The Commonwealth of Massachusetts

SPECIAL REPORT

OF

SERVICES FOR CRIPPLED CHILDREN

DEPARTMENT OF PUBLIC HEALTH

for the

FIVE YEAR PERIOD 1936-1941

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SERVICES FOR CRIPPLED CHILDREN IN MASSACHUSETTS

In November 1925 Massachusetts instituted its first extensive public provision of medical and surgical care for crippled children by authorizing the Department of Public Health to admit patients suffering from extra-pulmonary tuberculosis to its Lakeville State Sanatorium.

For several years before 1925 the necessity for public hospital facilities for the medical and surgical care of patients afflicted with extra-pulmonary tuberculosis had been becoming increasingly evident. Since 1898 sanatorium beds had been provided for the victims of pulmonary tuberculosis and during the first decade of this service four state sanatoria, with one thousand beds in all, had been established. During the next ten years six counties and some ten cities had built their own sanatoria. With the subsequent decline in the mortality rate from pulmonary tuberculosis, it appeared by 1920 that enough beds for pulmonary tuberculosis in Massachusetts were then available. Since the mortality rate for extra-pulmonary tuberculosis had not decreased so rapidly as had the rate for the pulmonary form of the disease and because the general hospitals were unable to furnish the necessary facilities for the treatment of this type of patient, it seemed logical to convert one of the sanatoria so that it could be used for the care of patients with bone and joint tuberculosis. The Department of Public Health accordingly recommended to the General Court that the Lakeville State Sanatorium be remodeled for this purpose. A law authorizing this was enacted in 1924 and the first patient was admitted the following year. By the end of 1926 the entire two hundred beds at this sanatorium were available for the care and treatment not only of children but of men and women suffering from extra-pulmonary tuberculosis.

Eighteen years before the Lakeville State Sanatorium was thus opened to patients with extra-pulmonary tuberculosis, the Department of Public Welfare had established the Massachusetts Hospital School with the avowed purpose of rehabilitating children whose wage-earning capacity was threatened or impaired by defects, lesions, or diseases of their bones, joints or motor apparatus. This was the first official act in the Commonwealth to aid the handicapped child. The Massachusetts Hospital School is described in its annual reports as being a school with hospital facilities so the emphasis has always been on education rather than on medical and surgical care. There are many reasons why the education of the handicapped child is important. In the first place, treatment for a crippling condition extends over a long period of time and education should not be neglected during this period. Furthermore, children who have received all the benefits of medical and surgical care must also receive academic and vocational training if they are to become self-respecting, self-supporting citizens.

The establishment of the Lakeville State Sanatorium as a hospital with school facilities for the care of children (and adults) suffering from extra-pulmonary tuberculosis was recognition, even though belated, that it is illogical to educate a crippled child until provisions have been made for ample medical and surgical care. Educational facilities in addition to medical and surgical care were there-

fore provided at the Lakeville State Sanatorium so that children can be taught concurrently with their treatment. This is particularly important in bone and joint tuberculosis, the treatment of which is of very long duration. But the emphasis is on physical restoration, for school work, essential as it is, seldom exerts its maximum influence unless at the same time, or earlier, the crippling condition is removed or at least alleviated to the maximum extent.

The next logical step in a state program for aiding crippled children was to provide for the teaching of handicapped children in their homes. Severely crippled children were being educated either at the Massachusetts Hospital School or at one of the privately conducted schools and many less handicapped children were attending the regular public schools. But there were other crippled children living at home who were not receiving any education at all because their crippling condition was so severe they could not go to school and because their parents preferred to keep them at home where they could care for them themselves rather than to send them to an institution. With this in mind the State Legislature in 1930 enacted a law requiring that "the school committee in a town where there are five or more children so crippled as to make attendance at a public school not feasible shall, and in any town where there are less than five such children may, employ a teacher or teachers who shall offer instruction to such children in their homes or wherever the school committee may arrange".

During the decade after the establishment of the Lakeville State Sanatorium as a center for the treatment of extra-pulmonary tuberculosis (1925-1935) the decline in the mortality from this disease was even greater in proportion than had been the decline in the mortality from pulmonary tuberculosis during the preceding quarter century. The result was, again, vacant beds at Lakeville. The logical thing to do was to use those beds for the treatment of patients with some other disease. This the General Court authorized in 1936 on the recommendation of the Department of Public Health when it enacted a law providing for the admission to the Lakeville State Sanatorium of persons crippled by anterior poliomyelitis on the same terms as patients with extra-pulmonary tuberculosis. It was not difficult to secure this legislation, for public attention had been focused on infantile paralysis during the preceding year when one thousand three hundred ninety cases had been reported in the Commonwealth, an epidemic with a morbidity rate of thirty-two per one hundred thousand population.

During the next few years the influx of patients with the residual paralysis of anterior poliomyelitis (infantile paralysis) kept the Lakeville State Sanatorium filled almost to capacity. But as had happened before, empty beds then began to appear due to the continued decline in the incidence of extra-pulmonary tuberculosis and to the subsidence of infantile paralysis. The infantile paralysis epidemic of 1935 has fortunately not been repeated although the year 1937 saw more infantile paralysis reported than in any other of the six subsequent years, but even then only a fourth as many cases were reported as had been reported in 1935. In 1941 the Legislature again accepted the recommendation of the Department of Public Health and authorized the admission to the Lakeville State Sanatorium of persons suffering from spastic paralysis.

One of the rural homes visited by the field staff.

Before spastics are actually admitted to the Lakeville State Sanatorium there will be drawn up and submitted to the U. S. Children's Bureau for approval a comprehensive plan which will provide primarily for a state-wide program for the medical and surgical care of the sufferers from this disease and secondarily for research into the problems of prevention and treatment of the condition.

Services for Crippled Children under the Social Security Act

The enactment of the Social Security Act by the Congress in 1935 was followed by an enabling act of the Massachusetts General Court (Chapter 494, Acts of 1935) which empowered the Department of Public Health to receive and administer the Federal Grants-in-Aid authorized by Titles V, parts 1 and 2, and Title VI of the Social Security Act. The appropriation in that Act for Services for Crippled Children is expressly stated as being for the purpose of improving and extending existing services in rural areas and in areas of economic distress.

The Department is in full accord with this policy, for orthopedic surgeons and private agencies had been actively engaged in helping all types of handicapped children long before public services were inaugurated for children crippled by bone and joint tuberculosis. It is impossible to estimate the amount of this private work or to express its value in dollars and cents, nor is it possible without making a special study of the subject to attempt to enumerate the agencies and physicians who have aided crippled children in one way or another, with no thought of financial recompense. It is wholly certain that the Federal Grant-in-Aid for the medical and surgical care of crippled children would be entirely insufficient to supplant these services, even were the Department inclined to try to do more than to improve and extend existing services. The new funds are used only for individuals not reached by other existing services. Most of the private work done for crippled children in the State has been and still is, in the larger cities, particularly in the Boston Metropolitan Area and in Worcester. Consequently, it was logical for the Department of Public Health to concentrate its efforts on rural areas, in conformity with the policy expressed in the Social Security Act.

Because of the fact that so many private agencies and individuals have long been engaged in helping the handicapped child, many persons believed and said that it was not worth while for the Department of Public Health to organize and operate an Orthopedic Unit for Services for Crippled Children. They insisted it would not be possible to find enough patients not already cared for to justify the expense of administering such a Unit. That these fears were unjustified is demonstrated by the accomplishments for two thousand children admitted to clinics, whose records are analyzed in this Report.

The Federal Grant-in-Aid for Services for Crippled Children

Title V, Part 2 of the Social Security Act authorized the annual appropriation for payment to the states of $2,850,000 for services for crippled children. In 1939 Congress amended this Act by authorizing an additional appropriation of $1,000,000 to be allotted to the states according to the financial need of each state for assistance in carrying out its State Plan. These funds are allotted by

the Secretary of Labor who devises a formula based on the several pertinent factors.

The basic reason for a federal grant-in-aid is that there are now so many new and improved governmental services for which there is a demand that local taxing resources have been outrun. Many of those who object to the principle of the grant-in-aid say that after all federal money thus granted is merely money obtained from all of us by taxation and then returned to us. This is, of course, true but state and local governments depend largely upon property taxes, which have reached the upper limit. The Federal Government, which has jurisdiction over the entire economic community, has access to forms of taxation which are not available to states.

The grant-in-aid is probably the best device to aid the states in rendering services which would otherwise be impossible for any but the more wealthy states. It thus has the advantage of equalizing the services in the several states, for all formulae for the allotment of funds give the states with less financial resources considerably more in proportion than is allotted to the more fortunate ones. In effect, the backward states are granted much more than they pay in federal taxes, while those at the other extreme receive less. There have been objections from the latter states, but a Supreme Court decision has ruled that Congress may make any appropriation it wishes and that if a state objects it need not participate. Failure to participate is thus virtually a fine for the state, so there is no choice but to accept federal supervision in order to get the funds.

Federal grants-in-aid are not new, for the first one was made in Lincoln's administration. During the succeeding fifty years no federal restrictions whatever were imposed as conditions. Those now in force have been added gradually. First, reports were required of the states; then the audit, with inspectors; then the sanction; then plans; and finally federal approval of the plan as a prerequisite for the grant-in-aid. The result is that the Federal Government now has effective control over the states. Congress has the spending power and can thus easily transfer state affairs of national interest to federal control.

In order to be successful, state administration of services made possible by a federal grant-in-aid depends on a relationship of mutual confidence between federal and state officials, for antagonism between these groups can ruin a program. The fundamental policy of the Federal Government should be to develop a strong and able state administration and then to relax federal supervision in proportion to the degree of excellence achieved by each State Administration. When the federal agency responsible for the administration of a grant-in-aid continues to supervise and control detailed aspects of administration after the state has demonstrated its ability and its honesty of purpose, the basic end of federal supervision will be defeated.

The Massachusetts Plan for Services for Crippled Children

In accordance with the conditions set forth in the Social Security Act, a Plan and Budget were submitted by the Department of Public Health to the Children's Bureau of the United States Department of Labor. After the approval

of the Plan and Budget by the Children's Bureau, an Orthopedic Unit was organized in the Division of Administration of the Massachusetts Department of Public Health. The Plan embraced the establishment of permanent state-wide diagnostic clinic centers and the admission to clinic of any child living in the state whose crippling condition is included in the State definition of a crippled child, provided such admission is requested in writing by a physician licensed to practice medicine in the State. For administrative purposes the term "crippled children" was defined as including those children under twenty-one years of age who are suffering from poliomyelitis, bone and joint tuberculosis, congenital defects, arthritis, cardiac conditions and other similar conditions that may lead to, or have produced crippling and that may be treated advantageously. Included also in the definition were children requiring plastic operations following burns and accidents, or with congenital defects, such as harelip, cleft palate and so forth. Not included were those children who are the victims of "acute" accidents, or who require operations for hernia or for the removal of tonsils and adenoids. It was expressly stated in the definition that mere custodial care would not be provided for any child whether of normal or of low mentality.

The Care of Cardiac Children

The original definition of a crippled child as given above included the phrase "cardiac condition" as a cause of crippling. It was soon realized that without a special plan of operation it would not be possible to accomplish anything in this field. A number of private agencies, seeing the above clause in the definition, assumed that chronic cardiac children for whom nothing could be done except to give custodial care could now be cared for at governmental expense. Sad as is the state of such children they can not be cared for under Services for Crippled Children, the chief purpose of which is medical and surgical care for patients who can be benefited. Accordingly, the phrase concerning cardiac children was removed from the definition. It is essential that public money should be spent only on patients who can be benefited by treatment. Sentimentality has no place in the administration of a program which has so definite a purpose; custodial care is therefore denied both to cardiac children and to mentally defective children. Children in the latter group are, however, not wholly barred from treatment; if they are sufficiently cooperative so that orthopedic surgery will make them ambulant and thus relieve some member of the family, treatment is justified.

The subject of cardiac children was revived when in 1939 Congress appropriated funds for an acute rheumatic fever and heart disease program. Plans for such a program were promptly submitted to the Children's Bureau by the Massachusetts Department of Public Health and approval obtained. In the full realization that any program for the care of sufferers from this disease could not possibly succeed without the active aid of the practicing physician, steps were immediately taken to secure the cooperation of the medical profession. It took some months to present this matter to the profession, and in the meantime, there were a few misunderstandings so the greater part of a year elapsed before the Department

of Public Health was ready to proceed with the work. Meanwhile the Children's Bureau had withdrawn its previous approval of the Plan pending acceptance by the Department of Public Health of certain additional stipulations which were recommended by the Children's Bureau. No further progress has been made in effectuating this program in Massachusetts.

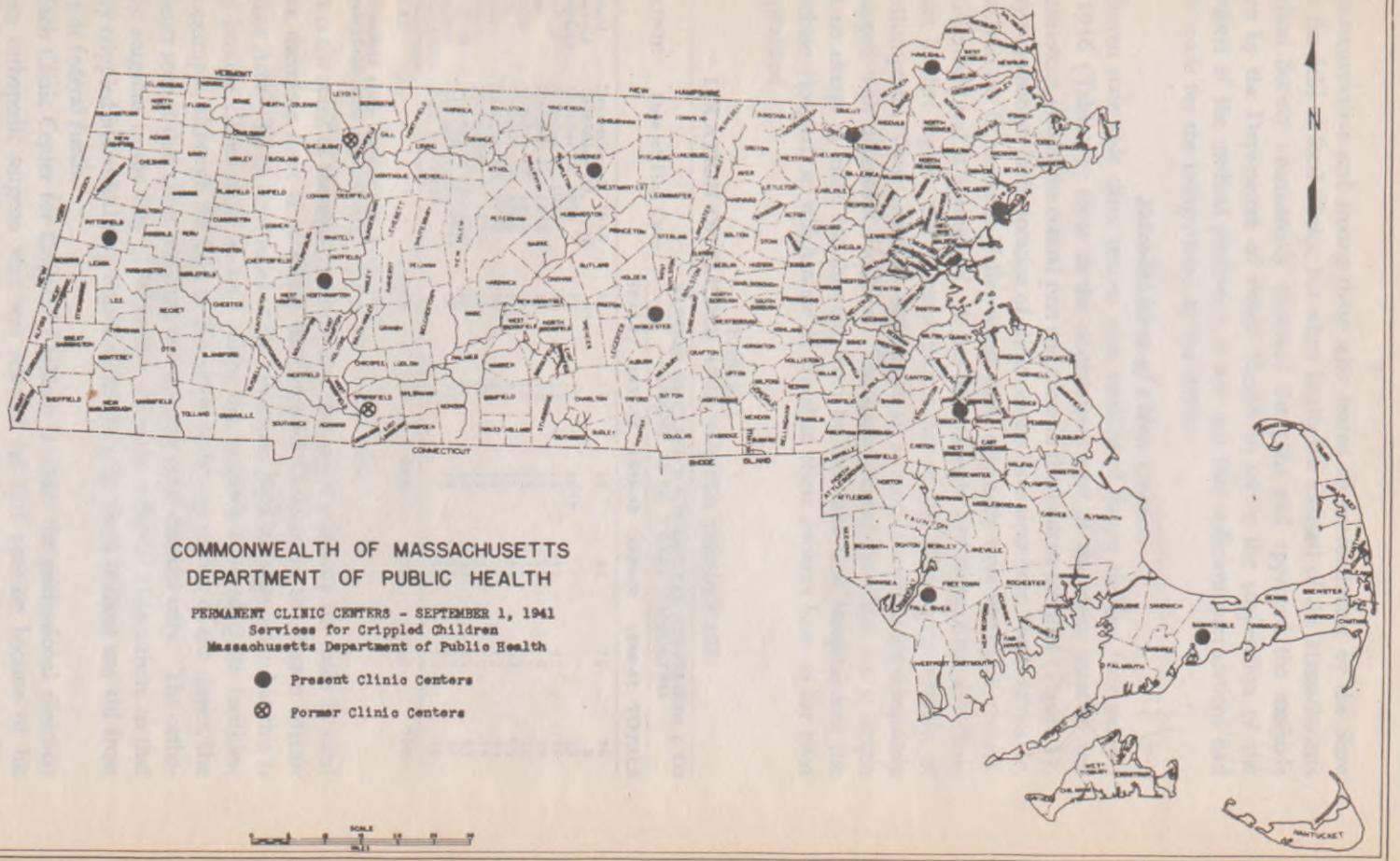
Children with Strabismus

Early in the clinic year 1938-39 the definition of a crippled child was amended to include children suffering from strabismus, provided an operation was found to be necessary. There was no provision for buying glasses except as required incidental to the operation. Children with this diagnosis were admitted to service in the same manner as orthopedic cases, but they were generally referred by local ophthalmologists. The procedure was to have these children examined at the Massachusetts Eye and Ear Infirmary (Massachusetts General Hospital) and if operative interference was recommended, to admit them to that hospital for operation. Fifty-nine patients were admitted to service and forty-six of them were admitted to the Massachusetts Eye and Ear Infirmary.

But administrative difficulties were soon encountered. Patients referred by local ophthalmologists for operation were examined at the Massachusetts Eye and Ear Infirmary and occasionally as a result of that examination operation was not recommended. These patients returned home disgruntled and the local ophthalmologist was more than disgruntled. When on one occasion a local ophthalmologist referred a certain child for examination and the Massachusetts Eye and Ear Infirmary decided against the operation the local ophthalmologist was particularly disturbed because he was on the staff of the Massachusetts Eye and Ear Infirmary and would have accepted the child for operation had he been on service at the time. The Department of Public Health was not willing to have operations done locally, primarily because the question of selection of local ophthalmologists for operative work would have presented great difficulties and secondarily because the Department was unwilling to take a step toward the establishment of a fee schedule such as would have been necessary had this work been done locally. It therefore seemed better to drop strabismus from the definition of a crippled child. To cease doing this work was regretted by the Department, for the children who had been helped were the only ones in the entire program who were sufficiently appreciative to write to the Department to express their gratitude.

Discussions with the Medical Profession

The medical and surgical care of crippled children, being a problem in curative rather than in preventive medicine, is a new departure in the public health field. It therefore closely concerns the members of the medical profession, who under our economic system are dependent upon their fees from patients for a living. The problem was accordingly discussed with large and small groups of members of the Massachusetts Medical Society in almost all of the eighteen constituent districts of the Society before any moves were made toward the establishment of clinics. Some slight opposition was encountered among the



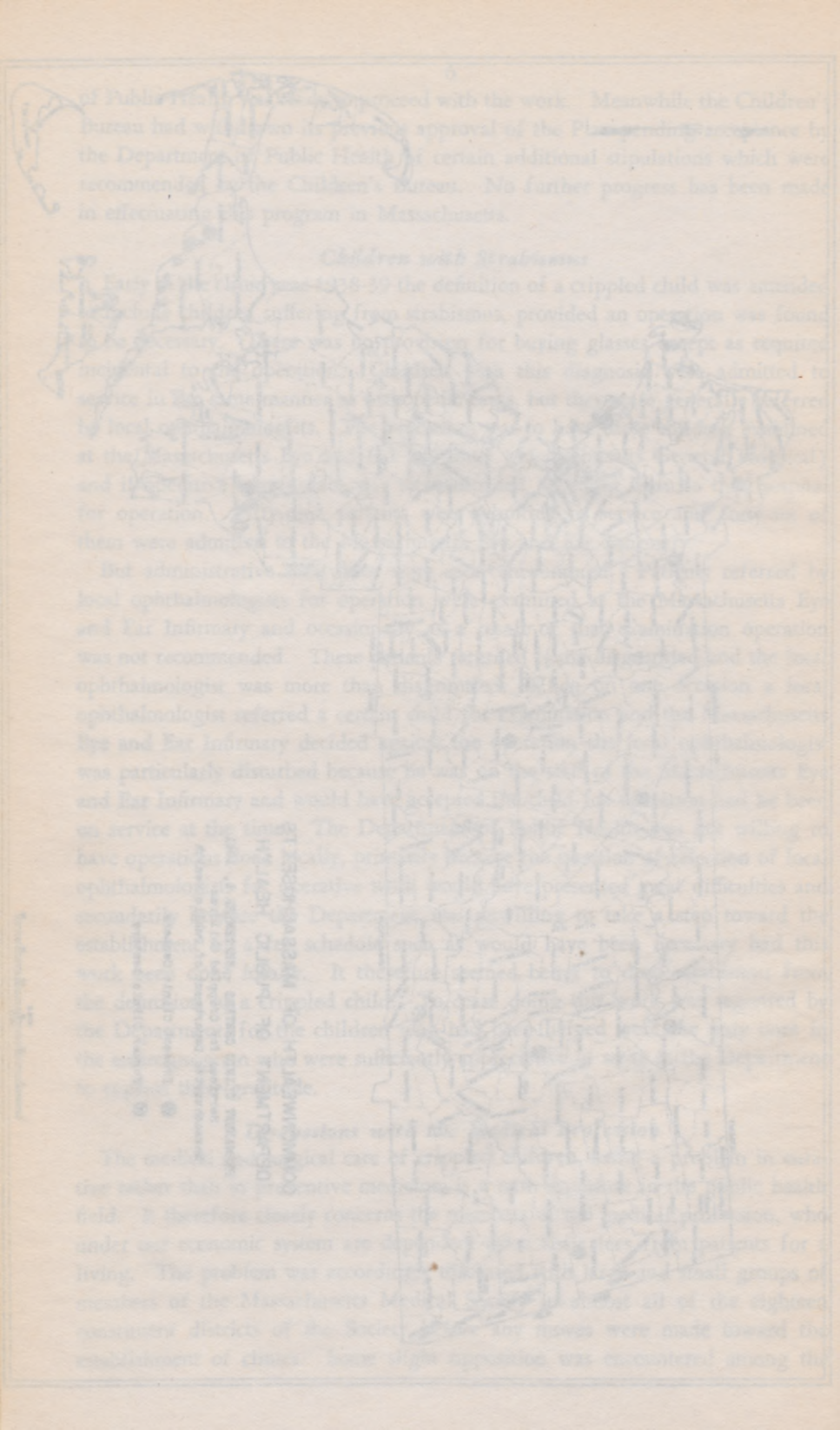
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

PERMANENT CLINIC CENTERS - SEPTEMBER 1, 1941
Services for Crippled Children
Massachusetts Department of Public Health

● Present Clinic Centers

⊗ Former Clinic Centers

Photostat by the Eng. Div. Mass. Dept. of Public Health



ultra-conservative and among those who feared an encroachment by the State into the field of local clinics, but when finally the Council of the Massachusetts Medical Society unanimously endorsed the plan and approved the methods taken by the Department of Public Health to secure the cooperation of the members of the medical profession it was felt that sufficient preparations had been made for the inauguration of the service.

Establishment of Clinic Centers

Eleven state-wide clinic centers were established during the last four months of 1936 (Table 1); three in the northeastern part of the state, three in the southeastern, two in the central part and three in the western counties (Figure 1). Only two changes in the location of clinic centers have since been found advisable, namely in the Connecticut Valley where there originally were two clinic centers, at Greenfield and at Springfield. It has been thought best to have but one clinic center in that region, more central than either of the other cities, namely, at Northampton. These ten clinic centers are all at hospitals which are adequately equipped with diagnostic facilities. The space allotted for clinic use is ample and no charge is made for this use, even by the Cape Cod Hospital and the Brockton Hospital, in which none of the state clinic patients have so far been hospitalized.

TABLE 1
LOCATION OF CLINICS AND NUMBER CONDUCTED

CLINIC	Date of First Clinic	NUMBER OF CLINICS CONDUCTED SEPTEMBER 1 TO AUGUST 31 OF YEARS INDICATED					
		1936-37	1937-38	1938-39	1939-40	1940-41	TOTALS
Pittsfield	September 2, 1936	11	12	11	11	11	56
Greenfield	September 25, 1936	8*					8
Springfield	October 2, 1936	11	12	10**			33
Haverhill	October 7, 1936	10	12	11	11	11	55
Salem	October 13, 1936	10	12	11	11	9	53
Hyannis	October 19, 1936	11	12	11	11	11	56
Lowell	October 24, 1936	10	12	11	11	14	58
Gardner	October 30, 1936	10	11	11	11	11	54
Brockton	November 6, 1936	10	12	11	11	11	55
Fall River	November 23, 1936	10	11	10	11	11	53
Worcester	December 18, 1936	9	12	11	11	11	54
Northampton	July 19, 1939			1	11	11	23
TOTAL		110	118	109	110	111	558

*Greenfield clinic discontinued June, 1937
**Springfield clinic changed July, 1939 to Northampton clinic

It is the spirit of the Social Security Act that aid is primarily for those in rural areas, therefore there is no Clinic for Crippled Children in the Boston Metropolitan Area. To be sure, some of the clinics *are* held in large cities, but this is only because clinics must be held where the hospitals have adequate facilities. For example, although the City of Worcester is the site of one of the clinics, the patients seen at that clinic are from surrounding rural districts only. The orthopedic surgeons in the City of Worcester maintain sufficient clinics there so that every crippled individual may obtain all the help he needs without any aid from state or federal funds.

Each Clinic Center for Crippled Children is under the professional direction of an orthopedic surgeon who was selected for that position because of his professional ability and who has been appointed Clinic Consultant in the De-

partment of Public Health on a part-time basis at a nominal salary. The orthopedic surgeons now serving in that capacity are:

Clinic	Consultant
Pittsfield	Frank A. Slowick
Northampton	Garry deN. Hough, Jr.
Haverhill	William T. Green
Salem	Paul W. Hugenberger
Hyannis	Paul L. Norton
Lowell	Albert H. Brewster
Brockton	George W. Van Gorder
Fall River	Eugene A. McCarthy
Worcester	John W. O'Meara

Dr. Arthur T. Legg and Dr. Mark H. Rogers were clinic consultants for the Haverhill and Gardner Clinics respectively until their deaths. Dr. Harold C. Bean had charge of the Salem Clinic until he was ordered to active duty in the United States Navy.

Publicity

It has not yet been found necessary or even desirable to make any special concerted effort to give general publicity to Services for Crippled Children. The program is well known to the physicians of the State many of whom heard what the Department of Public Health proposed to do for crippled children weeks before the first clinic center was established. The initial skepticism manifested by many of them has given way to hearty cooperation. They have found that the Department is sincere in its wish to cooperate with the practicing physician and that the professional work being done is of the highest type. Under these circumstances they are perfectly willing to refer suitable patients to the state clinics. As a matter of fact, more new cases have been located with the aid of the family physician than through any other agency. Each physician (as well as all other interested agencies) receives, early in June and in December of each year a schedule of clinic sessions for the next six months. (Table 2 is a copy of the post card which was sent them in June 1941). Each month the New England Journal of Medicine publishes the schedule of clinic sessions for the succeeding month. At one Annual Meeting of the Massachusetts Medical Society the exhibit space allotted to the Department of Public Health was used by Services for Crippled Children. The most important function of the Supervisor of Clinics for Crippled Children (a physician) is to visit physicians in order to discuss specific matters with them. This method of dealing with the medical profession has been very effective in preventing misunderstandings or correcting them before they have grown. Physicians who report crippled children are kept informed of the progress of their patients. Such information is not furnished indiscriminately. Inquiries concerning patients under care are ordinarily referred to the family physician unless those inquiring are participants in the State program or have demonstrated a cooperative interest in the work. This method of procedure maintains the interest of the family physician in the patient. Representatives of interested agencies, welfare workers, nurses, etc., are all welcomed at

TABLE 2
THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH
CLINICS FOR CRIPPLED CHILDREN—1941
Please Preserve for Reference

			JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Salem	2.00 P.M.	1st Mon.	7		8	6	3	1
Haverhill	10.00 A.M.	1st Wed.	2		3	1	5	3
Lowell	2.00 P.M.	1st Fri.	*	1†	5	3	7	5
Gardner	1.00 P.M.	2nd Tues.	8		9	14	4*	9
Brockton	2.00 P.M.	2nd Thurs	10		11	9	13	11
Pittsfield	10.30 A.M.	3rd Mon.	21		15	20	17	15
Northampton	2.00 P.M.	3rd Wed.	16		17	15	19	17
Worcester	1.00 P.M.	3rd Fri.	18		19	17	21	19
Fall River	10.30 A.M.	4th Mon.	28		22	27	24	22
Hyannis	10.00 A.M.	4th Tues.	22		23	28	25	23

*Day Changed.
†No clinics in August except in Lowell.

the clinics, as well as practicing physicians. One certain physician has not missed attending any of the fifty-six sessions of the clinic center near his home, except once when he was ill. In this connection it is interesting to note that in his county an unusually high proportion of crippled children was admitted to clinic.

The Chief of the Orthopedic Unit and the Supervisor of Clinics have given many talks on the subject of State Services for Crippled Children before lay and professional organizations. The purpose of such talks is double. The first objective is to inform citizens of what their State government is doing in the way of helping the crippled child; the second is to enlist their aid in locating crippled children. Possibly the Department learns of crippled children as an indirect result of these talks but, in any event, the number referred in this way is small compared to the number of those referred by physicians.

The radio has been utilized as a means for disseminating information concerning the program. Eight fifteen minute periods have been allotted to the Orthopedic Unit annually. Three techniques have been used; the talk, the question and answer, and the discussion between two or more persons. The type which seemed most satisfactory was a discussion between the Chief of the Unit or the Supervisor of Clinics and a social worker or physiotherapist concerning the aid which had been given a specific patient. The child was present and had something to say at the end of the program. It is very difficult to estimate the value of such radio programs in terms of publicity. There was no fan mail except a letter from a kind lady whose heart had been touched by one little girl patient who spoke on the program. She sent a $5 check for the child, which was used for the purchase of clothing.

Articles, six hundred words in length, were prepared in the Orthopedic Unit and appeared in state-wide newspapers several times annually. Longer descriptions of Services for Crippled Children have been published in the New England Medical Journal, the Massachusetts Health Journal, the Physiotherapy Review, and others.

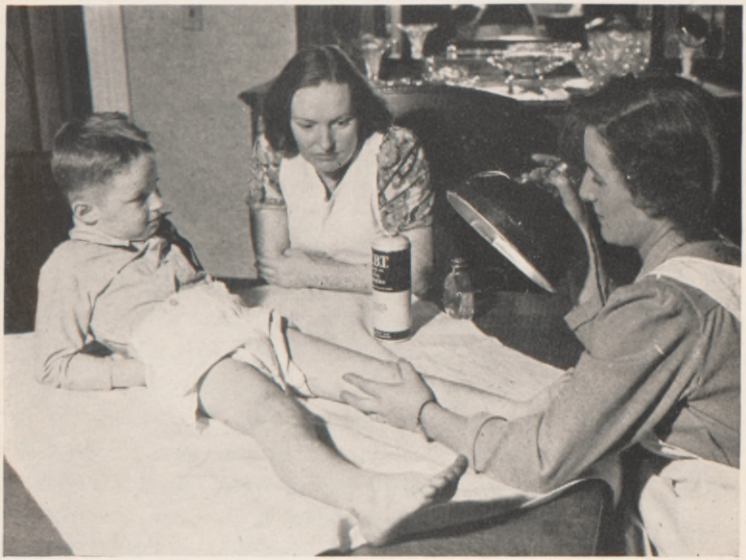
Locating Crippled Children

The local public health nurse is in an excellent position to be of great assistance in locating crippled children. She should be on the watch for deviations from normal and when she notes them she should call them to the attention of

the parents and the family physician. She has unexcelled opportunities to explain Services for Crippled Children to all those who are interested. A circular was sent to each public health nurse in the state in the early days of the program asking her aid. As a result, some of the most interesting and most needy of all the children admitted to service were brought to the attention of the Orthopedic Unit. The aid of local nurses should be developed and to that end it is hoped to be able to employ a chief consultant supervising nurse to be attached to the Orthopedic Unit for the purpose of securing closer cooperation with local nurses. The physiotherapists and social workers have established cordial relationships with local nurses whenever this was possible, but a supervising nurse whose duty is specifically in that field should have a great influence toward perfecting this relationship.

Another method of locating crippled children is by means of reports from physicians in compliance with "An Act Providing for the Reporting of Congenital Deformities and Other Crippling Conditions in Infants". This Act, which became effective October 1, 1939, provided that within sixty days after the birth of any child born in the Commonwealth with visible congenital deformities, or with any condition apparently acquired at birth which may lead to crippling, report shall be made to the Department of Public Health. This law has so far not resulted in finding any appreciable number of patients for admission to Services for Crippled Children for those physicians who are sufficiently interested to make the report are likewise sufficiently interested to see that the child is placed under care. However, the names are placed on the Register and in the course of a very few years the children and their physicians will be visited again. During the two years this law has been in effect about four hundred crippling conditions have been reported of which three-fourths are orthopedic.

The annual census of physically handicapped children which is required by law is an important means of locating crippled children. At the beginning of each school year the superintendent of schools in each city and town receives a letter from the Commissioner of Education calling attention to the law and asking for reports. The State Department of Education receives these reports and refers crippled children to the Department of Public Welfare for investigation. These investigations are carried on from the office of the Supervisor of Social Service for Crippled Children in the Department of Public Welfare. All reports are reviewed and statements as to the diagnosis and treatment are verified whenever possible. Special investigations are made when there is evidence that the child may be in need of treatment or education, or both. Children not receiving treatment but needing it are referred to suitable clinics. The policy here is to acquaint the family with the existing facilities and, when they have selected the one of which they wish to avail themselves, to make the initial contact for them either by letter or personal interview. Since the establishment of Services for Crippled Children within the Department of Public Health children in need of these services are referred to the Orthopedic Unit. When the Unit was established in the Department of Public Health, the office of Supervisor of Social Service for Crippled Children in the Department of Public Welfare was moved to an ad-



Showing a mother how to give her son a physical therapy treatment.

joining room and has been there ever since. There has been a continuing exchange of information on all new and old cases reported to either Department.

State Register of Crippled Children

A State Register of Crippled Children is kept in the central office of the Orthopedic Unit. This Register contains certain essential information concerning each child on the Register, the most important of which is a physician's diagnosis. The State Register would ideally include the names of all the crippled children in the State whether under adequate care or neglected. The basis for the Massachusetts Register, when the Orthopedic Unit was established, was a survey of crippled children in the State made in 1931 by the Department of Public Welfare, and a subsequent annual census of crippled children between the ages of six and sixteen conducted by the Department of Public Welfare and the Department of Education. In this survey, six thousand one hundred forty-one crippled children were located, many of whom as well as many of those found since in the annual school census are now over twenty-one years of age and thus no longer eligible for inclusion on the Register. The Register now includes the names of six thousand four hundred sixty-one children. It is an undoubted fact that there are many more crippled children in the Commonwealth than are listed on the Register. By consulting the records of hospitals and of clinics throughout the state it would be possible to add several thousands of names to the Register, but such a survey would take much time and clerical help, and would probably result in finding only those children who are receiving adequate care. In addition, it would most certainly arouse the suspicions of some that the Department might be planning to replace those services.

The Orthopedic Unit has not, however, ignored the names on its Register. Each field worker was given all available information concerning the children listed on the Register whose homes are in her district. During the course of her work she visited the family physicians of these children to learn if the child were well cared for or if aid were needed. Children were occasionally admitted to clinics as a result of these visits. Families who said they had no doctor were often ones where the aid of the Orthopedic Unit was needed.

Advisory Committees

One of the first steps in the organization of the Orthopedic Unit was the selection and appointment of advisory committees. The General Advisory Committee is made up of about a dozen representatives of the agencies interested in helping the handicapped child, including the Department of Public Welfare, the Department of Education, the Massachusetts Medical Society, the Hospital Council of Boston, as well as individual leaders in social service and in nursing, the professions most concerned.

The present membership of this Committee is as follows:

Dr. Robert B. Osgood, 372 Marlboro Street, Boston

Mr. Arthur B. Rotch, Commissioner of Public Welfare

Mr. R. O. Small, Director of Division of Vocational Education, Department of Education

Mr. Herbert A. Dallas, Supervisor of Rehabilitation, Department of Education
Miss Edith I. Cox, Superintendent, Robert Breck Brigham Hospital
Dr. Elmer S. Bagnall, Secretary, Committee on Public Relations, Massachusetts Medical Society, 8 Fenway, Boston
Dr. Bronson Crothers, 300 Longwood Avenue, Boston
Dr. John E. Fish, Superintendent, Massachusetts Hospital School, Canton
Miss Emily D. Rice, Director of Social Service, Peter Bent Brigham Hospital, Boston
Miss Dorothy J. Carter, Community Health Association, 137 Newbury Street, Boston
Rev. Thomas J. Brennan, Superintendent, St. Elizabeth's Hospital, Brighton
Rev. Richard J. Quinlan, Diocesan Supervisor of Schools, 75 Union Park Street, Boston
Dr. T. Duckett Jones, House of the Good Samaritan, 25 Binney Street, Boston

The Technical Advisory Committee is made up of ten physicians, leaders in the medical profession, five of whom are orthopedic surgeons. On September 1, 1941 this Committee was constituted as follows:

Technical Advisory Committee

Dr. Robert B. Osgood	Dr. T. Duckett Jones
Dr. Bronson Crothers	Dr. Kenneth D. Blackfan*
Dr. Frank R. Ober	Dr. Conrad Wesselhoeft
Dr. W. Lloyd Aycock	Dr. Lloyd T. Brown
Dr. R. Nelson Hatt	Dr. James Warren Sever

All the original members of this Committee are still serving except Dr. Arthur T. Legg, whose untimely death removed one of the Department's most trusted advisors, and Dr. Smith-Peterson, who resigned because he was unable to devote the necessary time to his duties as a member of the Committee. Drs. Osgood, Crothers and Jones are also members of the General Advisory Committee. Both Committees have been very helpful and much reliance is placed upon their recommendations which have always been adopted by the Department of Public Health.

The Orthopedic Sub-Committee of the Technical Advisory Committee has rendered invaluable service. The members are:

Dr. Robert B. Osgood	Dr. Frank R. Ober
Dr. R. Nelson Hatt	Dr. James Warren Sever

Dr. Lloyd T. Brown

Each member of this Sub-Committee visits annually two of the clinic centers to review the work being done there. Each visit is made at the time of a regularly scheduled clinic session. This is regarded as a "special" clinic, although the regular routine of the clinic is followed. New cases are seen, check-up examinations are made as in any session, but an attempt is also made by the clinic consultant to demonstrate to the representative of the Technical Advisory Committee just what has been accomplished during the preceding year. Patients whose operative work has been completed, those who present special problems, and those for whom physiotherapy or apparatus has been provided,

* Deceased

as well as others, are brought to clinic. Report is made to the Chief of the Orthopedic Unit after each one of these clinic reviews. The annual schedule is so arranged that each sub-committee member visits all of the ten clinic centers during a five-year period.

Staff Conferences

Both administrative and professional conferences are held periodically. The former are bimonthly in Boston, except during the summer months and are conducted by the Chief of the Orthopedic Unit with all field workers attending. Professional conferences are conducted in turn by the clinic consultants who demonstrate their most interesting patients to the accompaniment of lively discussion. A short period is then devoted to administrative matters and dinner follows. The May conference has always been held at the Lakeville State Sanatorium and is attended by the members of the Orthopedic Sub-Committee of the Technical Advisory Committee as well as by the clinic consultants. Conferences have been held in Springfield, Worcester and Lowell, in addition to Boston, where the respective clinic consultants and the Peabody Home for Crippled Children were hosts.

Procedure for Admission to Clinic

In order to be admitted to a clinic it is only necessary for a crippled child to present an application signed by a physician licensed to practice medicine in the Commonwealth, preferably the family physician. A child thus admitted is given a thorough examination at the clinic following which a complete social study of the patient's family is made by a public health social worker. If this social study indicates that the child is so situated economically that without state aid or without the aid of some charitable organization he would be unable to obtain all the medical and surgical attention he needs, he is accepted for care. The data obtained as a result of this social study of the patient's family is referred to the chairman of a special committee of the District Medical Society for an expression of his opinion as to the child's eligibility for public care. Every effort is made to insure that persons who are able to pay for all the necessary treatment and apparatus, and who should pay, are excluded from clinics. The final decision as to eligibility for admission to clinic rests with the Commissioner of Public Health. In the event that patients can pay for part of the services rendered arrangements are made for them to pay the hospital or the brace maker.

There are no stringent residence restrictions. Any child living in the State is eligible for admission. Any child coming to Massachusetts to live from any other state is not only eligible as soon as he arrives but is urged to continue treatment as soon as the Orthopedic Unit receives appropriate information.

Administrative Procedures in the Orthopedic Unit

The administrative responsibility for the efficient conduct of Services for Crippled Children rests with the Commissioner of Public Health. He has delegated authority to administer these services and to secure efficient operation to the Chief of the Orthopedic Unit in the Division of Administration. The Orthopedic Unit includes both a clerical and a field staff. The physician who is

Supervisor of Clinics for Crippled Children attends all the clinics and exercises administrative supervision over the field staff. Assisting him in the operation of the clinics are six physical therapists and two medical social workers. The field work is divided among the field staff by clinic districts, as equally as possible. Each of the six physical therapists is in administrative charge of one or of two clinic centers according to location or to the size of the clinic. Nursing help at clinic sessions is obtained from the hospitals where the clinics are held, on an hourly basis, according to need.

Procedure at Clinic Sessions

The clinics are exclusively diagnostic. Two types of patients are seen, new cases and those who have previously had their first examination and who have returned for follow-up examinations. Any crippled child, upon written application of a licensed physician may be admitted to a clinic for examination but only those children are subsequently accepted for full care whose parents are unable to pay for the treatment which is deemed necessary. The decision whether to accept or reject applicants is based on information obtained by the public health social worker on the field staff when she visits the family at home.

When a child comes to clinic, he is examined by the clinic consultant who is in full professional charge of his clinic. The consultant is assisted by the Supervisor of Clinics for Crippled Children, by a nurse, by the physical therapist who is in administrative charge of the clinic, and by a public health social worker. The clinic consultant dictates his findings and recommendations during the course of the examination. This is recorded in duplicate, in the central office of the Orthopedic Unit, and in the records of the physiotherapist who administers the clinic. The clinic consultant always states when next he wishes to see the patient and the physiotherapist makes a special record of this recommendation. Her notebook of clinic visits shows months in advance what patients are to attend succeeding clinics. She notifies the patients by post card when they are to come, unless the patient is one whose home she visits to give treatments. In this event, notifications are, of course, oral.

As a result of his examination the clinic consultant makes certain recommendations. If he desires to refer the patient to a specialist in some other field for a special examination and report, this is arranged at once. He may consider it advisable to admit the child to a hospital for an operation. If so, all that is needed is to obtain the consent of the parents; when this is obtained the patient is admitted to the hospital designated by the clinic consultant. No formal commitment is necessary and there are no waiting lists for admission to hospital because of lack of funds to care for a child. The consultant is in full charge of his patient while the latter is in hospital and either performs the operation himself or, if it is a minor one, designates his assistant, who is duly authorized by the Department of Public Health to act in this capacity under the direction of the clinic consultant.

Many patients attending the clinics require braces or other apparatus; ample provision has been made to meet these needs. The clinic consultant prescribes

The patients do not object to their treatments.

and takes the necessary measurements, and the order is given to the brace maker. When the apparatus is delivered, it is fitted to the patient by the clinic consultant.

The Supervisor of Clinics for Crippled Children takes the medical history of each child on a prescribed form on its first visit to a clinic center and makes a general physical examination. Photographing the patients is a matter of routine, to show defects and later to show the improvement. Motion pictures are also made when the gait or other motions are to be recorded.

Each clinic session is attended by a representative of the Division of Vocational Rehabilitation of the Massachusetts Department of Education. This relationship has been found to be a valuable one, for it often is possible to be of much assistance to patients who are under care or who are nearing the point of maximum improvement, by helping them secure suitable employment.

One of the public health social workers attends each clinic session. She utilizes this opportunity to interview the patients and their parents. Opportunity is afforded her for interview in private, but she goes to the patient's home for the complete initial social study of the family. The worker has many opportunities at clinic to discuss numerous minor matters with patients and their families. She has many responsibilities in connection with patients, not only in relation to Services for Crippled Children, but in connection with the utilization of community resources. There are so many welfare agencies in the Commonwealth that one of the most important duties of the public health social worker is to serve in a liaison capacity. Many problems arise in the matter of adjustments in the family, in the school and in the neighborhood. The social worker thus plays an important part in the after-care of the patient.

Physical Therapy

Many patients seen at the clinic do not require operations; they may need no other treatment than physical therapy. In such cases the clinic consultant prescribes the treatment he wishes given and arrangements are then made for the physical therapist of that clinic district to visit the home periodically to carry out these recommendations. Where there are several patients in a community who require such treatment they are brought together if possible at some convenient available center and are there given treatment, thus conserving the time of the physical therapist. Such an arrangement is not often possible, for most of the patients live in rural regions at some distance from each other. To have such patients brought to a central point would require transportation and the time of some other member of the family. The mother would generally not be able to take the time to go with the child for treatment and thus one of the most important functions of the physical therapist, that of teaching the mother or an older sister what treatment to give and how to give it, would be lost.

Muscle examinations are also invariably made at the patient's home. If a child who obviously will need such an examination makes application for admission to clinic long enough in advance of the clinic session, the examination is made before the clinic session so that the consultant can see the report when he examines the child.

After-Care

The after-care which is provided for patients under the care of the Orthopedic Unit may be classified as follows:

a. *Medical.* Patients are brought back to clinic at intervals specified by the consultant, or at any time when the physical therapist or public health social worker who sees the patient at the home thinks it necessary. If the child is unable to attend the clinic, or to go to the consultant's office, the consultant goes to the home.

b. *Physical Therapy.* This treatment is almost always given in the home by the physical therapist. The mother or an older sister is taught how to do it, and thus is enabled to assist in the after-care.

c. *Social Service.* This consists of helping patients make the trying adjustments to changed conditions after hospitalization, etc., and to aid in utilizing community resources.

d. *Public Health Nursing.* This is done by local nurses whenever necessary. Both nurses and local welfare workers are given opportunities to be of direct service to patients.

Pediatric Examinations

Pediatric examinations are now given whenever indicated, but it is deemed preferable to have these examinations made in the pediatrician's office, by appointment. The ordinary clinic space provided in hospitals is not sufficient for both a pediatrician and an orthopedist to make complete separate examinations. The most important examinations at the clinic session are orthopedic. The clinic consultant needs for his patients two or three cubicles or examining rooms and a dressing room. If the pediatrician were trying to make his examination at the same time, each would hinder the other.

Plastic Surgery

Nor is there a plastic surgeon at any clinic session. Most plastic cases are not required to attend clinic sessions. They are sent directly to the plastic surgeon's weekly clinic, which he himself conducts at the Cambridge Hospital. This clinic has no connection with the Orthopedic Unit except that children referred by that Unit are examined there.

Children with cleft palate or harelip or both have been admitted to service ever since the program was initiated in 1936. Unfortunately, the progress of this part of the program has not been so satisfactory as has the orthopedic work. The difficulty has not been in the professional work, for that can not be surpassed, but in, first, the lack of available hospital beds and, second, in the difficulty in getting the necessary orthodontic work done at a cost which is comparable to that paid for other professional work. When its services are available the Harvard Dental School Clinic is of great assistance and the cases which have been completed as a result of that assistance show remarkably good results. The matter of availability of hospital beds has apparently now been settled, for the Cambridge Hospital will admit our patients. Dr. V. H. Kazanjian and Dr. Bradford Cannon conduct a weekly clinic at that hospital and all patients

requiring plastic surgery are sent to this clinic and then admitted for operation. All future plastic work authorized by the Orthopedic Unit is to be done there.

Home Visits by Consultants

Not infrequently it is necessary for the patient to be seen by the clinic consultant between clinic sessions. If the child is able to visit the physician's office, an appointment is made by the physiotherapist. If not, the clinic consultant goes to the patient. Provision is also made for consultation visits by the clinic consultant at the request of the family physician to aid him in the treatment of paralytic subacute anterior poliomyelitis. Acute anterior poliomyelitis, being a reportable disease, the Division of Communicable Diseases of the Massachusetts Department of Public Health receives reports from physicians when cases occur. The information given on these reports is transmitted to the Orthopedic Unit and the reporting physician is then informed by letter that if he desires this consultation service he may have it.

Clinic Sessions

During the five years since the establishment of the first clinic center for crippled children at St. Luke's Hospital in Pittsfield on September 2, 1936, five hundred fifty-eight clinic sessions have been held (Table 1). Clinic sessions were monthly at each clinic center until the summer of 1939 when it was decided that each member of both office and field staffs should take the major portion of his or her vacation during the month of August and that there should be no clinics during that month. This procedure so simplified clinic administration that it was adopted as a policy.

Three of the clinic centers, those at Hyannis, Brockton and Worcester, have each had an unbroken series of all scheduled monthly sessions since the inauguration of service. Ten scheduled clinic sessions at the other clinic centers have had to be cancelled, in emergency, during the five-year period.

It is interesting to note that in the Annual Report of the Secretary of Labor for the federal fiscal year ending June 30, 1940 the statement is made that during the federal fiscal year 1939 clinic sessions were held regularly in three hundred fifty-nine permanent clinic centers as part of the state program in the United States. No information is given as to how frequently clinic sessions were conducted at those centers. In that year there were in Massachusetts ten permanent clinic centers where one hundred nineteen monthly clinic sessions were conducted. In the entire country five hundred nineteen itinerant clinics were held during that period. Massachusetts does not conduct itinerant clinics, for the reason that efficient follow-up services are not readily provided without definite scheduled clinics.

Services for Crippled Children in State Health Districts

In Massachusetts the towns and cities are characteristically autonomous in governmental functions. Health work is no exception and, as a result, since most of the three hundred and fifty-one towns and cities are small in population, local health work in such communities is generally limited and much reliance is

placed on the State Department of Public Health. Unions of towns for health work have been attempted, but these are voluntary, unstable and not to be relied upon in the long run, although one union of ten towns and another of two towns are each now functioning as a health unit. The modified form of county health department is also in use in one county (on Cape Cod) and much can be said in favor of this type of organization.

The Commissioner of Public Health was authorized some years ago to divide the state into not more than eight health districts. This was done, but it is only recently that steps have been taken to perfect the organization of these districts to make each a complete health unit. These districts are administrative units under the direction of the Director of Local Health Administration, who is the Assistant to the Commissioner of the Department of Public Health. One district, the Worcester District, is now a fairly complete health unit.

District organization of this kind has an important relationship to the administration of Services for Crippled Children. There are two clinic centers in the Worcester District. One physiotherapist and one public health social worker are assigned to these two clinic centers so their work is practically all in the Worcester District and they are members of the staff of the District Health Officer. These field workers are supervised administratively by the District Health Officer and receive only technical guidance from the Chief of the Orthopedic Unit. They have office space and clerical help in the District Health Office and are thus associated with other public health workers and are made to realize that they are in a health department and not lone workers in an independent activity. As district organization proceeds it is expected that the Orthopedic Unit will be relieved of many minor administrative duties and be able to pay more attention to technical guidance and to matters of policy.

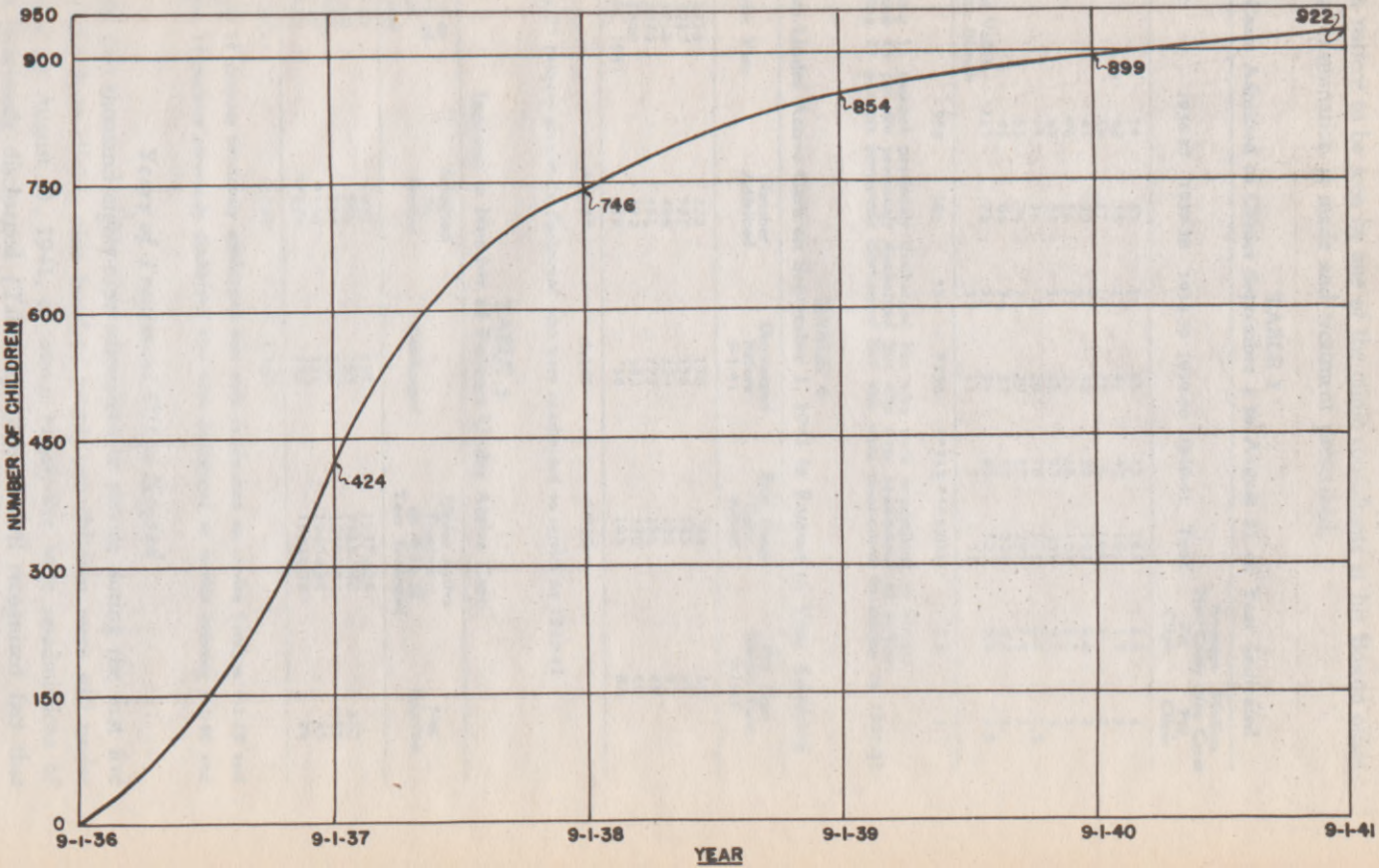
Number of Children Admitted to Services for Crippled Children

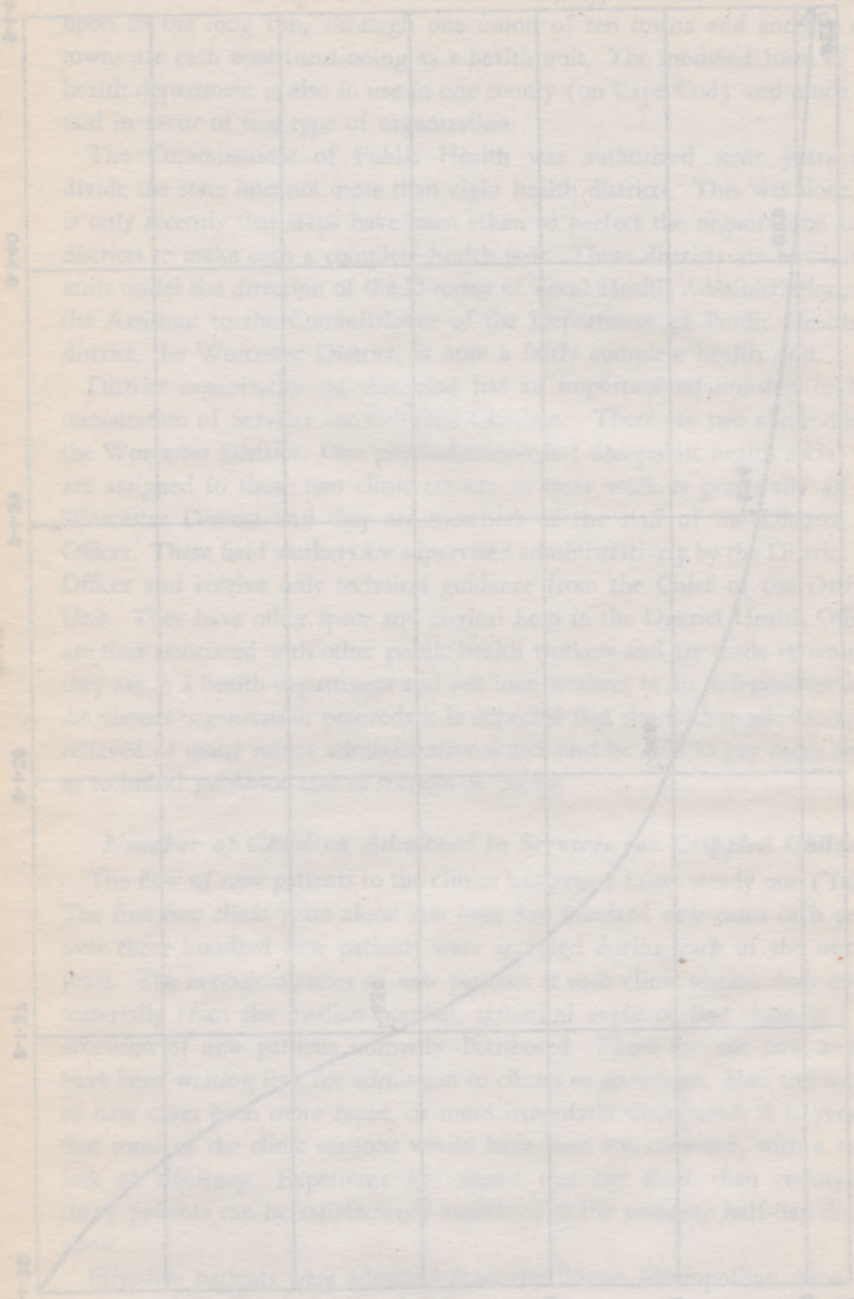
The flow of new patients to the clinics has been a fairly steady one (Table 3). The first two clinic years alone saw over five hundred new cases each year and over three hundred new patients were accepted during each of the next three years. The average number of new patients at each clinic session does not differ materially from the median number, statistical evidence that there is a steady accession of new patients normally distributed. There are not now and never have been waiting lists for admission to clinics or to service. Had the increment of new cases been more rapid, or more irregularly distributed, it is very likely that some of the clinic sessions would have been too crowded, with a resultant lack of efficiency. Experience has shown that not more than twenty-five or thirty patients can be satisfactorily examined at the ordinary half-day diagnostic clinic.

Fifty-five patients were admitted from the Boston Metropolitan Area. There is no State Clinic in this area for the reason that ample voluntary facilities are available for the ordinary case. Patients are occasionally found in this area whose special requirements can not be met by existing facilities, for one reason or another. Such patients, after careful investigation, are accepted for care, but are

FIGURE 2

NUMBER OF CHILDREN UNDER ACTIVE CARE AT INTERVALS OF ONE YEAR





not required to attend one of the clinic sessions. An appointment is made for each such patient to be seen by one of the clinic consultants at his Boston office where the examination is made and treatment prescribed.

TABLE 3
New Cases Admitted to Clinics September 1 to August 31 of Year Indicated

CLINIC	1936-37	1937-38	1938-39	1939-40	1940-41	Total	Average New Cases Per Clinic	Median New Cases Per Clinic
Brockton	54	65	54	45	47	265	4.8	4.
Fall River	40	38	25	41	42	186	3.5	3.
Gardner	69	37	19	26	13	164	3.	2.
Haverhill	41	29	21	30	22	143	2.6	2.
Hyannis	46	36	31	24	28	165	2.9	3.
Lowell	49	51	34	48	57	239	4.1	3.
Pittsfield	35	36	8	29	16	124	2.2	1.5
Salem	61	74	21	29	17	202	3.8	3.
Worcester	49	66	36	32	39	222	4.1	3.
Connecticut Valley	115	73	53	39	47	327	5.1	4.5
Metropolitan Boston			32	13	7	52		
TOTAL	559	505	334	*356	**335	***2,089	3.6	3.

*Including 11 patients previously discharged but who were re-admitted to service.
**Including 14 patients previously discharged but who were re-admitted to service.
***Including 25 patients previously discharged but who were re-admitted to service in 1939-41.

TABLE 4
Patients Under Active Care on September 1, 1941 in Respect to Year Admitted

Calendar Year	Number Admitted	Discharged Before 9-1-41	Still Under Care 9-1-41	Per Cent Under Care 9-1-41
1936	220	176	44	20
1937	501	356	145	29
1938	486	324	162	33
1939	331	173	158	48
1940	332	102	230	69
To Aug. 31, 1941	219	36	183	84
TOTAL	*2,089	1,167	922	

*Including 25 patients previously discharged who were re-admitted to service in 1939-41

TABLE 5
Increase in Number of Patients Under Active Care

Sept. 1 to Aug. 31 of Year Indicated	Admitted to Service	Discharged	Under Active Treatment on 8-31 of Year Indicated	Net Increase
1936-37	559	135	1937-424	
1937-38	505	183	1938-746	322
1938-39	334	226	1939-854	108
1939-40	*356	311	1940-899	45
1940-41	**335	312	1941-922	23
TOTAL	2,089	1,167		

*Including 11 patients previously discharged who were re-admitted to service between 9-1-39 and 8-31-40.
**Including 14 patients previously discharged who were re-admitted to service between 9-1-40 and 8-31-41.

Years of Treatment Often Needed

Of the two thousand eighty-nine admissions to service during the first five years of the State clinics, nine hundred twenty-two children were still under active care on August 31, 1941, of whom twenty-five were re-admissions of children previously discharged (Table 4). It is a well recognized fact that orthopedic treatment is necessarily long-continued, but it is a little startling to note that of the patients admitted during 1936 twenty per cent were still under

treatment on September 1, 1941. This proportion increases as the period of treatment decreases so that eighty-four per cent of those admitted during the first eight months of 1941 were still on the active list on September 1, 1941. It must be remembered, in interpreting these figures, that a certain number of hopeless cases are brought to clinics by parents who are ever hopeful of getting aid. Such patients are, of course, not retained on the active list after the first or second clinic visit. In Table 7 it is shown that of the eight hundred fifty-five patients who had been discharged from service prior to September 1, 1940, five hundred sixty-six had made only one or two clinic visits each. These patients were discharged either because no treatment was possible, because they were not included in the definition of a crippled child, because they were referred to another clinic, or for some other similar reason (Table 27). If these patients had not been included in the figures in Column 2 of Table 4, the percentages in the last column would be larger for the base would represent only those patients who had actually been placed under treatment.

Apparently the number of patients under active care has reached its level. There is every indication that in the months to come unless an epidemic of acute anterior poliomyelitis comes and leaves a wake of residual paralysis the number of patients discharged will approximately equal the number of new cases admitted, as was the case in the clinic year 1940 to 1941 when three hundred thirty-five were admitted and three hundred and twelve discharged (Table 5).

TABLE 6

Clinic Attendance September 1 to August 31 of Year Indicated

Clinics	1936-37	1937-38	1938-39	1939-40	1940-41	Total Attendance	Median Attendance At Clinics	Average Attendance At Clinics
Brockton	107	204	196	192	195	894	16	16
Fall River	104	190	183	210	221	908	17	17
Gardner	120	117	110	126	125	598	10	11
Haverhill	71	117	150	195	222	755	14	14
Hyannis	128	217	207	193	243	988	17	18
Lowell	98	191	235	229	327	1080	20	19
Pittsfield	73	148	132	130	139	622	11	11
Salem	136	247	175	166	124	848	16	16
Connecticut Valley	202	227	258	230	234	1151	18	18
Worcester	73	200	164	184	182	803	15	15
TOTAL	1,112	1,858	1,810	1,855	2,012	8,647	16	16

Figure 2 demonstrates graphically the number of patients under active care on September 1 of successive years. This graph is not unlike the enumeration growth curve of a bacterial culture as discussed by Zinsser. All three phases are present; the lag phase, which is the period of time between the planting of the organism in the medium and the beginning of maximum multiplication rate; the logarithmic period, which is the period of maximum growth rate; and the stationary stage, which is a period in which bacteria are dying as fast as they are being formed. The analogy, even to phraseology, is complete in the lag phase and in the logarithmic period. In the stationary stage, if one changes the phraseology to read "a period in which patients are being discharged as fast as new patients are being admitted", the analogy remains complete. It is to be hoped that changes in the "nutrient medium" of Services for Crippled Children

can be prevented so that catabolic metabolism will not gain the ascendency and so that the period of senescence will be averted.

Clinic Attendance

Clinic sessions are attended not only by new patients who present themselves with applications signed by their respective physicians, but by those who have attended a previous clinic session or sessions and who are returning for further observation, for adjustment of apparatus, for follow-up, for check-up or for any one or more of many other reasons. Total attendance has varied considerably among the ten clinic centers; it is summarized in Table 6. Two of the clinic centers, those at Pittsfield and Gardner, and especially the former, are well below the average in clinic attendance but, as shown in Table 22, the need of the Pittsfield Clinic patients for medical and surgical aid is greater, in proportion, than in any other clinic center.

That the attendance at clinic sessions is kept at a reasonable figure is shown in the last two columns of Table 6. There is practically no difference between the median and the average attendance, which indicates that few clinic sessions have extremely low or extremely high attendance. The sessions are generally about three hours in length. Not infrequently four or even five hours are required for careful examinations of the patients who attend.

Many Patients Attend Clinics Often

It is interesting to study the frequency of clinic visits by the patients although these figures are not final for more than half of the patients admitted were still on the active list on September 1, 1940 and will attend many more sessions before they are discharged. Those who were discharged before September 1940 made a fewer number of visits each, generally because it was evident that little, if anything, would be done for them. Table 7 shows that almost two-thirds of the discharged patients came to a clinic session only once or twice and that much less than half of the active patients have so far been seen so infrequently as that. The majority of patients under active care on September 1, 1940 who had made only one or two clinic visits had been only recently admitted to clinic; during the course of their treatment these children will undoubtedly need further examination.

Age and Sex of Children Admitted to Services for Crippled Children

A study of the age and sex of the crippled child at the time of first admission to clinic (Table 8) reveals the surprising fact that more children come to clinic for the first time when they are in their sixteenth year than at any other age. If these adolescents came for help because of deformities which are the result of accidents or of infections, it might be possible to conclude that they had been injured in their early teens, when children are on the streets more than when they are younger. But this is not the case, for the great majority of patients at this age have had their disabilities for several years.

TABLE 7
Number of Clinic Visits by Individuals During Four Years Ending 9-1-40

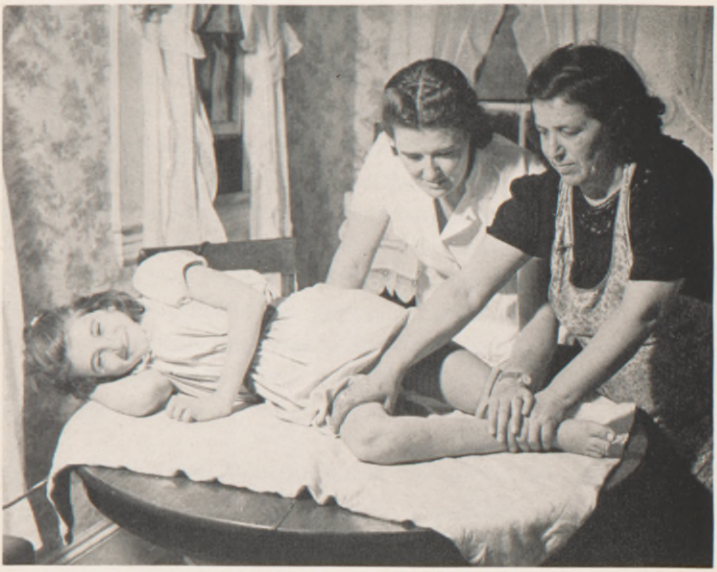
Number of Visits To Clinic	Under Active Care 9-1-40	Discharged Before 9-1-40	Total Patients	Total Visits
0	22	29	51	
1	207	409	616	616
2	125	157	282	564
3	86	77	163	489
4	82	52	134	536
5	70	34	104	520
6	63	23	86	516
7	46	15	61	427
8	38	14	52	416
9	31	10	41	369
10	24	10	34	340
11	16	5	21	231
12	17	10	27	324
13	14	5	19	247
14	13	2	15	210
15	10	1	11	165
16	9	0	9	144
17	10	2	12	204
18	3	0	3	54
19	5	0	5	95
20	3	0	3	60
21	1	0	1	21
22	1	0	1	22
24	1	0	1	24
25	2	0	2	50
Total 302	899	855	1,754	6,644

TABLE 8
Age and Sex of Patients at First Clinic Visit

AGE*	UNDER ACTIVE CARE 9-1-40			DISCHARGED BEFORE 9-1-40			TOTAL		
	M	F	T	M	F	T	M	F	T
Under 1	19	9	28	6	3	9	25	12	37
1	14	15	29	13	16	29	27	31	58
2	26	13	39	17	15	32	43	28	71
3	26	19	45	11	9	20	37	28	65
4	23	15	38	21	11	32	44	26	70
5	19	17	36	16	12	28	35	29	64
6	33	15	48	14	12	26	47	27	74
7	27	24	51	18	14	32	45	38	83
8	25	24	49	20	13	33	45	37	82
9	28	16	44	20	15	35	48	31	79
10	27	19	46	28	16	44	55	35	90
11	18	19	37	26	19	45	44	38	82
12	24	22	46	26	22	48	50	44	94
13	26	29	55	23	22	45	49	51	100
14	28	35	63	28	31	59	56	66	122
15	29	35	64	30	18	48	59	53	112
16	35	37	72	31	26	57	66	63	129
17	25	24	49	28	27	55	53	51	104
18	19	12	31	24	23	47	43	35	78
19	12	13	25	32	22	54	44	35	79
20	1	1	2	17	12	29	18	13	31
21	1	1	2	14	9	23	15	10	25
Over 21				12	13	25**	12	13	25**
TOTAL	485	414	899	475	380	855	960	794	1,754

*Age determined by subtracting year of birth from year of first clinic attendance.
**These patients were merely seen in consultation and were not accepted for care.

The reason for this can only be inferred. That the age of sixteen is the most popular one at which to go to a clinic for help is particularly true of boys. Girls come to clinic in gradually increasing numbers beginning at age thirteen, through ages fourteen, fifteen and sixteen. In fact, as many girls came to clinic for the first time at fourteen years of age as boys at sixteen years, although the sex ratio of children attending clinics is 1.23 boys to one girl. At ages thirteen to sixteen inclusive, two hundred thirty-three girls were admitted as compared with two



A mother giving her daughter a physical therapy treatment under the watechful eye of the physical therapist.

hundred thirty boys at those ages. At all other ages there were seven hundred thirty boys to five hundred sixty-one girls. A possible conclusion is that many of the patients at the adolescent age, both boys and girls, come on their own initiative when they begin to take an interest in themselves and in their appearance. This change begins at a younger age in girls than in boys and reaches its climax at age sixteen in both boys and girls.

The age group "over twenty-one" consists of two classes — those coming to clinic either before admission to or discharge from the Lakeville State Sanatorium and those applying for admission to clinic under some misapprehension about the age limit. Occasionally patients are examined in the State Clinics when they apply for admission to the Lakeville State Sanatorium in order to determine their suitability for admission there. Patients are also examined at the clinics after discharge from that institution in order to watch their progress. This is done in cooperation with the Division of Tuberculosis of the State Department of Public Health. These patients, although thus occasionally admitted to a clinic for diagnostic service, are not given treatment by Services for Crippled Children. Patients whose medical and surgical treatment will obviously need to continue after they are twenty-one years of age are not accepted for care but no patient who reaches the age of twenty-one years before his treatment has been completed is summarily dropped on the twenty-first anniversary of his birth if he needs a little more treatment.

The Orthopedic Unit Does Not Supplant the Work of Other Agencies

In carrying out its policy of improving and extending existing services for crippled children the Orthopedic Unit of the Massachusetts Department of Public Health does not knowingly supplant the work of any agency, either official or voluntary. No patient is admitted to Service without a thorough investigation of the previous medical and surgical care received. If the applicant proves to be under the care of some physician, hospital or agency, or if he has been under such care within the previous year or two, the appropriate person is consulted and the patient admitted only when there is need for additional assistance and of course after a full understanding with those concerned. If such a patient is denied care under Services for Crippled Children, it is because there is assurance that the existing facilities are ample for the needed care.

The medical profession of one of the largest cities in the State resisted the establishment of a clinic in their city until the true reason came to light so that the misunderstanding could be corrected. Local orthopedists in that city had for a number of years conducted orthopedic clinics for its citizens. They did not wish the State Department of Public Health to supplant these clinics and since nothing could be more foreign to the wishes of the Department than to replace this excellent work, it was not difficult to come to an agreement. A monthly clinic is now held in that city, but no crippled children living within that city are admitted to clinic. When such a crippled child is found, the Chairman of the appropriate committee of the District Medical Society of that city is given this information. He is then responsible that the child gets the care he needs.

TABLE 9

Medical or Surgical Treatment Previous to Attending State Clinic For Crippled Children

Previous Medical or Surgical Care	ACTIVE			CLOSED			TOTAL		
	M	F	T	M	F	T	M	F	T
Family Physician	106	96	202	112	105	217	218	201	419
Metropolitan Hospital	100	68	168	94	56	150	194	124	318
Local Hospital	69	68	137	66	54	120	135	122	257
State Hospital	15	8	23	7	9	16	22	17	39
Private Agency	48	43	91	67	43	110	115	86	201
Public Agency	3	1	4	8	8	16	11	9	20
No Treatment	173	154	327	93	92	185	266	246	512
Unknown	31	25	56	62	40	102	93	65	158
TOTAL	545	463	1,008	509	407	916	1,054	870	1,924

Previous Medical and Surgical Care

Table 9 summarizes the previous medical and surgical care of the one thousand seven hundred fifty-four patients who were accepted for care before September 1, 1940. Some of the children had had several types of previous care, hence the total in this table is greater than the number of patients. The largest single category is those who had had no treatment at all. This group numbered five hundred twelve children, almost a third of the total number of patients admitted. That such a situation could and did exist in the Commonwealth of Massachusetts was somewhat disconcerting to those who had insisted, before the Orthopedic Unit was organized, that few neglected children would be found. In all justice to the medical profession it must be said that the reason these children had been neglected was not that physicians had refused to help them but that the parents had made no effort to get care for their children. The tendency in families of the lower economic strata is to hide the deformed child from others than members of the family and to become so accustomed to the sight of the crippling condition that all thought of making the necessary efforts to try to get the condition corrected disappears. This attitude of the parents might well be one reason why so many children first come to clinic in their adolescent years on their own initiative when they are becoming self-conscious. This negligence on the part of the parents is due to one or more of the following factors: the realization that treatment and apparatus are expensive; the fear of operative procedures; and the feeling that the crippling condition is so hopeless anyway that nothing can possibly be done to alleviate it. There are, of course, those who believe that a deformity has been bestowed by the Deity and therefore should not be disturbed. On the other hand there are certain parents who will not believe a condition to be hopeless, no matter who had told them it is, and who go to every clinic and to every physician who can speak with authority in the vain hope of finding some one who will promise physical restoration.

The next largest group in Table 9 includes those who had consulted their family physicians. It must be borne in mind that of the one thousand seven hundred fifty-four children under discussion (those admitted during the first four years) only forty-five came from the Boston Metropolitan Area and that none came from the city of Worcester. It is a rural-dwelling group and under such conditions the family physician's help is largely limited to giving advice

since he cannot afford to provide hospitalization or apparatus. The only hospitals ordinarily available to rural patients are the smaller ones and in them free beds are not numerous and clinics are few. The Orthopedic Unit makes particular effort to extend Services for Crippled Children into just such areas in order to care for these children.

Over three hundred of the children admitted to care had had previous treatment in some metropolitan hospital, and almost as many had been in a local hospital. Practically all of these children had had operative treatment, and this had nearly always been well done. The records of the children admitted to the clinic centers contain transcripts of their hospital records so that clinic consultants know just what the previous treatment was. There is one important point in this connection and that is that no matter how successful an operation, unless there is efficient after-care and follow-up, much of the beneficial effect of an excellent operation is lost. Many of the patients seen in the clinics who had had operative procedures some years before they were admitted to Services for Crippled Children but who had had no after-care demonstrate this fact perfectly. Over two hundred patients had received aid from a private or public agency, generally the former, but very few such agencies do more than to provide hospitalization or apparatus, or both. Practically none furnish follow-up services.

Reasons for Discontinuance of Treatment

No special efforts were made to ascertain just why the patient's parents discontinued whatever treatment the crippled child was getting before admission to Services for Crippled Children. Certain questions were asked of each family in order to obtain the data necessary for the State Register of Crippled Children as well as to obtain full information concerning the economic and social status of the family in order to determine whether the family is a needy one or not. In the course of this questioning an attempt is made to learn why previous treatment was discontinued. If this information is not readily forthcoming, the matter is not pressed. Table 10 summarizes the information obtained concerning reasons for discontinuing treatment. The largest single category in this table, aside from those who had had no treatment to discontinue, is, unfortunately, the group which did not give any reason for discontinuing treatment. One can only conjecture what their reasons might have been. By coming to clinic they gave evidence that they at least were not unwilling to be helped. This group includes more than a third of the patients, but the other two-thirds who frankly gave their reasons furnish excellent food for thought.

Two hundred and sixty-five admitted that they lacked sufficient funds for the necessary treatment. Crippled children frequently require hospitalization and expensive apparatus. No matter how willing the family physician may be to give advice and any assistance within his power, he can not be expected to provide facilities such as these.

More than one hundred discontinued previous treatment because they had reached the age limit established by the agency under whose care they had been. Since patients are accepted at the clinic centers up to the age of twenty-one

years this is an excellent way to fulfill one of the purposes of Services for Crippled Children to "extend existing services".

The parents of two hundred and sixty-seven patients stated they had been advised against further treatment or had been told no more treatment was possible. About one-half the patients in this group were discharged from the active list soon after admission to clinics, thus corroborating this advice, but it was found possible to aid the others.

TABLE 10
Reason For Discontinuing Treatment Previous to Attending Clinic For Crippled Children

REASON	ACTIVE			CLOSED			TOTAL		
	M	F	T	M	F	T	M	F	T
No treatment to discontinue	173	154	327	93	92	185	266	246	512
Lack of funds	86	72	158	67	40	107	153	112	265
Unknown	92	85	177	136	108	244	228	193	421
Reached age limit	35	26	61	43	23	66	78	49	127
Advised against further treatment	56	41	97	67	62	129	123	103	226
No treatment possible	13	7	20	15	6	21	28	13	41
Dissatisfaction	5	4	9	2	3	5	7	7	14
Lack of transportation	7	7	14	6	4	10	13	11	24
Uncooperative	6	6	12	9	8	17	15	14	29
Not discontinued	21	16	37	43	35	78	64	51	115
TOTAL	494	418	912	481	381	862	975	799	1,774

In a surprisingly small number of patients the parents were dissatisfied with whatever treatment had been given them, which speaks very well for the quality of care in Massachusetts. It is well known that patients or their parents are often, for the flimsiest of reasons, dissatisfied with results in orthopedic cases.

Only a very few stated that lack of transportation was the factor which necessitated discontinuing previous treatment. Presumably these particular ones lived in rural regions and thus were especially eligible for Services for Crippled Children. Arranging for transportation for patients is one of the functions of the field staff of Services for Crippled Children. The purpose in distributing the clinic centers so that they were state-wide was to bring clinic service near the homes of all possible patients. That this has been successful is shown by the fact that the problem of transportation is but a minor one in the Massachusetts program, except in connection with the transportation of patients from Nantucket and Martha's Vineyard, two islands off Cape Cod. A local public health nurse there who is much interested in the program brings the patients to the Hyannis Clinic, takes them home and provides after-care under the direction of the clinic consultant. She is reimbursed for her travel expenses.

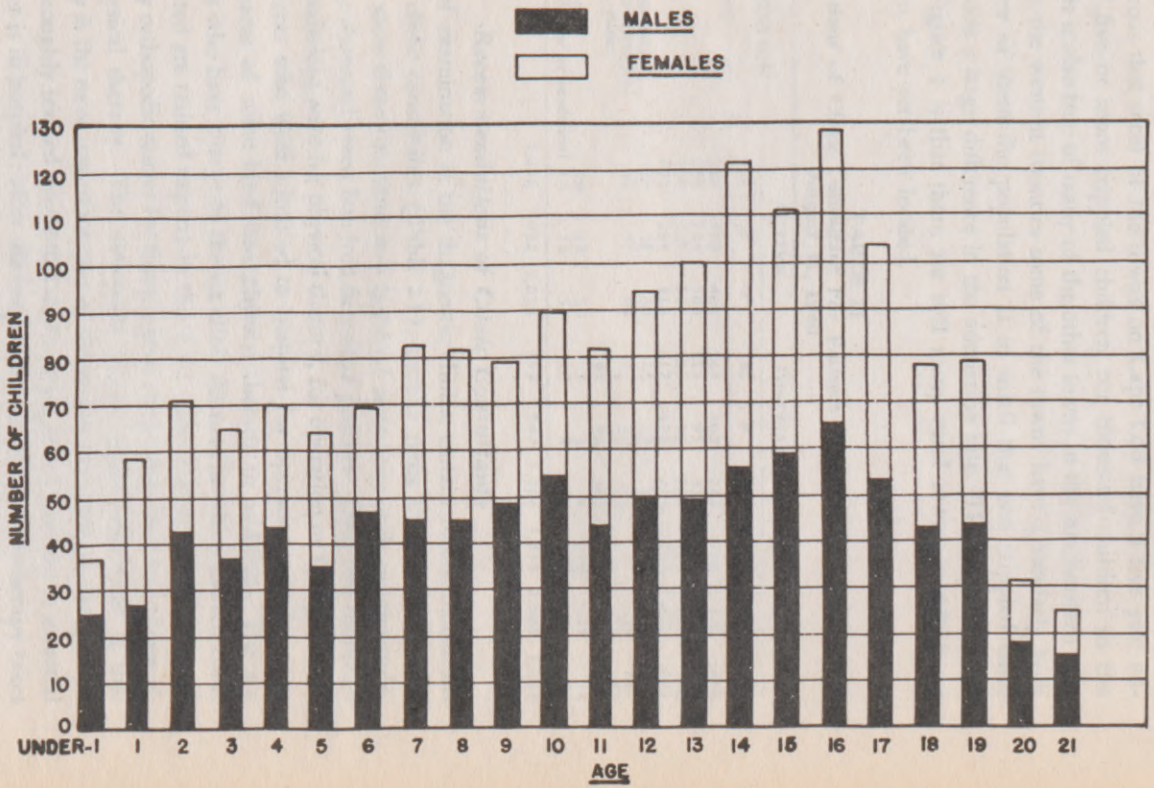
In one hundred and fifteen cases after special arrangements had been made, the Orthopedic Unit took over the treatment and the responsibility. In general, this was done because the patient needed either an expensive apparatus or an operation and was unable to pay.

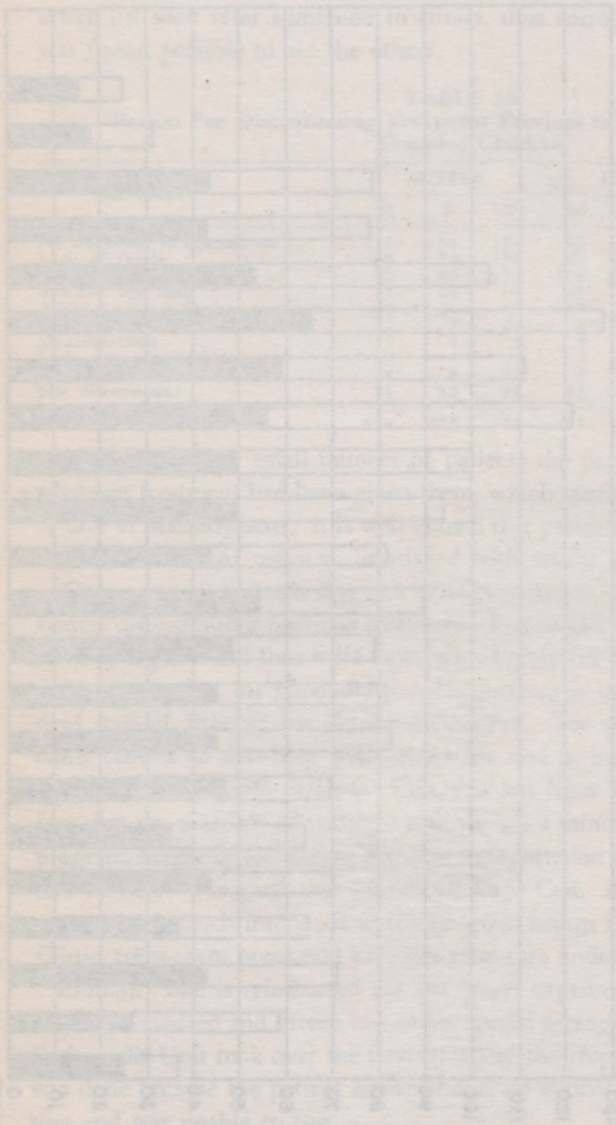
Admission Rates by Towns and Cities

Although there are many cities and towns in rural areas from which no patients have been admitted to Services for Crippled Children, Figure 4 presents evidence that the populous eastern and northeastern parts of the Commonwealth are the ones from which fewest patients have been accepted for care. Most of the cities

FIGURE 3

AGE AT ADMISSION TO SERVICES FOR CRIPPLED CHILDREN





and towns in this area have either sent no crippled children at all to the clinic centers or they have sent less than two per thousand of children in the population under the age of twenty-one years. The explanation is, of course, that the crippled children in this region are being adequately cared for by other agencies and do not need State help.

It is conspicuous that most of the towns on Cape Cod have a five year admission rate of five or more crippled children per thousand children in the population. This is also true of many of the other towns in the southeastern part of the State. In the western counties some of the towns have a similarly high rate but in many of them the population is so small that one crippled child more or less makes a large difference in the admission rate. The important deduction from Figure 4 is that there are still many rural towns in which no crippled children have yet been located.

TABLE 11
Recommendations of Clinic Consultant For Patients Admitted to Clinics to August 31, 1940

RECOMMENDATION	ACTIVE			DISCHARGED			TOTAL		
	M	F	T	M	F	T	M	F	T
Operation	233	170	403	143	100	243	376	270	646
Physiotherapy	246	254	500	115	95	210	361	349	710
Apparatus	284	227	511	129	96	225	413	323	736
X-ray (diagnostic)	200	214	414	117	112	229	317	326	643
Referred to other specialist	39	29	68	26	17	43	65	46	111
Hospitalization (non-operative)	42	40	82	17	16	33	59	56	115
Return to previous clinic				3	14	17	3	14	17
Not clinic case				96	86	182	96	86	182
Convalescent home care	16	12	28	3	3	6	19	15	34
Special treatment, dietary or medicinal	16	16	32	10	8	18	26	24	50
TOTAL	1,076	962	2,038	659	547	1,206	1,735	1,509	3,244

Recommendations of Clinic Consultants

As a result of examination at the diagnostic clinics, certain recommendations were made by clinic consultants (Table 11), usually more than one for each patient. There were three thousand two hundred forty-four such recommendations for the one thousand seven hundred fifty-four patients. Over two thousand of the recommendations were for physical therapy, for operation or for apparatus. Almost all patients who were admitted to hospital for operation or who were given an apparatus of some kind had physical therapy in addition. The six physiotherapists who have charge of the six clinic districts in which the ten clinic centers are located are trained experts in this field. The Massachusetts program does not employ orthopedic nurses for this purpose unless they have had thorough training in physical therapy. The viewpoint of the Orthopedic Unit is that physical therapy is the most important part of the follow-up work, so the greatest need is for thoroughly trained physiotherapists. Orthopedic nursing is essential while the patient is in hospital; after discharge from hospital physiotherapy takes first place. During the five years under consideration, almost twenty-one thousand physiotherapy treatments have been given to the patients admitted to service. In addition to giving treatments, physiotherapists have made over eleven thousand visits to nurses, physicians, welfare workers, etc., in connection with follow-up work.

If continuous nursing service is needed during after-care, a suitable convalesent home is utilized. When occasional nursing help is needed, local nurses are often called upon. The Commonwealth of Massachusetts is well supplied locally with nurses who are employed both by private and by public agencies and who are eager, for the most part, to be of all possible assistance.

In Table 11, one hundred and thirteen patients are shown as having been referred to a specialist for consultation and report. The recommendations that this be done were made at clinic sessions. When, during hospitalization or follow-up work, the need arose for the services of some other specialist than the orthopedist, authority was granted by the Chief of the Orthopedic Unit, who designated the specialist and made the appointment.

Referrals to Specialists

Table 12 not only shows the number of children who have been referred to specialists, but also the number of children making multiple visits to the designated specialist. This group of one hundred and eighty-seven children includes the patients from the Boston Metropolitan Area, all of whose visits to physicians are in this group. Also included in this group are a number of patients who were referred to specialists for consultation and report, and later for treatment. These children were rather unequally distributed among the clinic centers (Table 13). The largest single group was, of course, that from Metropolitan Boston. Four clinic consultants referred a total of twenty-two cases; the other six asked for the remaining one hundred and twenty consultations.

Acceptance of Recommendations

The recommendations of clinic consultants have been surprisingly well accepted (Table 14). No special efforts were ever made to induce anyone to consent to operation. The risks and the possibility of unsatisfactory results, as

TABLE 12

Consultation Visits For Diagnosis or Treatment as Referred by Clinic Consultants

NUMBER OF VISITS	MALE	FEMALE	TOTAL
None	837	730	1,567
1	66	31	97
2	31	21	52
3	11	6	17
4	5	2	7
5	2	1	3
6		1	1
7	2		2
8	1		1
10	2		2
11	1		1
12	1		1
16		1	1
18	1		1
68		1	1
171	960	794	1,754

TABLE 13

Number of Patients Referred by Clinic Consultants to Other Specialists

CLINIC	MALE	FEMALE	TOTAL
Brockton	13	11	24
Fall River	3	5	8
Gardner	3	2	5
Greenfield		1	1
Haverhill	10	5	15
Hyannis	2		2
Lowell	6	7	13
Metropolitan Boston*	32	13	45
Northampton	2		2
Pittsfield	4	3	7
Salem	8	3	11
Springfield	19	5	24
Worcester	21	9	30
TOTAL	123	64	187

*Metropolitan patients did not attend clinics. They were seen by several of the clinic consultants at their offices, or by other specialists, direct.

TABLE 14

Acceptance of Recommendations of Clinic Consultant at Clinic For Crippled Children

HOW ACCEPTED	ACTIVE			CLOSED			TOTAL		
	M	F	T	M	F	T	M	F	T
Fully	446	388	834	392	319	711	838	707	1,545
Partially	32	19	51	39	30	69	71	49	120
Refused	7	7	14	44	31	75	51	38	89
TOTAL	485	414	899	475	380	855	960	794	1,754

well as the possible benefits to be derived from surgical interference, were explained to each patient's family. On the other hand, a parent's first refusal was rarely accepted as final, especially if the chances for improvement in that child's condition were good. Final definite refusal on the part of the parent after the clinic consultant and several members of the field staff had repeatedly talked with them resulted ordinarily in the discharge of the patient from clinic. Seventy-five patients in this category are listed as closed cases as compared with fourteen who were still carried on the active list on September 1, 1940 in spite of refusal. Those fourteen are being "labored with" in the language of the revivalist. Any patient who has been dropped from the active list because of final refusal to accept the aid which has been offered may, of course, be readmitted at any time that the parent decides to accept aid. Occasionally, in flagrant cases, the Society for the Prevention of Cruelty to Children is called upon for aid, which is gladly given. A child should not be penalized for life because ignorant parents refuse to allow him to have his handicap overcome.

It is remarkable that so comparatively few refused all aid. That there are not more in this group is a tribute to the clinic consultants and to the field workers, physiotherapists and social workers alike, who interpret the orthopedists' recommendations to the families. Most of the refusals came early in the program; they are rare now for the clinics have achieved a well-earned reputation for obtaining satisfactory results.

One cogent reason for this reputation lies in the continuity of the service the patients get, once they are accepted. They are examined by the clinic consultant, who is aided by the clinic supervisor, the physical therapist and the

social worker. If physical therapy is prescribed, they see the same physical therapist again and again. The same social worker sees them repeatedly at their homes and in clinics. When they return to clinics they see the same consultant. If an apparatus is ordered, it is fitted by the consultant, who gives full instructions concerning its use and who adjusts it as need arises. The physical therapist checks on its use, makes any necessary adjustments if she can, or has the patient come to clinic for this service. If operation is recommended, the child is admitted to hospital, but not merely turned over to a hospital staff. The clinic consultant performs the operation, the physical therapist and social worker visit the child during the stay in hospital, not to perform any duties necessarily, since the child is under hospital jurisdiction, but to show personal interest and to assist the child or the family. A very striking result of this careful, kindly follow-up care is the attitude of patients in the clinic sessions. A child on its first visit is often apprehensive and worried, and manifests its emotions by crying and by resisting the examination. On subsequent visits the contrast in the child's demeanor is striking, except in the case of the permanently uncooperative child, of whom there are fortunately not many.

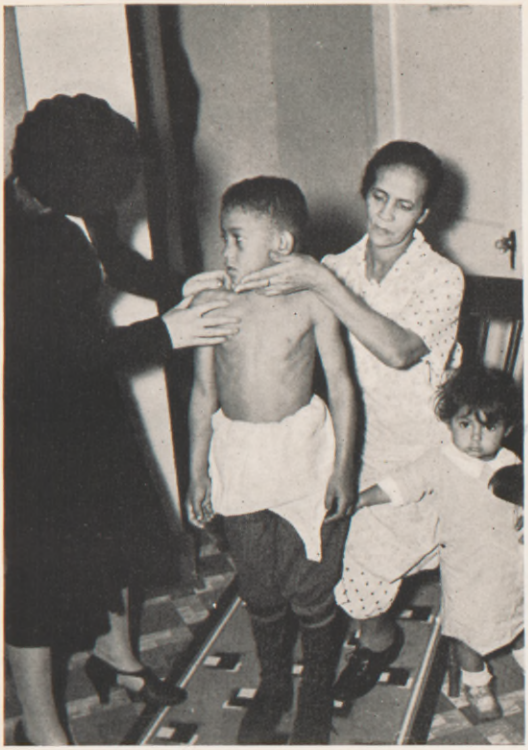
Classification of Crippling Condition by Diagnosis

The diagnoses of children admitted to service during the first five years are classified in Table 16. Over a third of all the diagnoses are included under the first classification of crippling conditions, those due to prenatal influences. The next largest classification, about a fourth of the total, includes the crippling conditions resulting from infection. Crippling conditions due to trauma, to disorders of metabolism, and to new growths make up still smaller groups. Those due to unknown or uncertain causes together with those which are not included in a classification which is basically orthopedic, make up the remainder. Some of the children, of course, had several crippling conditions each. In this study only the most important crippling condition in each child was recorded so the number of diagnoses is the same as the number of children admitted to service.

TABLE 15

Diagnosis of Children Admitted to Services For Crippled Children

I. CRIPPLING CONDITIONS DUE TO PRENATAL INFLUENCES		
Congenital absence of a part	18	
Cerebral spastic paralysis	188	
Cleft palate and/or harelip	51	
Congenital deformity	58	
Congenital dislocation	32	
Obstetrical paralysis	98	
Spina bifida	20	
Clubfoot	43	
Torticollis, congenital	37	
Miscellaneous	58	
Total		603
II. CRIPPLING CONDITIONS DUE TO INFECTIONS		
Arthritis	64	
Osteomyelitis	37	
Subacute anterior poliomyelitis	24	
Residual paralysis of anterior poliomyelitis	317	
Miscellaneous	13	
Total		455



A physical therapist visiting a home for a demonstration by the mother of the progress she has made.

III.	CRIPPLING CONDITIONS DUE TO TRAUMA OR PHYSICAL AGENTS		
	Amputations due to accidents and to other causes	26	
	Cicatrices and contractures due to burns and other trauma	56	
	Miscellaneous	57	
	Total		139
IV.	DISORDERS OF METABOLISM, GROWTH OR NUTRITION		
	Deformity due to rickets	56	
	Bone changes, abnormal growth	1	
	Total		57
V.	CRIPPLING CONDITIONS DUE TO NEW GROWTHS		
	Miscellaneous	13	
	Total		13
VI.	CRIPPLING CONDITIONS DUE TO ALL OTHER CAUSES, INCLUDING UNKNOWN OR UNCERTAIN CAUSES		
	Flat foot (fixed, postural and spastic)	70	
	Progressive muscular dystrophy	24	
	Scoliosis	180	
	Legg-Perthes' Disease	11	
	Miscellaneous	22	
	Total		307
VII.	MISCELLANEOUS CONDITIONS		
	Strabismus	59	
	Mental diseases	18	
	Neurological disorders	31	
	No crippling condition within definition	52	
	Miscellaneous	20	
	Total		180
	TOTAL NUMBER OF PATIENTS ADMITTED TO SERVICE		1,754

TABLE 16
Crippling Conditions Found in Clinics; Per Cent of Total, in Each Clinic

Clinic	Per Cent Due to Prenatal Influences	Per Cent Due to Infection	Per Cent Due to Physical Agents	Per Cent Due to Disorders of Metabolism	Per Cent Due to All Other Causes	Per Cent Due to Miscellaneous Conditions
Brockton	11.3	9.7	17.3	3.6	18.2	13.1
Fall River	8.2	7.	10.8	31.	6.5	5.4
Gardner	11.6	7.2	8.6	5.	5.9	3.6
Haverhill	7.8	8.8	5.		5.7	4.8
Hyannis	5.8	6.8	6.5	8.6	11.1	11.2
Lowell	9.	12.6	7.9	19.	10.1	10.7
Metropolitan Boston	2.	.6	7.2		.3	11.3
Pittsfield	6.	7.7	3.6		6.9	5.4
Salem	11.6	16.2	7.2	6.9	6.9	3.6
Worcester	12.1	8.2	7.2	12.1	8.2	17.9
Connecticut Valley	14.6	15.2	18.7	13.8	20.2	13.
TOTAL	100.	100.	100.	100.	100.	100.

The first question that might be asked is whether these crippling conditions were seen equally in the ten clinic centers or whether certain conditions were more common in one clinic center or another. Table 16 presents evidence that the distribution is a normal one, for each group of crippling conditions listed in Table 15 is fairly equally divided among the clinic centers. For instance, of the six hundred and three patients whose crippling conditions were due to prenatal influences (Column 2 of Table 16), Brockton had 11.3 per cent, Gardner 11.6 per cent, etc. Other crippling conditions are similarly analyzed in the other columns. In no instance, except Fall River (Column 5), is the deviation from the mean statistically significant and in this instance we are dealing with a much smaller number, there being only fifty-seven in this classification (Table 15). Table 16 does not take into consideration the variation in the total number of children admitted to the respective clinic centers. Had the figures been thus weighted the distribution would be even better. For instance,

Pittsfield, the smallest clinic center in point of admissions to service, had only six per cent of the patients whose crippling conditions were due to prenatal influences (Column 2), while the Connecticut Valley clinic center, more than twice as large, had 14.6 per cent. The patients from the Boston Metropolitan Area are, for reasons heretofore given, not compared with the clinic centers.

Age of Crippled Children at Time of Admission to Service

The age distribution of these classifications (Table 17) is interesting in two respects: first, because it differs so widely from the figures which are given in Table 6 in Children's Bureau Publication No. 258. The figures in the latter table are for children on State Registers and not for those actually being cared for by Services for Crippled Children. The Massachusetts State Register figures which are included in the Children's Bureau summary are incomplete in many

TABLE 17
Age on Admission to Clinic

CRIPPLING CONDITION DUE TO	AGE GROUP					
	0-4	5-9	10-14	15-20	21	TOTAL
Prenatal Influences	147	145	162	141	8	603
Infections	32	65	135	194	29	455
Trauma or Physical Agents	9	21	44	61	4	139
Disorders of Metabolism, Growth or Nutrition	37	14	3	3		57
New Growths	4	4	3	2		13
Other Orthopedic Causes	30	77	97	100	3	307
All Others	37	59	47	34	3	180
TOTAL	296	385	491	535	47	1,754

respects and probably do not give a true picture of the age distribution of crippled children in the Commonwealth. In the Bureau publication it is shown that less than 0.5 per cent of the children on the Massachusetts Register are under one year of age and only 5.0 per cent between one and five years of age. Table 17, Column 1 shows that two hundred ninety-six, or 17 per cent of the children admitted for care were under five years of age at time of admission. The difference is not so great in the case of the next older group, five to nine, where Publication No. 258 lists 15 per cent on the Massachusetts Register, while the proportion of patients in that age group actually under care in Massachusetts is 22 per cent. The difference is discussed here because the Publication comments on Massachusetts being lowest in the proportion of crippled children under the age of ten. The reverse is, of course, the case for children from ten to twenty-one years of age.

Table 17 is interesting for a second reason. When Table 8 was commented upon, attention was called to the fact that more sixteen year old children than any others were admitted to service. One expects crippling conditions due to infections, to trauma and to some other orthopedic causes to be found in increasing numbers the older the child, but one is somewhat surprised to note that this is also true, at least insofar as applying for admission to clinic is concerned, in crippling conditions due to prenatal influences. The age at which the patients in the last-named group come to clinic most frequently is ten to fourteen. As this classification (prenatal influence) is considerably the largest, it has much weight in defining the mode in the age distribution. However, Services

for Crippled Children in the Department of Public Health had been in existence only four years when these figures were tabulated and many of these children, particularly those living in rural areas, had had no opportunity to get aid earlier in life. Studies in future years will probably show changes in age distribution since the trend is for those children whose crippling conditions are due to prenatal influences to come to clinic earlier in life.

Crippling Conditions Due to Prenatal Influences

A study of the crippling conditions due to prenatal influences (Table 18) reveals the fact that all but fifty-eight of the six hundred and three children included in this classification may be grouped under nine broad diagnoses. There is nothing noteworthy about the first group (congenital absence of a part) except the preponderance of males and the fact that two-thirds of them lacked a forearm or parts of it. In the second group there were one hundred eighty-eight children uniformly distributed among the clinic centers whose crippling condition was due to cerebral spastic paralysis. Slightly more than half of these children had been discharged from active care before September 1, 1940 because orthopedic surgery had nothing more to offer them. The new program for the relief of these sufferers, which the Department plans to institute, should be of great benefit to these unfortunates. The third group includes seven patients with harelip, twenty-eight with cleft palate and sixteen with both. The congenital deformities making up the fourth group were of all types. Twenty-nine of the congenital dislocations (fifth group) were of the hip, and of these, twenty were in girls and five were double dislocations. Five of the ten clinic centers had seventy-one of the ninety-eight patients with obstetrical paralysis who make up the sixth group but, even so, Salem was the only clinic which had a disproportionate number. That clinic had twenty such cases, eleven per cent of all patients admitted to that clinic center. Two-thirds of the ninety-eight cases were of the whole arm type. Thirty-five of the forty-three clubfoot cases (the seventh group) were boys and less than half of these patients came to clinic younger than the age of four years. One child had both clubfeet and clubhands. There is nothing noteworthy about the twenty cases of spina bifida and thirty-seven of torticollis which were admitted.

TABLE 18

Age and Sex of Children Admitted
Because of Certain Conditions Due to Prenatal Influences

	MALE					FEMALE					
	0-4	5-9	10-14	15-20	21	0-4	5-9	10-14	15-20	21	Total
Congenital absence of a part	1	6	4	4			1	2			18
Cerebral spastic paralysis	20	19	26	38	2	13	19	24	25	2	188
Cleft palate and/or harelip	18	2	9	6		9	4	3			51
Congenital deformity	13	9	12	3		9	7	2	3		58
Congenital dislocation	2	3		2		4	7	8	6		32
Obstetrical paralysis	6	13	17	14	2	4	14	14	13	1	98
Spina bifida	2	3	5			3	2	2	3		20
Clubfoot	17	7	5	6		2	3	1	2		43
Torticollis, congenital	7	7	4	3	1	2	5	6	2		37
TOTALS	86	69	82	76	5	46	62	62	54	3	545
All others											58
TOTAL											603

TABLE 19
Age and Sex of Children Admitted
Because of Certain Conditions Due to Infections

	MALE					FEMALE					
	0-4	5-9	10-14	15-20	21	0-4	5-9	10-14	15-20	21	Total
Arthritis all forms	3	6	10	14	1	1	2	11	14	2	64
Osteomyelitis	1	2	9	14		1	2	3	5		37
Acute anterior poliomyelitis	4	3	5	4		1	3	1	3		24
Chronic anterior poliomyelitis	10	31	52	78	13	11	15	38	57	12	317
TOTALS	18	42	76	110	14	14	22	53	79	14	442
All others											13
TOTAL											455

Crippling Conditions Resulting from Infection

The acute anterior poliomyelitis cases enumerated in Table 19 are those for whom family physicians asked for consultations in order better to direct the after-care during the subacute stage. Half of the chronic poliomyelitis cases involved a leg or foot or both. Twenty-five of them were over twenty-one years of age and were seen either preliminary to admission to the Lakeville State Sanatorium, or afterwards as part of the follow-up care at the request of the Division of Tuberculosis of the Department of Public Health, which administers the State sanatoria.

Crippling Conditions Due to Trauma

Artificial limbs were generally provided for the children listed in Table 20. Almost half of them are boys fifteen to twenty years of age and a large proportion of them are residents of the Boston Metropolitan Area.

In Table 21 are listed the chief miscellaneous causes for admission to service. That there should be so many cases of deformity due to rickets indicates that disorders of metabolism, of growth and of nutrition are not uncommon, especially since the fifty-six patients with this disease seen at the clinic were so severe that they were orthopedic cases. Eighteen of these patients, a figure which apparently is statistically significant, were seen in the Fall River clinic center.

Admission to Hospitals

Six hundred and thirty-three patients were admitted to hospital eight hundred and eighty-one times during the first four years (Table 22). Thus, over one-third of the patients admitted to service required surgical intervention, some of them several times. These figures are by no means final for these patients, for of the six hundred and thirty-three children hospitalized, four hundred and twenty-eight were still under active care on August 31, 1940 and many of them undoubtedly will have received further operative treatment before they are discharged.

TABLE 20
Age and Sex of Children Admitted
Because of Certain Conditions Due to Trauma or Physical Agents

	MALE					FEMALE					
	0-4	5-9	10-14	15-20	21	0-4	5-9	10-14	15-20	21	Total
Amputations due to all causes	1	1	5	12	2			1	4		26
Deformities contractures, cicatrices	4	9	4	10	1	1	7	12	8		56
TOTALS	5	10	9	22	3	1	7	13	12		82
All Others											57
TOTAL											139

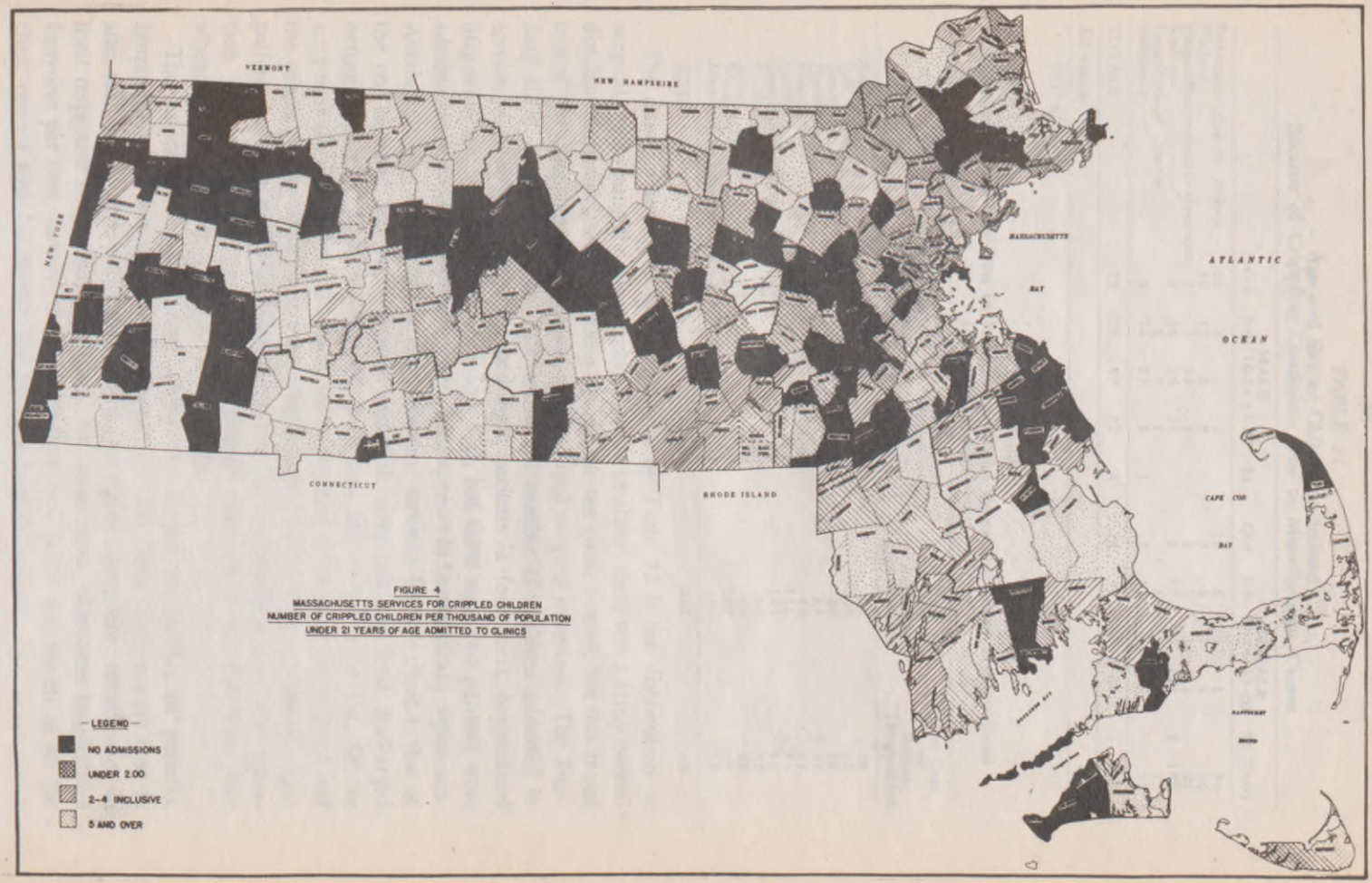


FIGURE 4
MASSACHUSETTS SERVICES FOR CRIPPLED CHILDREN
NUMBER OF CRIPPLED CHILDREN PER THOUSAND OF POPULATION
UNDER 21 YEARS OF AGE ADMITTED TO CLINICS

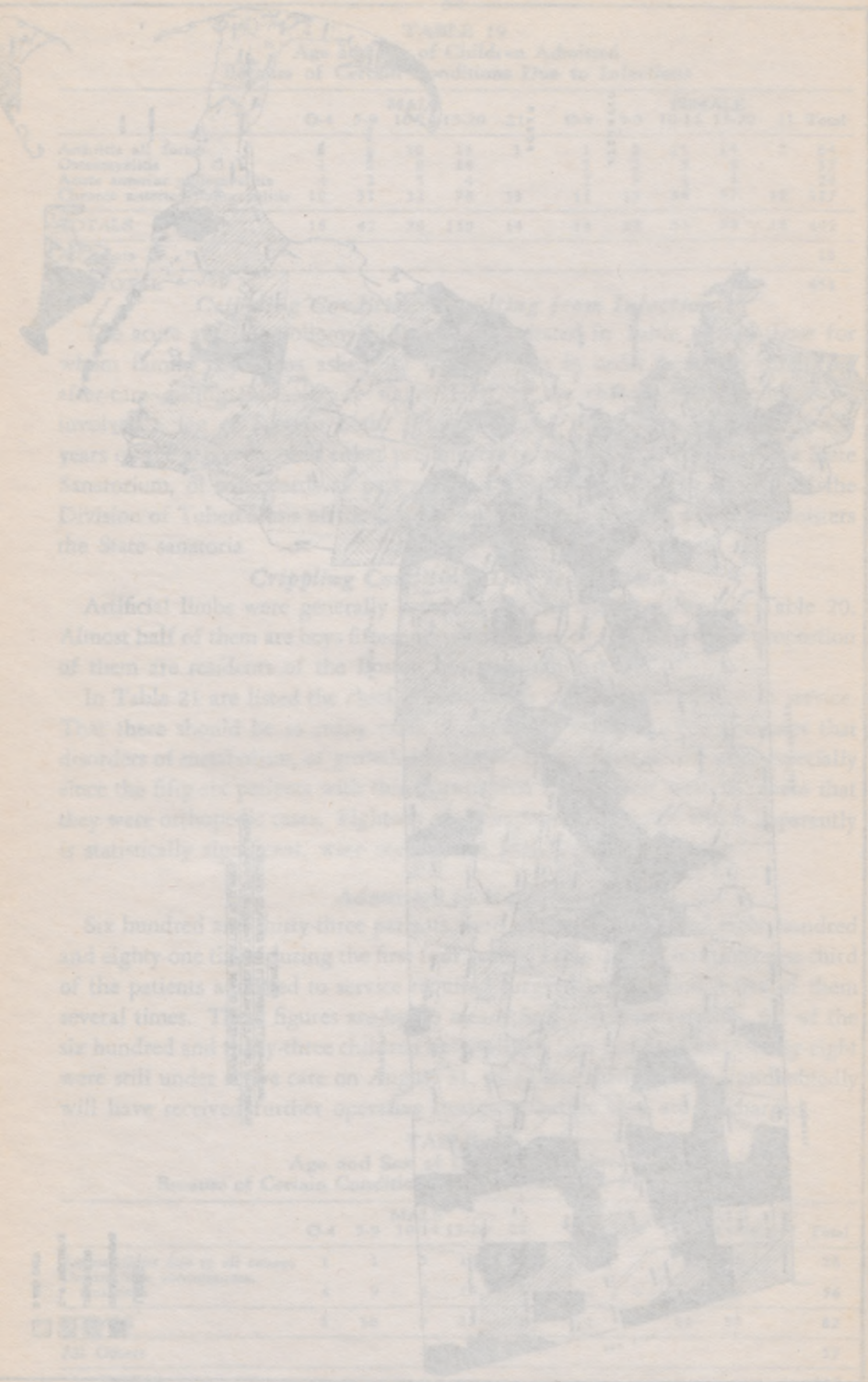


TABLE 21

Age and Sex of Children Admitted Because of Crippling Conditions Due to Miscellaneous Causes

	MALE					FEMALE					
	0-4	5-9	10-14	15-20	21	0-4	5-9	10-14	15-20	21	Total
Deformity due to rickets	20	7		1		18	6	3	1		56
Flatfoot	12	17	9	8		7	5	7	5		70
Progressive muscular dystrophy	1	5	10	1		1	1	3	2		24
Scoliosis	2	24	16	21		1	15	45	53	3	180
Legg-Perthes' disease		8	1	1			1				11
Stabismus	4	16	13	5	1	1	11	5	3		59
TOTALS	39	77	49	37	1	28	39	63	64	3	400
All others											157
TOTALS											557

TABLE 22

Proportion of Children in Respective Clinics Requiring Surgical Treatment (including Lakeville)

	Patients Admitted to Care Through 8-31-40	Patients Hospitalized Up to 8-31-40	Total Numer of Admissions to Hospital	Per Cent of Patients Hospitalized
Brockton	218	62	83	28
Fall River	144	55	94	38
Gardner	151	45	66	30
Haverhill	121	50	65	41
Hyannis	137	42	60	31
Lowell	182	75	112	41
Connecticut Valley	280	86	105	31
Pittsfield	108	62	93	57
Salem	185	49	64	26
Worcester	183	82	109	45
Metropolitan Boston	45	25	30	55
TOTAL	1,754	633	881	36

The most interesting point brought out by Table 22 is the distribution of surgical cases among the clinic centers. Table 16 shows there was a fairly normal distribution of crippling conditions among the ten clinic centers, but this is not true of the distribution of children who received surgical treatment. The Pittsfield clinic center, much the smallest in the number of children admitted to service, with only one hundred and eight patients in four years, hospitalized fifty-seven per cent of them. Not only that, but these sixty-two patients were admitted to hospital ninety-three times. This appears to be statistically significant. Another striking feature of the hospitalization statistics for this clinic is that of the one hundred and eight patients admitted, sixty-nine had been discharged before August 31, 1940, leaving only thirty-nine still on the active list. Of the sixty-nine that had been discharged, thirty-two had never been hospitalized and the others (thirty-seven) had been hospitalized fifty-six times. Although these patients had been discharged from the active list comparatively soon after operation, the field worker in that clinic district visits them for follow-up care whenever her itinerary takes her near enough.

The Connecticut Valley clinic center, the largest in number of patients, hospitalized less than the average proportion. The three clinic centers next in size, each with a little over one hundred and eighty admissions, varied much in their respective hospitalization figures. Of these three, Worcester hospitalized forty-five per cent, Lowell forty-one per cent, and Salem was lowest of all the clinic centers with but twenty-five per cent hospitalized.

The patients from the Boston Metropolitan Area are included in the table, but this group obviously is not comparable to clinic groups. The mere fact that a patient from this area was accepted generally meant that the treatment he required was extensive.

Four hundred and sixty-seven children had single admissions to hospital and of these over three hundred were still under active care on August 31, 1940. The children with multiple admissions numbered one hundred and fifty-seven, of whom over one hundred were still under active care on September 1, 1940 with the probability of eventual further hospitalization (Table 23). The distribution of multiple hospitalizations among the clinics shows nothing striking with one exception, Gardner, which has a relatively large proportion.

The hospitals to which most of the children were admitted for operation by the respective clinic consultants are named in Table 24. This list includes only those hospitals which had twenty or more admissions each. There are twelve such hospitals besides the Lakeville State Sanatorium. Four of them in the Boston Metropolitan Area had two hundred and forty-seven admissions, over thirty-six per cent of the total. At first glance this might appear to be inconsistent with the established policy of working chiefly in rural areas. As a matter of fact, when crippled children are hospitalized a local hospital is used whenever possible so that parents may the more easily visit their children. Five of the clinic centers are in cities near or in which the respective clinic consultants reside. These cities have acceptable hospitals where the clinic consultants do all their other operative work and where they have full control over their patients and can see them daily, if necessary. In several of the other clinic centers a limited amount of local hospitalization is done, but since the respective clinic consultants in those clinics have their offices in Boston, it is necessary for them to have their most important cases brought to the Boston Metropolitan Area for operative treatment. Minor cases are cared for locally, with the aid of authorized assistants. Two hospitals, the Cape Cod Hospital and the Brockton Hospital, both of which house clinics for crippled children, have never been used for hospitalization; but in spite of that, they continue freely to furnish space and facilities for clinics. Altogether, including the hospitals grouped under "miscellaneous" in Table 24, twenty-three hospitals have received patients from State clinics. In each instance the orthopedic patients so hospitalized were under the direct supervision of the clinic consultant in charge of the patient.

TABLE 23

Multiple Admissions of Patients to Hospital, Including Lakeville

	None	1 Act.	1 Dis.	2 Act	2 Dis.	3 Act.	3 Dis.	4 Act.	4 Dis.	5 Act.	5 Dis.	6 Act.	6 Dis.	Total
Brockton	156	30	16	10	3	1		1	1					218
Fall River	89	19	14	8	2	7	1	3		1				144
Gardner	106	18	12	10	1	1	1	2						151
Haverhill	71	33	8	4	1	2		2						121
Hyannis	95	22	10	5		2		3						137
Lowell	107	48	6	6	4	7	1	2				1		182
Pittsfield	46	19	27	2	4	2	4	2	1		1			108
Salem	136	29	11	4	3					2				185
Worcester	101	44	18	11	2	6	1							183
Conn. Valley	194	42	29	8	3	3	1							280
Met. Boston	20	5	16	1	2		1							45
TOTAL	1,121	309	167	69	25	31	10	15	2	3	1	1		1,754

TABLE 24

Hospitals to Which Twenty or More Patients Each Were Admitted

	Under Active Care 9-1-40	Discharged Before 9-1-40	TOTAL
Lakeville State Sanatorium	74	19	93
Massachusetts General Hospital, Boston	44	27	71
Children's Hospital, Boston	60	6	66
Cambridge Hospital, Cambridge	55	9	64
St. Luke's Hospital, Pittsfield	18	34	52
Worcester City Hospital, Worcester	38	12	50
Massachusetts Eye & Ear Infirmary, Boston	11	35	46
St. John's Hospital, Lowell	37	7	44
Wesson Memorial Hospital, Springfield	25	19	44
Henry Heywood Memorial Hospital, Gardner	24	11	35
Union Hospital, Fall River	22	11	33
Salem Hospital, Salem	19	12	31
Cooley Dickinson Hospital, Northampton	17	3	20
Miscellaneous	25	6	31
TOTAL	469	211	680
Admissions to two or more hospitals	30	2	32
Admissions to two or more hospitals one of which was Lakeville	11	4	15
Total Multiple Admissions	41	6	47
TOTAL CHILDREN HOSPITALIZED	428	205	633

Length of Hospitalization

Table 25 summarizes a study of the length of hospitalization of five hundred and forty patients admitted seven hundred and eighty-eight times to hospitals. One notes in the second column that the total number of days spent in hospital by patients from the respective clinic centers varies enormously, from seven hundred and twenty-nine in the case of Salem to two thousand nine hundred and thirty-six in the case of Worcester. This wide variation is not significant in itself since several factors must be considered; nevertheless Salem, a clinic center high on the list in the total number of patients admitted, is lowest in days of hospitalization. The ninety-three admissions to the Lakeville State Sanatorium are not included in this table.

In every clinic center the median number of days in hospital per patient hospitalized is less than the average number of days spent in hospital by each patient. This indicates that all clinic centers had their share of patients who required long or repeated hospitalizations. Two clinic centers (Fall River and Haverhill) are conspicuous in this respect because each shows a long hospitalization per patient, almost sixty days. Here again the Salem center is low, but three other centers are at about the same level.

If, however, one takes multiple admissions into consideration and computes the average duration of each hospitalization, there is a different grouping of clinic centers. The average duration of each hospitalization is, of course, lower, varying from fifteen to forty with a general average of twenty-three days. The Hyannis Clinic has much the highest average; in fact, with its figure of forty it is the only one with an average stay in hospital per admission of more than thirty days. Three clinics are grouped near thirty, and the other five are between fifteen and twenty.

TABLE 25
Days Spent in Hospital by Patients From Respective Clinics

	Days Spent in Hospital	Patients Hospitalized Up to 9-1-40	Median Number of Days in Hospital Per Patient	Average Number of Days in Hospital Per Patient	Total Number of Admissions to Hospital	Average Days in Hospital Per Admission
Brockton	1,460	50	16	29.2	71	20.6
Fall River	2,416	42	40	57.5	81	29.8
Gardner	928	41	12	22.6	62	15.
Haverhill	1,573	38	28	41.4	53	30.
Hyannis	2,029	34	21	59.7	52	40.
Lowell	1,655	68	17	24.3	105	16.
Metropolitan Boston	543	24	8	22.6	29	19.
Connecticut Valley	1,807	85	16	21.3	104	17.4
Pittsfield	2,411	55	29	43.8	86	28.
Salem	729	31	9	23.5	46	16.
Worcester	2,936	72	26	40.8	99	30.
TOTAL	18,487	540	17	34.	788	23.

The reason for treating the ninety-three Lakeville admissions separately is obvious when one studies the figures. The ninety-three poliomyelitis patients transferred there had spent 19,409 days in that hospital by August 31, 1940 as compared with 18,487 days for the five hundred and forty clinic patients who had been admitted to the other hospitals (Table 25). As shown in Table 24, seventy-four of the ninety-three patients were still under care in the Lakeville State Sanatorium on September 1, 1940. The median number of days in hospital per patient at Lakeville up to August 31, 1940 was one hundred and thirty-eight as compared with seventeen in the other hospitals; the average was two hundred and nine days as compared with thirty-four. The policy of Services for Crippled Children is to send to Lakeville as many as possible of its patients who are paralyzed from anterior poliomyelitis and obviously the ones allocated for transfer to Lakeville are those requiring the most treatment. Patients with bone and joint tuberculosis are not accepted at the clinic centers but are admitted directly to Lakeville on application of the family physician. Table 15, it will be noted, included no tuberculosis among the crippling conditions found in patients accepted for care by the Orthopedic Unit.

Table 26 summarizes admissions to other hospitals than the Lakeville State Sanatorium. In this table patients are recorded by sex as well as by their status (active or discharged) on September 1, 1940. The sex ratio of admissions to hospital is 1.28, not significantly greater than the ratio in the case of admissions to the clinics if one takes into account that of the ninety-three children transferred to the Lakeville State Sanatorium, sixty-one were boys and thirty-two were girls. This disparity was probably a matter of availability of beds in male or female wards at Lakeville. It was frequently not possible earlier in the program because of lack of beds to admit patients to Lakeville as soon as desired, hence many poliomyelitis cases were hospitalized elsewhere.

One patient was hospitalized as many as six different times. Four patients were in hospital five times each and seventeen others were admitted four times each. One hundred and thirty-five had two or three admissions each. Frequently the interval between admissions was short, but parents were reassured

TABLE 26
Number of Admissions to Hospitals of Children Hospitalized
(exclusive of Lakeville)

Number of Admissions to Hospital of Each Child	Under Active Care 9-1-40			Discharged From Active Care Before 9-1-40			TOTAL			Total Number of Hospital Admissions
	M	F	T	M	F	T	M	F	T	TOTAL
None	240	231	471	356	294	650	596	525	1,121	
1	131	104	235	85	63	148	216	167	383	383
2	45	24	69	11	14	25	56	38	94	188
3	15	17	32	6	3	9	21	20	41	123
4	5	9	14	2	1	3	7	10	17	68
5	2	1	3	1		1	3	1	4	20
6		1	1					1	1	6
TOTAL	438	387	825	461	375	836	899	762	1,661	788

when they could have their children at home occasionally, even for short periods. In addition, there was considerable saving in hospital costs, not a disadvantage when a budget is being stretched to do as much good to as many people as possible.

Care in Convalescent Homes

Only thirty-five of the one thousand seven hundred and fifty-four children had to be admitted to convalescent homes during the first four years of Services for Crippled Children. Of these thirty-five, thirty were boys, one of whom was admitted twice. Such admissions were necessary because of the unsuitability of the homes of these children or because nursing care was needed. Ordinarily, with the aid of the after-care given by the members of the field staff and the local nurses who assist, patients' homes are satisfactory for convalescence after hospitalization. The parents naturally have been pleased with this method of taking care of convalescent patients. Whenever it was necessary to provide convalescent care every effort was made to find a satisfactory place near the patient's home but unfortunately a suitable home so located was not always available.

The most frequently used convalescent home is that maintained by the Children's Hospital in Boston where twelve of the thirty-five patients given convalescent care were provided for. Those twelve children had all been patients in the Children's Hospital so there was no interruption in the continuity of their treatment during the period of transition from hospital to convalescent home. The others given convalescent care were equally distributed among thirteen convalescent homes and three foster homes. (Foster homes are grouped here with convalescent homes not with any idea that these terms are synonymous, but because this type of care is so rarely necessary that separate classification is not worthwhile.) One hospital outside the Boston Metropolitan Area, when the condition of the patient was such that hospital care was no longer needed and a nearby convalescent home was sought, asked to have the patient remain in hospital at the same cost that a convalescent home would have been. This occurred twice and was, of course, entirely satisfactory.

The number of days spent in convalescent homes by the thirty-five patients was four thousand two hundred and forty-seven. The median length of stay per admission was eighty-three days; the average one hundred eighteen days.

Children at these homes except those at the Children's Hospital Convalescent Home are always under the active supervision of the members of the field staff of Services for Crippled Children.

Reasons for Discharge from Care

The reasons for discharge from service of those children who had been admitted to clinics but who were removed from the active list before September 1, 1940 are listed in Table 27. The largest group, one-fourth of those discharged, is made up of children whose crippling condition had been terminated. These children number about one-eighth of the total number admitted to service during the four year period. Taking into consideration the fact that the treatment of crippling conditions, including after-care, is long in duration and that the number of admissions on which this proportion is based represents admissions during the entire period of four years, this result seem commendable. Too much praise can not be given the clinic consultants who are entirely responsible for the success of the program in removing or alleviating the crippling conditions of the patients who have been admitted to service. They have served faithfully, conscientiously, and wholeheartedly and the professional skill which they have demonstrated over and over again is entirely out of proportion to the nominal remuneration which they receive. The Department of Public Health is responsible for the administration of the program, but such has been a comparatively simple task. All the personnel assisting the Chief of the Orthopedic Unit, administrative as well as professional, have rendered services of the highest quality so that the task of the Chief of the Unit is a gratifying and pleasant one.

For one hundred and fifty-nine of those discharged, no further treatment could be recommended. Though this decision was sometimes made at the time of the first clinic visit, it was more often made after some attempts to afford at least partial relief from the crippling condition even when it was obvious from the start that the basic condition was hopeless.

One hundred and twenty-five patients were discharged because they were uncooperative. This includes the seventy-five classified in Table 14 as refusing to accept the recommendations of the clinic consultant. In the table, sixty-nine were classified as partially accepting the recommendations. Some of these had to be discharged later because of lack of cooperation, after a certain amount of work had been done for them. Experience has shown it to be a waste of time to try to help people who are indifferent or only slightly attentive at follow-up visits and who show no evidence of having tried to cooperate either by taking recommended exercises or by wearing the apparatus provided. Most people of this type, though appearing surprisingly often at clinics (one hundred and twenty-six out of one thousand seven hundred and fifty-four), are fortunately not a serious problem. Generally, they are persons of so low a mental level that the difficulties in transforming them into self-respecting, self-supporting individuals are insurmountable.

Another large group in Table 27 includes those who, at their first clinic

visit, were obviously not eligible for admission to Services for Crippled Children. These children were discharged after one or two visits, but they were not merely refused care and sent home. Once having been admitted to a clinic center a child is regarded as a responsibility and if Services for Crippled Children can not itself be of help the child is referred to another agency, if one exists, which can help.

TABLE 27
Reason for Discharge From Active Care Prior to 9-1-40

REASON FOR DISCHARGE	MALE	FEMALE	TOTAL
Reached age of twenty-one	40	39	79
Uncooperative	71	55	126
No further treatment recommended	102	57	159
Crippling condition terminated	102	106	208
Not a clinic case (Not included in definition of a crippled child)	78	67	145
Admitted to state school	15	4	19
Referred to another clinic	45	34	79
Moved out of state	15	10	25
Deceased	2	7	9
Application rejected	5	1	6
TOTAL	475	380	855

Seventy-nine patients reached the age of twenty-one and were then automatically dropped. A similar number were referred to another clinic, either because they were on the active list of the other clinic at the time of the first clinic visit or because, for one reason or another, the patient or his family preferred to be cared for by some other agency. The Department of Public Health has always been meticulously careful to avoid taking someone's else patient, for the policy of the Department is to help only those who can not get help elsewhere.

Only six patients who applied were refused admission to service. In each instance the estimate of the cost of the required treatment was low and investigation showed that the parents were well able to provide the necessary care. Except in one case these applications were rejected by the Department of Public Health without even referring them to the Committee Chairman of the District Medical Society.

Finally, in a statistical study of the results accomplished in four years of operation of Services for Crippled Children, one should make some estimate of what has been accomplished in terms of the condition of the patient himself. Table 28 attempts to give expression to this judgment. Over half of those discharged were benefited and almost all of those still on the active list on September 1, 1940 had received improvement. The few who had not were generally recent admissions. At any rate, there is still hope for them or they would not be retained for active care.

Expenditures under the Federal Grant-in-Aid

Table 29 summarizes the expenditures of the Grant-in-Aid, under Part 2, Title V of the Social Security Act during the respective federal fiscal years since the program began. Matching funds, which each state must appropriate, are provided in Massachusetts mainly by the expenditures at the Lakeville State Sanatorium for the children hospitalized there. These are much greater than is necessary to obtain the greatest possible allotment from the Children's Bureau.

TABLE 28
Condition of Patient 9-1-40, or at Time of Discharge From Care

CONDITION OF PATIENT	ACTIVE			CLOSED			TOTAL		
	M	F	T	M	F	T	M	F	T
Improved	452	388	840	250	194	444	702	582	1,284
Unimproved	33	26	59	225	186	411	258	212	470
TOTAL	485	414	899	475	380	855	960	794	1,754

TABLE 29
Expenditure by the Orthopedic Unit of the Federal Grant-in-Aid For Services For Crippled Children By Federal Fiscal Years

	1936	1937	1938	1939	1940	1941	TOTAL
Salaries and fees		$22,315.98	$41,029.64	$44,097.34	$46,091.92	$48,690.27	$202,225.15
Travel, purchase and maintenance of cars		8,029.58	10,529.36	13,214.88	5,547.25	7,601.37	44,922.44
Hospital care		9,771.93	14,346.34	22,094.40	26,881.15	27,084.91	100,178.73
Colanvescent care		5,177.41	4,290.72	1,486.26	1,985.15	3,371.71	16,311.25
Appliances		784.04	2,505.71	3,517.32	3,166.83	3,858.61	13,832.51
Other expenses	$713.75	4,796.24	7,600.08	9,628.23	5,191.96	2,868.00	30,798.26
TOTAL	$713.75	$50,875.18	$80,301.85	$94,038.43	$88,864.26	$93,474.87	$408,268.34

The physical therapist leaving a home after giving a treatment.

The Department of Public Health pays a state-wide uniform rate of $3.50 per day for hospitalization of crippled children. A $10.00 charge is permitted for the use of an operating room. Roentgenograms are paid for at the rate of $2.00 each. If there is no anesthetist on the hospital staff, a maximum fee of $10.00 is paid for this service. When plaster dressings are applied, the actual materials used are paid for. If expensive medication is prescribed, the Department pays this charge. Maintenance in convalescent homes is paid for at $1.00 to $2.00 per day according to the particular needs of the patient.

During the five years of Services for Crippled Children, nine hundred and sixty-two appliances have been purchased for the children admitted to care. These varied from minor shoe adjustments to artificial limbs. Some of these were paid for in part by the patient's family or by a local welfare agency. Patients were encouraged to pay for minor appliances themselves, and they gladly did so when financially able. It is only for the neediest that the more inexpensive items are purchased by the Department.

Besides the maintenance of the Central Office and the Field Staff of the Orthopedic Unit, funds made available by this Grant-in-Aid are used to improve and extend the work of the Lakeville State Sanatorium. The employment of a supervisor of physiotherapy, two physiotherapists and a bracemaker is included in this aid. An othopedic surgeon, whose consultation fees are paid by means of this Grant-in-Aid, visits the Sanatorium regularly to perform the orthopedic surgery required by the victims of the paralysis of anterior poliomyelitis. A roentgenologist also makes periodic visits. In addition to these personal services, funds obtained through this Grant-in-Aid have been used to equip an excellent brace shop and to purchase two respirators as well as other valuable apparatus used in the medical and surgical care of patients.

It is quite evident from Figure 4 that there is continued need in Massachusetts for State Services for Crippled Children. On September 1, 1940 there were almost one hundred towns with a total population of 160,000 from which no crippled child had yet been admitted to a State clinic. The other towns outside the Boston Metropolitan Area have sent to the clinics an average of 4.5 crippled children each per thousand of children in the population under the age of twenty-one. Seventy-eight of these towns have each, however, sent less than two per thousand. Many of the towns which have high admission rates have small populations so that the admission rates have large standard deviations. It is not at all likely that it will ever be possible to locate as many crippled children in need of aid in other parts of the Commonwealth as have been found in Dukes County (Martha's Vineyard) and Barnstable County (Cape Cod), where respectively 8.5 and 10.9 crippled children per thousand of children in the population have been admitted to service. Nevertheless, it is reasonable to assume that there are crippled children who are in need of care in many of the rural towns from which no patients have yet been admitted, and the Orthopedic Unit of the Department of Public Health plans to make special efforts to locate them so that they may be offered whatever help they need.