously been scheduled. The additional blood and urine [1] survey procedures were merely superimposed on that program. The initial investigations entailed analyses of the blood and urine sugar concentrations of 749 individuals.

The primary objectives of these studies were to test the mechanical adaptability of the screening procedure for field work and to determine the maximum rate at which analyses could be carried out. It was found that a rate of 100 individuals examined per hour could be maintained in the field by three nurses performing the venipuncture and one technician pipetting the aliquots of blood into the tubes containing the trichloroacetic acid necessary for deproteinization.[2] The tubes were then shipped to a central testing laboratory for completion of the analyses. The results of these preliminary screening tests are given in table 1.

Fifty-six individuals in the Lowndes County investigation were notified by mail to report in a fasting condition for further study on a selected date. Fifty-three of these individuals had shown a blood sugar screening level of more than 150 milligrams percent (170 mg. percent has subsequently been selected as a screening level); the other three were called back solely because of sugar in the urine. Fifty-two

[1] Urinalyses by Clinitest method.

[2] This schedule is readily maintained by qualified and experienced personnel. In preparing for mass surveys, several trial runs are necessary to develop teamwork.

Table 1. *Results of preliminary screening tests for blood sugar*

Blood sugar ranges, mg percent	Number individuals	Percent of total
Below 70	2	0. 3
70–79	4	0. 5
80–89	12	1. 6
90–99	48	6. 4
100–109	127	17. 0
110–119	155	20. 7
120–129	159	21. 2
130–139	138	18. 4
140–149	49	6. 5
150–159	23	3. 1
160–169	13	1. 7
170–179	7	0. 9
180–189	4	0. 5
190–199	0	0. 0
200–above	8	1. 1
Total	749	100. 0

of the 56 individuals voluntarily reported for this glucose tolerance test. When they arrived at the testing station, personal case histories, as well as fasting blood and urine specimens, were obtained. This was followed by administration by mouth of 100 grams of glucose. Both blood and urine specimens were obtained at the end of 1- and 2-hour periods from the time the sugar was ingested. Of the 52 subjects who reported, 20 were found to have hyperglycemia. A summary of the findings obtained as a result of these glucose tolerance tests is presented in table 2.

Table 2. *Results of glucose tolerance tests*

Classification of findings of glucose tolerance tests	Number of individuals
1. Normal	27
2. Hyperglycemia with glycosuria	10
3. Hyperglycemia without glycosuria	10
4. Unclassified glycosuria without hyperglycemia	5

Of the 20 hyperglycemic individuals only 1 was previously known to have diabetes.

Ten of the subjects did not have sugar in the urine at any time during the sugar tolerance test. More information correlating urine and blood sugar values will be published in a separate report.

To date we have made no further study of the 20 individuals with hyperglycemia listed in table 2, nor the 5 individuals with glycosuria without hyperglycemia, all of whom appear to have some error in their carbohydrate metabolism. Each person has been referred to the physician of his choice for further study and diagnosis. Under these circumstances a positive diagnosis by us is unwarranted.

Further clinical investigation would be required to differentiate those cases due to other causes, such as hyperthyroidism, from the true cases of diabetes mellitus. Furthermore, it is anticipated that the findings from many thousands of examinations in mass case finding studies will soon be available which will give more significant data as to diabetes prevalence rates and trends.

Procedure

Preparation of Glassware

Clean 13-x 100-mm. pyrex test tubes for blood sugar and similar tubes for syphilis serology are serially numbered. The numbers are on labels [3] which have a pressure-sensitive adhesive back, making them transferable. The test tubes are placed in square cardboard boxes partitioned to hold 100. These are arranged from left to right in rows of 10 so that numbers 1 through 10 are on the first row, 11 through 20 on the second, etc. A label is attached to each box indicating the first and last serial numbers of the tubes contained therein.

The last two significant numbers are indicated in the box. The same box is used over and over again for any block of 100 serially numbered tubes. For example, the test tube serially numbered 57255 would be found in the box for tubes numbered from 57201 to 57300 in the position indicated as 55 in figure 1. Each time a box is filled a label is attached to it giving the lowest and highest serial numbers of the test tubes included.

An amount of 2.25 cc. of 5 percent trichloroacetic acid is then pipetted automatically into the boxed blood-sugar test tubes.[4] The numbered tubes are rubber stoppered and sent to the field station. Similar boxes containing syphilis serology tubes having corresponding numbers are sent with them.

Preparation and Storage of Reagents

The anthrone reagent, 0.2 percent, must be prepared from C. P. sulfuric acid (95 percent v/v) and twice recrystallized anthrone. The sulfuric acid used in this preparation should be at room temperature before admixture with the anthrone solid. Similarly, the prepared reagent should be used at room temperature.

Solutions of anthrone, if kept for several days, tend to darken slightly upon standing in the light at room temperature. For this reason, we have found it advisable to prepare at any one time only

[3] Prenumbered labels with pressure-sensitive adhesive backs may be obtained from Avery Adhesive Label Corporation, Monrovia, Calif.

[4] A Brewer pipetting machine equipped with Tygon tubing is satisfactory for pipetting trichloroacetic acid.

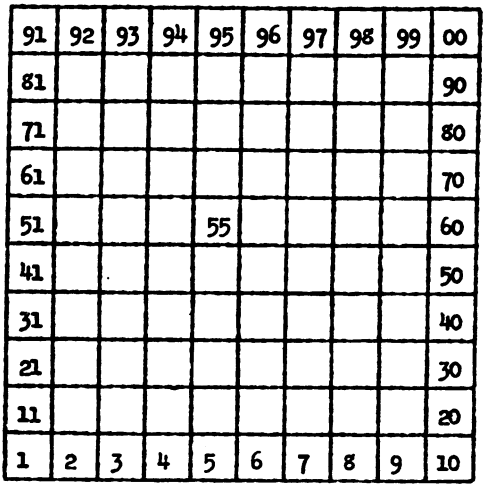

Figure 1. Square cardboard box for holding any block of 100 serially numbered test tubes.

the amount of solution required for one day's operations. This usually involves no more than 15 minutes of the laboratory supervisor's time.

Five percent trichloroacetic acid is prepared from the C. P. reagent and tap water. Inasmuch as the reagent slowly deteriorates at this strength, it is advisable to prepare a fresh supply for each week's work. In large mass survey work, a daily check should be made on the available number of tubes containing trichloroacetic acid in the central supply department. No tube containing trichloroacetic acid should be used in the field more than 2 weeks after its preparation.

Field Sampling

When the individual to be tested arrives at the field station, he is given an identification card and survey form. Both bear the same serial number corresponding to the prenumbered test tubes to be used as identification for all his tests. The survey form lists questions concerning personal history including the time of the last meal or snack.

By means of a Petroff needle, a 4- to 8-cc. sample of blood is collected from each individual and placed in the prenumbered serology tube bearing his serial number. Before a clot can form, a 0.25-cc. portion of the sample is transferred by pipette[5] to the prenumbered blood-sugar test tube containing trichloroacetic acid. The blood-sugar test tubes are then rubber stoppered, mixed well, and shipped to the central sugar-testing laboratory. Refrigeration of the samples, although desirable, is not essential.

[5] Development of an automatic quantitative transfer device in mass survey work is indicated to reduce the human error factor in rapid pipetting.

Final Analysis in Blood Sugar Laboratory

In the laboratory, the tubes are centrifuged for 5 minutes at approximately 2,500 rpm. The supernatant liquid is decanted as completely as possible from the precipitated proteins into a clean 13- x 100-mm. pyrex test tube. The numbered label is transferred to the new tube at the same time. Exact pipetting of the supernatant is not used, since it has been found that the variation in the volume of supernatant from specimen to specimen is very slight. To this solution, 5 cc. of anthrone reagent is added by means of a Krogh-Keys pipette. The tube is rubber stoppered and immediately inverted several times to insure proper mixing. The technicians performing this operation should wear rubber gloves as a protection against accidental thermal or chemical burns. After they have stood 15 minutes or longer, the same tubes may be read in a spectrophotometer or a photoelectric colorimeter at 620 millimicrons wave length. In our laboratory a Klett-Summerson photoelectric colorimeter with a light filter No. 62 is used. Glucose standards are run with each day's specimens, and with each new batch of anthrone reagent. It has been possible for two technicians to carry out more than 100 such determinations in 1 hour. (If only one test is being done at a time and the standards and reagents have been previously prepared, the entire procedure, from venipuncture to final colorimetric reading, can be performed by one technician in less than 30 minutes.) The readings are recorded on special laboratory forms. (See fig. 2.) In survey routine the exact sugar concentration is not recorded, but all individuals are classified in one of the following groups:

I. Less than 130 mg. percent of blood sugar
II. 130–169 " " " " "
III. 170–199 " " " " "
IV. 200 and over " " " " "

Disposal of Waste Sulfuric Acid

For mass survey operations the disposal of the large amounts of strong sulfuric acid used in this procedure can create quite a problem, especially if it is compulsory to flush the acid down the drain. Neutralization appeared to us to be the method of choice for such work, and for this task we constructed a large lead-lined vat provided with a series of baffles into which the sulfuric acid was dumped. For neutralization purposes the best agent that we have used has been 58 percent light soda ash. An attempt to use crushed limestone for this failed.

Personnel Required and Their Duties

The personnel required and the duties of each for laboratory determinations at the rate of 1,000 per hour are summarized in the flow chart

First Number 107601 Station 10 Date Jan. 10, 1950 Curve No. 2

No.	Col. Reading	Mg. % Sugar	Group	No.	Col. Reading	Mg. % Sugar	Group	No.	Col. Reading	Mg. % Sugar	Group	No.	Col. Reading	Mg. % Sugar	Group
1			1	26			1	51			3	76			1
2			1	27			1	52			1	77			1
3			2	28			4	53			1	78			1
23			1	48			2	73			1	98			1
24			1	49			1	74			2	99			1
25			N.S.	50			1	75			1	100			1

GROUP 1 90 GROUP 3 2 No Sample 1

GROUP 2 6 GROUP 4 1 Sample Lost 0

TOTAL 96 TOTAL 3 Colorimeter Number 3

John Doe
SIGNATURE TECHNICIAN

Figure 2. Sample laboratory form for use in a diabetes survey.

(fig. 3). Each operation is indicated together with the number of people required. For operations in which the number of determinations per hour is less than 1,000, the personnel requirements may be reduced proportionately. In smaller scale studies, for instance, it has been found that two technicians and one dishwasher may readily perform 100 complete laboratory analyses per hour. The supervisor, two clerks, and janitor required in large-scale studies (1,000 per hour) are not shown on the flow chart.

Summary and Conclusions

The adaptation of the anthrone blood sugar test for diabetes mellitus to mass case finding survey techniques is described. The procedure is sufficiently simple and rapid to enable three individuals performing venipuncture and one technician pipetting to collect specimens at a rate of more than 100 per hour and to enable two technicians in the laboratory to carry the determinations to completion at the same rate. The anthrone method has the further advantages of being quantitatively accurate for any follow-up diagnostic interpretations and a single test can be easily performed in a small laboratory by one technician in 30 minutes.

Detailed data are given as to the procedure, preparation of glassware, field sampling, final analyses in the laboratory, personnel required, equipment, and reagents needed, and a sample laboratory record form.

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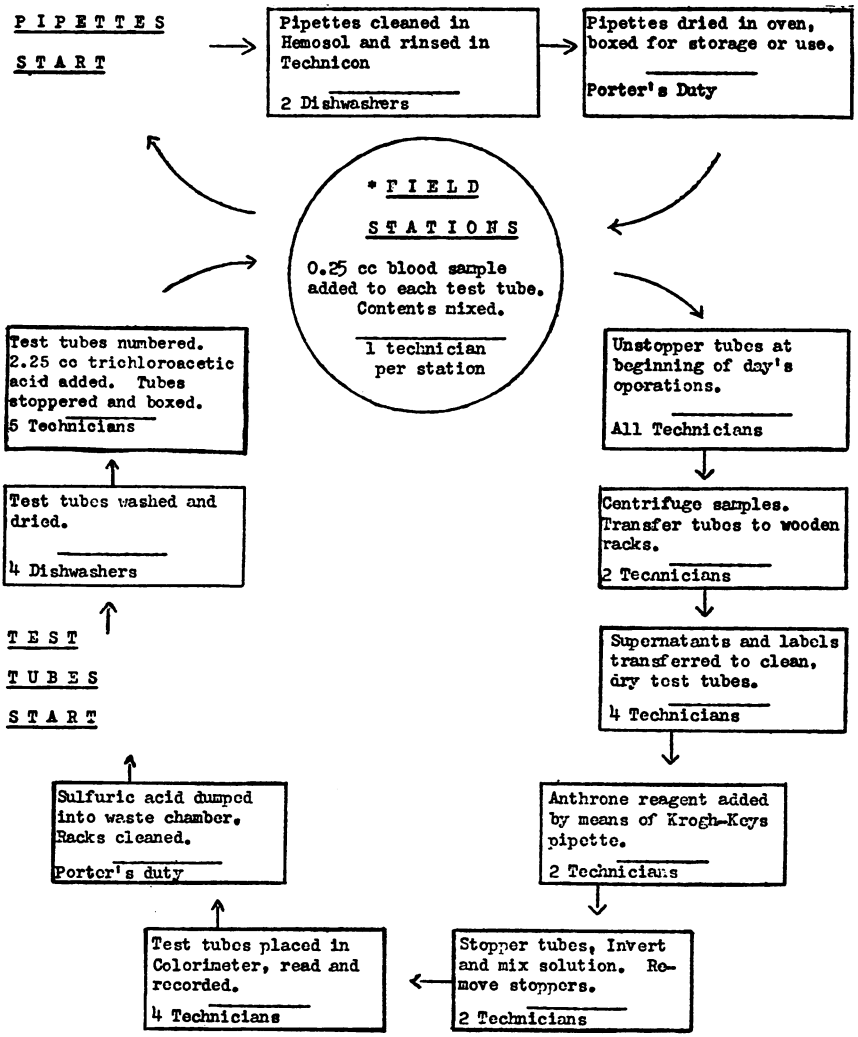

* Nurses (or other technicians) to draw the blood at the field station are not shown. Flow Chart of field station procedure for multiphasic health screening surveys may be obtained from the Georgia Department of Public Health, Atlanta 3, Georgia.

Figure 3. Personnel required and the duties of each for laboratory determinations at the rate of 1,000 per hour.

This information is given for handling of 100 and 1,000 blood sugar analyses per hour.

Seven hundred and forty-nine individuals were screened for abnormalities in their sugar metabolism. Follow-up glucose tolerance tests were run on 52 of these individuals and hyperglycemia was found in 20. Simultaneous urine sugar determinations were negative in 10 of the 20.

These findings have persuaded us to abandon the urine sugar test

in favor of the anthrone blood sugar test as a mass survey screening procedure.

ACKNOWLEDGMENT

The authors gratefully acknowledge the valuable assistance of Miss Lucy Lester and Mrs. Jeanne Bynum of the laboratory of the Division of Industrial Hygiene, Georgia Department of Public Health, as well as of Dr. E. E. Mandel and the personnel from the Laboratory of Clinical Pathology, Communicable Disease Center, Public Health Service. Much valuable criticism has been provided by Dr. George T. Lewis and the staff at the Biochemistry Department of Emory University, Emory University, Ga.

REFERENCES

(*1*) Current Mortality Analysis. National Office of Vital Statistics, Federal Security Agency, Washington, D. C., 1948, vol. 6, No. 13.

(*2*) Wilkerson, H. C. L.: Diabetes control in the public health program. New York J. Med. **49:** 2945 (1949).

(*3*) National Health Survey, 1935–1936: The Magnitude of the Chronic Disease Problem in the United States, Bulletin 6, Sickness and Medical Care Series Public Health Service, 1938.

(*4*) Wilkerson, H. C. L. and Krall, L. P.: Diabetes in a New England town, J.A.M.A. **135:** 209 (1947).

(*5*) Metropolitan Life Insurance Company: Progress in Diabetes, 1949, p. 5.

(*6*) Bowdoin, C. D.: Mass blood testing in eight Georgia communities. J. Ven. Dis. Inform. **29:** 126 (1948).

(*7*) Petrie, L. M.: What we expect from X-ray programs. Transactions of the Forty-third Annual Meeting of the National Tuberculosis Association, 1947, p. 175.

(*8*) Hagedorn, H. C., Halstrom, F., and Jensen, B. N.: Swift Methods for Determination of Blood Sugar by Means of Potassium Ferricyanide. Niels Stiensen's Hospital. Rep. Steno Mem. Hosp. and Nordisk Insulinlaboratorium (Copenhagen), **1:** 29 (1946).

(*9*) Wilkerson, H. C. L. and Heftmann, E.: Screening method for blood glucose. J. Lab. and Clin. Med. **33:** 236 (1948).

(*10*) Mandel, E. E. and Lehmann, E. B.: Simple test for the approximate estimation of blood creatinine and glucose in one procedure. J. Lab. and Clin. Med. **34:** 720 (1949).

(*11*) Nelson, N.: A photometric adaptation of the Somogyi method for the determination of glucose. J. Biol. Chem. **153:** 387 (1944).

(*12*) Somogyi, M.: Determination of blood sugar. J. Biol. Chem. **160:** 69 (1945).

(*13*) Dreywood, R.: Qualitative test for carbohydrate material. Indust. & Engin. Chem. (Analyt. Ed.) **18:** 499 (1946).

(*14*) Durham, W. F., Bloom, W. L., Lewis, G. T., and Mandel, E. E.: Rapid measurement of carbohydrate in blood. Pub. Health Rep. **65:** 670 (1950).

(*15*) Morris, D. L.: Quantitative determination of carbohydrates with Dreywood's anthrone reagent. Science **107:** 254 (1948).

(Appendix table follows)

APPENDIX

Equipment and reagents needed for diabetes testing on a mass survey. All items are listed in amounts needed for 7-hour working days in an extended program when the analyses are performed at the rate of 100 and 1,000 per hour.

Item	Amount needed	
	100 detms. per hr.	1,000 detms. per hr.
Equipment:		
Dispensing machine for numbered labels	1	4.
Test tube boxes, cardboard 9" x 9" x 5¾" partitioned (No. 40 chipboard) for 100 test tubes.[1]	18	180.
Pipetting machine for trichloroacetic acid	1	1.
Rubber stoppers for test tubes (size 00 solid)	4,000	40,000.
100-place test tube racks (wooden)	5	50.
Centrifuge (accommodating 128 tubes)	1	2.
Krogh-Keys pipette (for anthrone)	1	4.
Wire baskets, 6" x 6" x 4½", cadmium plated, clamp hinged cover	10	100.
Klett-Summerson colorimeter	1	4.
No. 62 filter for colorimeter	1	4.
Pipette washing machine (Technicon)	1	3.
Technicon baskets (extra)	2	12.
Bucket[2] containing Hemosol solution for dirty pipettes (field station)	2	20.
Emergency stall shower	1	1.
Triple beam balance	1	1.
Analytical balance	1	1.
Needle pan[2]	1	2.
Petroff needles	2,000	20,000.
Tourniquets[2]	3	30.
Forceps[2]	1	2.
Glassware:		
Pipettes,[1] 1 cc. graduated	1,600	16,000.
Test tubes[1]	4,800	48,000.
Micro-burette for glucose standards	1	1.
Volumetric flask for glucose standards	2	2.
Carboy, 5-gallon capacity for anthrone	1	3.
Carboy, 12-gallon capacity for trichloroacetic acid	1	1.
Syphons for carboys	2	4.
Graduated cylinder, 2-liter capacity	1	1.
Beakers, assorted		
Supplies:		
Numbered labels	700	7,000.
Hemosol	¼ lb.	1½ lb.
Rubber gloves	6 pairs	6 doz. pairs.
Rubber aprons	3	27.
Data sheets (100 determinations per page)	7	70.
Identification cards	700	7,000.
Cotton balls	700	7,000.
Alcohol		
Reagents:		
Trichloroacetic acid (5 percent)	1,575 cc.	15,750 cc.
Anthrone,[3] (0.2 percent in cold 95 percent H_2SO_4 concentration)	3,500 cc.	35,000 cc.
Sodium bicarbonate for possible skin burns	1 lb.	1 lb.
Glucose	¼ lb.	¼ lb.
Benzoic acid	1 lb.	1 lb.
Miscellaneous:		
Lead lined bath for disposal of waste sulfuric acid—58 percent light soda ash.	1	1.

[1] An excess of these items is required since one set is at the field station while another is at the laboratory being prepared for delivery to the field station. A small supply should be available for breakage and any delays in transit.

[2] These items should be distributed among the field stations in proportion to the expected rate at which the blood samples are to be collected. At least one of each of these items should be provided for each field station even if it means an increase in the total number of items.

[3] Because of the present difficulty in obtaining chemically pure anthrone, we made our supply by the method described by D. L. Morris (*15*). However, the production of large quantities is too great an undertaking for the average laboratory and it is suggested that a chemical house be requested to manufacture a reagent grade anthrone.

Toward Better Training and Services in Medical Nutrition

By Charles Glen King*

The science of nutrition has advanced with remarkable rapidity during the last two decades, and the public is intensely aware of the fact that food is an important factor in public health as well as a major item in family budgets.

Agricultural life is increasingly guided by the science of foods and the interrelationship of foods, soil, and health.

Every alert farmer can see the striking effect of mineral elements and organic mulches upon the productivity of his soil. The farmer's family can see with equal clarity the effects of vitamin D, mineral elements, such as iodine, and choice animal proteins, such as milk and meat scrap, upon the growth of farm animals.

No less striking has been the growth of applied nutrition science in the food manufacturing industry and within the chemical industry.

The gains in public health and in an improved national economy that have resulted from these advances can scarcely be challenged. They are too well known.

Neither can the medical profession escape responsibility for leadership in bringing the results of basic research in nutrition to the service of general practice in medicine and in protective measures to conserve public health.

As schools of medicine and public health have increased their teaching and research in biochemistry, physiology, pediatrics, obstetrics, dietetics, nursing, and general measures to protect public health, there has been a natural and substantial need for developing in each institution a division or department in which primary emphasis is placed upon medical nutrition. Further developments of this nature are of urgent importance and should represent opportunities of outstanding attractiveness for young medical scientists. It is axiomatic that such academic posts should be characterized by emphasis upon both basic and clinical research, as well as upon teaching and active participation in professional societies.

Similarly, in schools of agriculture and in the graduate divisions of chemistry and the biological sciences in nearly all of the leading universities, there has been a steady growth in the research and teaching activities pertaining to human and animal nutrition—both from a

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basic science point of view and in terms of specific training for careers in agriculture, in the food industry, in many related government agencies, and in the manufacture of biological products, such as yeast and antibiotics. Nearly all of the larger food manufacturers now maintain extensive research and development laboratories in which nutrition scientists find attractive opportunities. And in the chemical industry, the manufacture of antibiotics headed the list of pharmaceutical products in 1949, followed by vitamin manufacture as a close second. Recognition of this vigorous trend is shown by the introduction this year of newly organized professional training programs in biochemical engineering at the Massachusetts Institute of Technology and at Columbia University.

In 1950, it is already evident that the manufacturers of antibiotics and vitamins have found common ground in the feeding of vitamin supplements and antibiotic concentrates to poultry and livestock. Apparent practical gains in growth and health have resulted in feeding the products to turkeys, chickens, and pigs. It is too early to evaluate the practical significance of such developments, but it is very likely that they will expand fairly rapidly, first in animal feeding, then by diligent efforts to introduce the supplements into the human food supply.

The public generally is intensely interested in the rapid advances demonstrating complex and far-reaching relationships of food practices to health. This response on the part of the public, leaders of industry, government officials, and administrative officers in the universities creates a demand for well-informed medical advice and leadership beyond the range of information generally available from medical specialists in other fields. There is good reason to believe that this trend will continue into the future with increased rather than lessened emphasis.

Throughout the different sections of the United States there is unmistakable evidence that leaders in agriculture, education, industry, and public health see the need for special training of young medical personnel to meet the opportunities and responsibilities that are already at hand. Hence, it is a matter of first-rate importance that in each section of the country there should be well-organized, vigorous programs of training and research in schools of medicine and public health. Such programs are needed not only to provide the training that is desired by medical personnel but also to provide recognized centers as focal points where reliable counsel and advice is available to all of the groups who have a major stake in the production, distribution, and use of foods, in maintaining adequate education of the public, and in the broader aspects of civic administration for the protection of public health.

Until there is adequate leadership on the part of the medical

profession, there will be wasteful practices and needless sacrifices of public health, in part, as a result of the public turning to incompetent sources of guidance and, in part, through failure to develop appreciation of the importance of food practices in protecting health and in building a sound over-all economy.

The Department of Agriculture has developed relatively strong and comprehensive programs of research and education, channeled primarily through the State agricultural colleges, experiment stations, and extension services. State and municipal departments of health have also made important contributions to public education, particularly in city areas where the Department of Agriculture has given less emphasis to its program. But these agencies and many industrial and private organizations would gain from having available within each area physicians who are recognized for their leadership and special interest in the field of nutrition. These individuals could exert a strong and stabilizing influence in educational measures by participation in the programs and conferences of many organized groups in their respective areas. Another fruitful channel of public service lies in the opportunity to keep the medical profession itself well informed and interested in food practices that are of primary importance.

The recent appointment of consultants in medical nutrition to the Office of the Surgeon General of the Public Health Service represents an outstanding accomplishment toward developing the kind of leadership that is needed.

PUBLIC HEALTH SERVICE PUBLICATIONS

January–June 1950

The purpose of this list is to provide a complete and continuing record of Public Health Service publications for reference use by librarians, scientists, researchers, and others interested in public health work, and not to offer the publications for indiscriminate free distribution.

Single sample copies of most of the publications listed are available from the Public Inquiries Branch, Division of Public Health Methods, Public Health Service, Washington 25, D. C.

For quantities of any of these publications, except the statistical reports of the National Office of Vital Statistics, order from the Government Printing Office, where they are available at the prices shown, with a 25 percent reduction on orders of 100 or more copies of any single publication. The statistical reports of the National Office of Vital Statistics can be obtained only by writing to the National Office of Vital Statistics, Public Health Service, Washington 25, D. C.

PERIODICALS

*Public Health Reports (weekly), January–June, vol. 65, Nos. 1–26, pages 1–850. 10 cents a copy. Subscription price $4 a year.

*Extracts from Public Health Reports (monthly), January–June, Tuberculosis Control Issues Nos. 47–52. Average 30 pages each. 10 cents a copy. Subscription price $1 a year.

*The Journal of Venereal Disease Information (monthly), January–June, vol. 31, Nos. 1–6, pages 1–171. 10 cents a copy. Subscription price 75 cents a year. (Price changed July 1950 to 15 cents a copy; subscription price $1.25 a year.)

*Journal of the National Cancer Institute (bimonthly), February–June, vol. 10, Nos. 4–6, pages 809–1400. $1.50 a copy. Subscription price $8 a year.

Public Health Engineering Abstracts (monthly), January–June, vol. XXX, Nos. 1–6. 32 pages each. No sales stock.

*Industrial Hygiene Newsletter (monthly), January–June, vol. 10, Nos. 1–6. 16 pages each. 10 cents a copy. Subscription price $1 a year.

National Negro Health News (quarterly), January–March; April–June, vol. 18, Nos. 1 and 2. 28 and 24 pages. No sales stock.

CDC Bulletin (monthly), January–June, vol. IX, Nos. 1 to 6. No sales stock.

REPRINTS FROM PUBLIC HEALTH REPORTS

2989. Studies of the action of sodium fluoride on human enamel by electron microscopy and electron diffraction. By Davis B. Scott, Robert G. Picard, and Ralph W. G. Wyckoff. January 13, 1950. 14 pages; 13 illustrations. 5 cents.

*Subscriptions to this periodical can be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

2990. Serological survey for murine typhus infection in southwest Georgia animals. By Harvey B. Morlan, Elmer L. Hill, and Joseph H. Schubert. January 13, 1950. 8 pages. 5 cents.

2991. Effects of DDT mosquito larviciding on wildlife. IV. The effects on terrestrial insect population of routine larviciding by airplane. By Harvey I. Scudder and Clarence M. Tarzwell. January 20, 1950. 17 pages; 2 illustrations. 10 cents.

2992. Q fever—An epidemiological note. By Edward A. Beeman. January 20, 1950. 5 pages. 5 cents.

2993. Statistics on clinical services to new patients in medical groups. By Antonio Ciocco, G. Halsey Hunt, and Isidore Altman. January 27, 1950. 17 pages. 10 cents.

2994. Polyvalent *Salmonella* "H" agglutination as a rapid screening test for *Salmonella* organisms. By A. A. Hajna and S. R. Damon. January 27, 1950. 4 pages. 5 cents.

2995. Estimates of disabling illness prevalence in the United States. Based on the February 1949 current population survey. By Theodore D. Woolsey. February 10, 1950. 22 pages. 10 cents.

2996. Promacetin in the treatment of leprosy. Progress report. By Frederick A. Johansen, Paul T. Erickson, Rolla R. Wolcott, William H. Meyer, Herman H. Gray, B. M. Prejean, and Sister Hilary Ross. February 17, 1950. 13 pages; 2 illustrations. 10 cents.

2997. Eight new *Salmonella* types. By James Watt, Thelma DeCapito, P. R. Edwards, G. J. Hermann, and Alice B. Moran. February 17, 1950. 9 pages. 5 cents.

2998. Effects of DDT mosquito larviciding on wildlife. V. Effects on fishes of the routine manual and airplane application of DDT and other mosquito larvicides. By Clarence M. Tarzwell. February 24, 1950. 25 pages; 2 illustrations. 10 cents.

2999. A method to determine levels of immunization, medical, and nursing services in prenatal and infant care. By Roscoe P. Kandle and Henry Goetz. March 10, 1950. 16 pages. 10 cents.

3000. Activities of a mental health nurse. By Adele L. Henderson. March 10, 1950. 6 pages. 5 cents.

3001. Seasonal changes in abundance of fleas on rats at Baltimore, Md. By James Yeh and David E. Davis. March 10, 1950. 6 pages. 5 cents.

3002. Malaria control in Iran. Résumé of reports made by Dr. Justin M. Andrews and Lawrence B. Hall. By Miriam Ziony. March 17, 1950. 17 pages. 10 cents.

3003. Field test of the efficiency of the rodenticide compound W. A. R. F. 42. By Martin W. Schein. March 17, 1950. 5 pages. 5 cents.

3004. Principles on the education and utilization of sanitary engineers. March 17, 1950. 2 pages. 5 cents.

3005. Recovery of *Brucella melitensis* from the hog. By S. R. Damon and J. H. Scruggs. March 17, 1950. 1 page. 5 cents.

3006. Siberian tick typhus. Relation of the Russian strains to *Rickettsia prowazeki*. By T. T. Crocker, B. L. Bennett, E. B. Jackson, M. J. Snyder, J. E. Smadel, R. L. Gauld, and M. K. Gordon. March 24, 1950. 12 pages. 5 cents.

3007. Q fever studies in southern California. XI. Recovery of *Coxiella burnetii* from milk of sheep. By W. L. Jellison, H. H. Welsh, B. E. Elson, and R. J. Huebner. March 24, 1950. 5 pages. 5 cents.

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3009. Nutrition programs in State health departments. By a subcommittee of the Committee on Diagnosis and Pathology of Nutritional Deficiencies. March 31, 1950. 36 pages. 15 cents.

3010. Effect of concentration and reaction (pH) on the germicidal activity of chloramine-T. By George R. Weber. April 14, 1950. 10 pages. 5 cents.

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3012. Colorado tick fever. Isolation of virus strains by inoculation of suckling mice. By J. W. Oliphant and R. O. Tibbs. April 14, 1950. 2 pages. 5 cents.

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3030. New *Salmonella* type: *Salmonella duval*. By P. R. Edwards and Mary G. West. June 30, 1950. 1 page. 5 cents.

1697. The control of communicable diseases in man. Report of a Committee of the American Public Health Association. Revised 1950. 159 pages. 40 cents.

SUPPLEMENTS TO PUBLIC HEALTH REPORTS

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HEALTH INFORMATION SERIES

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Annual Report of the Public Health Service for the fiscal year 1949. 1950. 173 pages. 40 cents.

UNNUMBERED PUBLICATIONS

An index of tumor chemotherapy. A tabulated compilation of data from the literature on clinical and experimental investigations. By Helen M. Dyer. March 1949. 329 pages. No sales stock.

The challenge of cancer. By Lester Grant. 1950. 116 pages. 55 cents.

A teaching guide to the challenge of cancer. 1950. 19 pages. 15 cents.

Patients in mental institutions, 1947. Prepared by Charles C. Limburg. 1950. 113 pages. 50 cents.

Notifiable diseases, year 1947. Reprint from Public Health Reports, March 19, 1948. 6 pages. 10 cents.

Tuberculosis case finding in general hospitals. By Zella Bryant. Extract from Tuberculosis Control Issue No. 52 of Public Health Reports, June 2, 1950. 14 pages. No sales stock.

The human heart. By N. S. Haseltine. 1950. 22 pages, illustrated. 15 cents.

National Negro Health Week Bulletin. Thirty-sixth observance, April 2–9, 1950. 4 pages; illustrated. No sales stock.

National Negro Health Week Leaflet. Thirty-sixth observance, April 2–9, 1950. 2 pages. No sales stock.

National Negro Health Week Poster. Thirty-sixth observance, April 2–9, 1950. No sales stock.

Communicable Disease Center—1948–1949 activities. 1950. 86 pages. No sales stock.

REPRINTS FROM THE JOURNAL OF VENEREAL DISEASE INFORMATION

381. The practitioner and the antibiotic age of venereal disease control. By John H. Stokes. January 1950. 14 pages. 5 cents.
382. The health department and private physician team in venereal disease control. By W. Elwyn Turner. January 1950. 4 pages. 5 cents.
383. Darkfield microscopy: Some principles and applications. By Frank W. Reynolds and Edwin N. Hesbacher. January 1950. 8 pages; 6 illustrations. 10 cents.
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386. The control of congenital syphilis: Prevention and case finding. By C. D. Bowdoin and Jack J. Jolly. February 1950. 4 pages. 5 cents.
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VENEREAL DISEASE FOLDERS

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REPRINTS FROM JOURNAL OF THE NATIONAL CANCER INSTITUTE*

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201. Inhibition of mammary-gland development and mammary-tumor formation in female C3H mice following ingestion of thiouracil. By Celia S. Dubnik, Harold P. Morris, and Albert J. Dalton. February 1950. 26 pages: 9 plates.

202. Effect of ultrasonic vibration on the formed elements of blood from normal and leukemic subjects. By Patrice L. Morrow, Howard R. Bierman, and Robert Jenkins. February 1950. 16 pages; 3 plates.

203. Mammary tumor-agent in the sperm of high-cancer-strain male mice. By O. Muhlbock. February 1950. 5 pages.

204. Production of malignancy *in vitro*. IX. Description of cells at the fluid interface of the culture. By Wilton R. Earle, Edward L. Schilling, and Emma Shelton. February 1950. 16 pages; 5 plates.

205. Use of perforated cellophane substrate in slide preparation tissue cultures. By Edward L. Schilling, Wilton R. Earle, and Virginia J. Evans. February 1950. 8 pages; 2 plates.

206. Note on the lack of progressive growth of metastatic mammary carcinoma transplanted subcutaneously into foreign strains of mice. By Richmond T. Prehn. February 1950. 2 pages.

207. Response of mammary-tumor-agent-free strain DBA female mice to percutaneous application of methylcholanthrene. By Howard B. Andervont and Thelma B. Dunn. February 1950. 31 pages; 4 plates.

208. Induction of hemangio-endotheliomas and sarcomas in mice with *o*-aminoazotoluene. By Howard B. Andervont. February 1950. 15 pages.

209. Extension of cellophane substrate procedure to growth of *in vitro* cultures of large areas. By Wilton R. Earle, Virginia J. Evans, and Edward L. Schilling. February 1950. 25 pages; 9 plates.

210. Intracellular distribution of enzymes. VI. The distribution of succinoxidase and cytochrome oxidase activities in normal mouse liver and in mouse hepatoma. By Walter C. Schneider and George H. Hogeboom. February 1950. 7 pages.

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211. Intracellular distribution of enzymes. VII. The distribution of nucleic acids and adenosinetriphosphatase in normal mouse liver and mouse hepatoma. By Walter C. Schneider, George H. Hogeboom, and Helen E. Ross. February 1950. 6 pages.

212. Intracellular distribution of enzymes. VIII. The distribution of diphosphopyridine nucleotide-cytochrome C reductase in normal mouse liver and mouse hepatoma. By George H. Hogeboom and Walter C. Schneider. February 1950. 5 pages.

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214. Mucolytic enzyme systems. XII. Hyaluronidase in human and animal tumors, and further studies on the serum hyaluronidase inhibitor in human cancer. By Lawrence B. Kiriluk, Arnold J. Kremen, and David Glick. February 1950. 8 pages.

NATIONAL OFFICE OF VITAL STATISTICS PUBLICATIONS*

Current Mortality Analysis (monthly), vol. 7, Nos. 9–12, 1949; vol. 8, Nos. 1–3, 1950.

Monthly Marriage Report (marriage licenses issued in major cities), vol. 3, Nos. 11–13, 1949; vol. 4, Nos. 1–4, 1950.

Monthly Vital Statistics Bulletin, vol. 12, Nos. 11–13, 1949; vol. 13, Nos. 1–4, 1950.

Weekly Mortality Index, vol. 20, Nos. 52–53, 1949; vol. 21, Nos. 1–25, 1950.

Weekly Morbidity Report, vol. 1, Nos. 1–24, 1950.

Communicable Disease Summary, weeks ending Jan. 7–June 17, 1950.

VITAL STATISTICS—SPECIAL REPORTS, VOL. 33, SELECTED STUDIES

No. 4. Generation Reproduction Rates. 63–68 pages.

No. 5. Illegitimate Births, 1938–1947. 69–106 pages.

No. 6. Registration of Vital Events Among Indians. 107–126 pages.

VITAL STATISTICS—SPECIAL REPORTS, VOL. 34, STATE SUMMARIES

Nos. 1–29, Alabama–New Jersey. 1–522 pages.

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No. 3. Marriages: United States, each State and county, 1948. 19–42 pages.

No. 4. Summary of Mortality Statistics: United States, 1948. 43–50 pages.

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No. 6. Deaths and Death Rates for Selected Causes: United States, each Division and State, 1948. 59–74 pages.

No. 7. Births by Person in Attendance: United States, each Division and State, 1948. 75–88 pages.

No. 8. Deaths from Selected Causes for 92 Major Cities in the United States, 1948. 89–106 pages.

No. 9. Marriage Statistics: Specified States, 1948. 107–128 pages.

No. 10. Births by Age of Mother, Race and Birth Order, United States, 1948. 129–144 pages.

No. 11. Deaths and Crude Death Rates for Each Cause: United States, 1946–1948. 145–160 pages.

*Available only from the National Office of Vital Statistics, Public Health Service, Washington 25, D. C.

Incidence of Disease

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

Reports from States for Week Ended December 2, 1950

Measles. For the current week 2,515 cases of measles were reported as compared with 2,026 cases for the previous week. The total number reported since the season low point (September 2) is 15,243 as compared with 10,561 for the corresponding period in 1949.

Tularemia. There were 23 cases of tularemia reported for the current week compared with an average of 9 for the 4 previous weeks.

Other Diseases. Four cases of smallpox, 1 in Ohio and 3 in Kentucky, were reported for the current week. There were 1,931 cases of whooping cough reported for the current week compared with 1,640 for the previous week. A slight increase in the number of poliomyelitis cases was reported, 598 for the current week. The total number for the "disease" year is 30,858 as compared with 40,529 for the same period last year.

Comparative Data For Cases of Specified Reportable Diseases: United States

[Numbers after diseases are International List numbers, 1948 revision]

Disease	Total for week ended—		5-year median 1945–49	Seasonal low week	Cumulative total since seasonal low week		5-year median 1944–45 through 1948–49	Cumulative total for calendar year		5-year median 1945–49
	Dec. 2, 1950	Dec. 3, 1949			1949–50	1948–49		1950	1949	
Anthrax (062)	------	4	(1)	(1)	(1)	(1)	(1)	42	51	(1)
Diphtheria (055)	145	211	315	27th	2,441	3,620	4,923	5,569	7,388	11,220
Acute infectious encephalitis (082)	18	4	5	(1)	(1)	(1)	(1)	933	720	597
Influenza (480–483)	2,560	2,142	2,492	30th	24,993	20,626	22,196	271,252	96,493	164,725
Measles (085)	2,515	1,619	2,277	35th	[2] 15,243	10,561	14,873	[2] 303,414	599,079	578,346
Meningococcal meningitis (057.0)	60	79	79	37th	661	653	653	3,460	3,169	3,184
Pneumonia (490–493)	1,443	1,599	------	(1)	(1)	(1)	(1)	[2] 74,697	71,467	------
Acute poliomyelitis (080)	598	433	261	11th	[3] 30,858	40,529	24,055	[3] 31,989	41,442	24,522
Rocky Mountain spotted fever (104)	------	------	------	(1)	(1)	(1)	(1)	451	558	555
Scarlet fever (050)	1,158	1,340	1,730	32d	10,479	11,389	14,763	50,649	69,055	76,164
Smallpox (084)	4	1	1	35th	11	6	9	37	47	156
Tularemia (059)	23	15	26	(1)	(1)	(1)	(1)	825	1,018	899
Typhoid and paratyphoid fever (040, 041) [4]	51	48	53	11th	2,745	3,198	3,198	3,254	3,686	3,686
Whooping cough (056)	1,931	2,026	2,026	39th	14,997	14,727	15,628	112,192	61,329	91,503

[1] Not computed.
[2] Additions: West Virginia, week ended November 25, measles, 28 cases and pneumonia, 3.
[3] Addition: Iowa, delayed report, 32 cases. Deduction, Michigan, week ended September 16, 1 case.
[4] Including cases reported as salmonellosis.

Reports of Epidemics

Food-borne gastro-enteritis. Dr. A. L. Gray, State Board of Health, has reported an outbreak of acute gastro-enteritis in Mississippi, which occurred in a city with a population of 40,000. There were 18 cases with onset of illness between September 16 and 25, inclusive. The illness was characterized by sudden onset with nausea, vomiting, abdominal pain, and diarrhea lasting for a period of from 6 to 28 hours. The incubation period ranged from 6½ to 30 hours (median 19 hours). Investigation revealed that a cream-filled pastry was the vehicle of transmission. Although the outbreak was first regarded as food poisoning from staphylococcus contamination which originated from lesions on a baker's hands, further studies suggested that the causative agent was a member of the enteric group of organisms. However, no specimens of food were available for bacteriological examination.

Trichinosis. Dr. W. R. Geidt, Washington State Department of Health, has reported an outbreak of trichinosis consisting of 13 cases in Seattle. The vehicle of infection was thought to be sausage made late in October from hogs shipped from West North Central States. The onset of cases was early in November. Diagnosis was confirmed clinically and by muscle biopsy in one case. The routine processing of meat was considered to be satisfactory.

Keratoconjunctivitis. A follow-up report by Dr. Saxvik, State Health Officer, on 89 cases of keratoconjunctivitis in Minot, N. Dak., indicates that the first confirmed case occurred on October 9, 1950. The primary outbreak occurred among school children, but numerous cases were seen also in farmers and businessmen.

Deaths During Week Ended December 2, 1950

	Week ended Dec. 2, 1950	*Corresponding week, 1949*
Data for 93 large cities of the United States:		
Total deaths	10, 105	9, 892
Median for 3 prior years	9, 892	----------
Total deaths, first 48 weeks of year	438, 034	438, 577
Deaths under 1 year of age	698	682
Median for 3 prior years	704	----------
Deaths under 1 year of age, first 48 weeks of year	29, 886	31, 294
Data from industrial insurance companies:		
Policies in force	69, 647, 352	70, 006, 580
Number of death claims	10, 972	14, 082
Death claims per 1,000 policies in force, annual rate	8. 2	10. 5
Death claims per 1,000 policies, first 48 weeks of year, annual rate	9. 2	9. 1

Reported Cases of Selected Communicable Diseases: United States, Week Ended December 2, 1950

[Numbers under diseases are International List numbers, 1948 revision]

Area	Diphtheria (055)	Encephalitis, infectious (082)	Influenza (480–483)	Measles (085)	Meningitis meningococcal (057.0)	Pneumonia (490–493)	Poliomyelitis (080)
United States	**145**	**18**	**2,560**	**2,515**	**60**	**1,443**	**598**
New England	**4**	**2**		**58**	**3**	**40**	**15**
Maine				11		6	1
New Hampshire					1		1
Vermont				3			
Massachusetts	4	1		36	1		5
Rhode Island				3			
Connecticut		1		5	1	34	8
Middle Atlantic	**11**	**4**	**6**	**535**	**8**	**376**	**121**
New York	9	4	[1] 1	156	5	268	80
New Jersey			5	113		53	14
Pennsylvania	2			266	3	55	27
East North Central	**7**	**3**	**51**	**710**	**15**	**96**	**121**
Ohio	1		3	178	4		26
Indiana	1	2		18		17	10
Illinois	4		1	174	7	53	25
Michigan		1		112	2	21	41
Wisconsin	1		47	228	2	5	19
West North Central	**9**	**1**	**3**	**139**	**7**	**133**	**40**
Minnesota	6	1		21	2	6	10
Iowa	1			5	1	1	9
Missouri	1		1	97	1	11	4
North Dakota			2	10		93	
South Dakota						3	4
Nebraska					2		7
Kansas	1			6	1	19	6
South Atlantic	**49**	**2**	**334**	**169**	**9**	**265**	**88**
Delaware				3			
Maryland			1	4		26	9
District of Columbia				6		14	
Virginia	5		195	18	1	54	17
West Virginia	13		80	33	3	12	6
North Carolina	10			45	3		8
South Carolina	2		26	3	1	9	3
Georgia	18	1	31	53	1	134	24
Florida	1	1	1	4		16	21
East South Central	**31**		**53**	**55**	**3**	**76**	**25**
Kentucky	10		4	13		7	18
Tennessee	11		21	23	2		1
Alabama	5		25	3	1	53	3
Mississippi	5		3	16		16	3
West South Central	**26**	**1**	**1,893**	**166**	**5**	**331**	**48**
Arkansas	4	1	114	23	1	34	9
Louisiana	1			1	1	14	2
Oklahoma	1		67	20	2	13	7
Texas	20		1,712	122	1	270	30
Mountain	**3**	**1**	**205**	**253**	**1**	**82**	**21**
Montana			13	9		1	1
Idaho			12	42	1	10	2
Wyoming	1			4		3	1
Colorado		1	41	174		23	2
New Mexico	1		2	6		24	6
Arizona	1		137	9		20	6
Utah				7		1	3
Nevada				2			
Pacific	**5**	**4**	**15**	**430**	**9**	**44**	**119**
Washington			1	181	1	2	20
Oregon	1		9	18		7	19
California	4	4	5	231	8	35	80
Alaska			3			3	1
Hawaii	1		30		1		

[1] New York City only.

Reported Cases of Selected Communicable Diseases: United States, Week Ended December 2, 1950—Continued

[Numbers under diseases are International List numbers, 1948 revision]

Area	Rocky Mountain spotted fever (104)	Scarlet fever (050)	Smallpox (084)	Tularemia (059)	Typhoid and paratyphoid fever [1] (040,041)	Whooping cough (056)	Rabies in animals
United States		**1,158**	**4**	**23**	**51**	**1,931**	**102**
New England		**119**			**1**	**311**	
Maine		20				17	
New Hampshire		7				4	
Vermont		5				65	
Massachusetts		78				107	
Rhode Island		2				62	
Connecticut		7			1	56	
Middle Atlantic		**166**		**5**	**5**	**399**	**15**
New York		[2] 89			4	197	13
New Jersey		20		1		119	
Pennsylvania		57		4	1	83	2
East North Central		**261**	**1**	**8**	**3**	**350**	**13**
Ohio		80	1		1	57	7
Indiana		28		3	1	50	
Illinois		49		5	1	44	
Michigan		84				95	6
Wisconsin		20				104	
West North Central		**72**			**1**	**134**	**11**
Minnesota		16				21	2
Iowa		18				5	7
Missouri		10			1	12	1
North Dakota		7				19	
South Dakota						1	
Nebraska		11				30	
Kansas		10				46	1
South Atlantic		**142**		**2**	**11**	**181**	**16**
Delaware		2				8	
Maryland		6			4	34	
District of Columbia		11				10	
Virginia		17		1	1	39	1
West Virginia		17		1	2	28	1
North Carolina		51				25	
South Carolina		7				2	8
Georgia		24			4	25	6
Florida		7				10	
East South Central		**96**	**3**	**2**	**2**	**75**	**17**
Kentucky		34	3			5	10
Tennessee		35			1	19	2
Alabama		22				41	5
Mississippi		5		2	1	10	
West South Central		**55**		**5**	**10**	**221**	**30**
Arkansas		5		3	1	31	4
Louisiana		5		1	2	1	
Oklahoma		11				6	
Texas		34		1	7	183	26
Mountain		**66**		**1**	**7**	**147**	
Montana		16		1		32	
Idaho		5			3		
Wyoming						2	
Colorado		15				21	
New Mexico		4			4	39	
Arizona		8				48	
Utah		18				5	
Nevada							
Pacific		**181**			**11**	**113**	
Washington		59			1	47	
Oregon		14				12	
California		108			10	54	
Alaska						6	
Hawaii		3					

[1] Including cases reported as salmonellosis. [2] Including cases reported as streptococcal sore throat.

FOREIGN REPORTS

CANADA

Reported Cases of Certain Diseases—Week Ended November 18, 1950

Disease	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Brucellosis					4	1					5
Chickenpox	2		80	2	295	498	57	159	120	80	1,293
Diphtheria				1	2					3	6
Dysentery, bacillary					11	6	1			6	24
German measles			5	4	11	58		10	23	27	138
Influenza			5			4	1			4	14
Measles	6		1		455	680	40	33	31	69	1,315
Meningitis, meningococcal						2					2
Mumps	1		14		115	294	18	70	173	149	834
Poliomyelitis				1		2		2	2		7
Scarlet fever	4		2		79	81	10	15	53	111	355
Tuberculosis (all forms)	10		9	8	124	32	13	10	12	32	250
Typhoid and paratyphoid fever				2	15	2				4	23
Venereal diseases:											
Gonorrhea	3		5	5	85	50	21	17	47	84	317
Syphilis	2		6	3	69	21	2	18	1	9	131
Primary					4	4		5	1		14
Secondary			1		3	1		2			7
Other	2		5	3	62	16	2	11		9	110
Other forms										1	1
Whooping cough	3		3	5	146	186	20		4	14	381

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

The following reports include only items of unusual incidence or special interest and the occurrence of these diseases, except yellow fever, in localities which had not recently reported cases. All reports of yellow fever are published currently. A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

Burma. During the week ended November 11, 1950, 54 cases (30 deaths) of cholera were reported in Burma. For the week ended November 4, 11 cases were reported.

India (French). For the week ended November 11, 1950, 7 cases (6 deaths) of cholera were reported in Karikal as compared with 14 (3 deaths) for the previous week.

Smallpox

Burma. During the week ended November 18, 1950, one case of smallpox was reported in Moulmein.

India. For the week ended November 25, 1950, 99 cases of smallpox were reported in Calcutta. There were 15 cases reported in Madras for this week. For the week ended November 18, Calcutta and Madras reported 64 and 35 cases, respectively.

India (French). Smallpox was reported in Pondicherry as follows: Week ended November 11, 1950, 31 cases (15 deaths) and week ended November 4, 32 cases (16 deaths).

Morocco (French). One case of smallpox was reported for the period November 1–10, 1950. This is the first case since the period August 1–10 when one case was reported.

Nigeria. During the week ended October 21, 1950, 261 cases (43 deaths) of smallpox were reported. For this week one and five cases were reported in Calabar and Lagos, respectively.

Japan. A vessel (S. S. Dai Ichi Kaiko Maru) traveling from Pusan and Moji arrived at Nagasaki during the week ended October 28, 1950 with a case of smallpox. The date of onset of the disease was October 20.

Typhus Fever

Ethiopia. During the week ended September 18, 1950, 32 cases of typhus fever were reported. Reports for the week ended September 4 and 11 show 62 and 60 cases, respectively.

India. For the week ended October 28, 1950, 9 cases (4 deaths) of typhus fever were reported in Jammu and Kashmir State.

Turkey. During the week ended November 25, 1950, seven cases of typhus fever were reported in Turkey as compared with six for the previous week. One case has been reported each week in Istanbul since the middle of September.

Training Course in Radiological Health

The University of Michigan School of Public Health is offering an inservice training course in Radiological Health to be held February 5–8, 1951, at Ann Arbor. It is one of a series of "continued" education courses and is noncredit.

Given at the request of the Michigan Health Officers Association, the course is planned by a committee of thirteen including H. E. Miller, Director, and Henry F. Vaughan, Dean, of the School of Public Health, and assisted by the Atomic Energy Commission, the Michigan Office of Civilian Defense, and the U. S. Public Health Service.

Four sections are planned: 1. Orientation; 2. Ways Ionizing Radiations Are Used; 3. Biological and Medical Effects; and 4. Public Health Implications.

Although not a course in civilian defense, it will provide public health workers with information that should aid them in more readily understanding some of the problems in which they might some time receive civilian defense training.

The course is set up for public health workers in Michigan, but interested persons elsewhere are welcome. It is suggested that persons planning to attend make early reservation as applicants will be enrolled to the extent of seating space. The fee is $5. For further information and enrollment applications address H. E. Miller, School of Public Health, University of Michigan, Ann Arbor, Mich.