XII.

TUBERCULOSIS AND THE PUBLIC HEALTH NURSE

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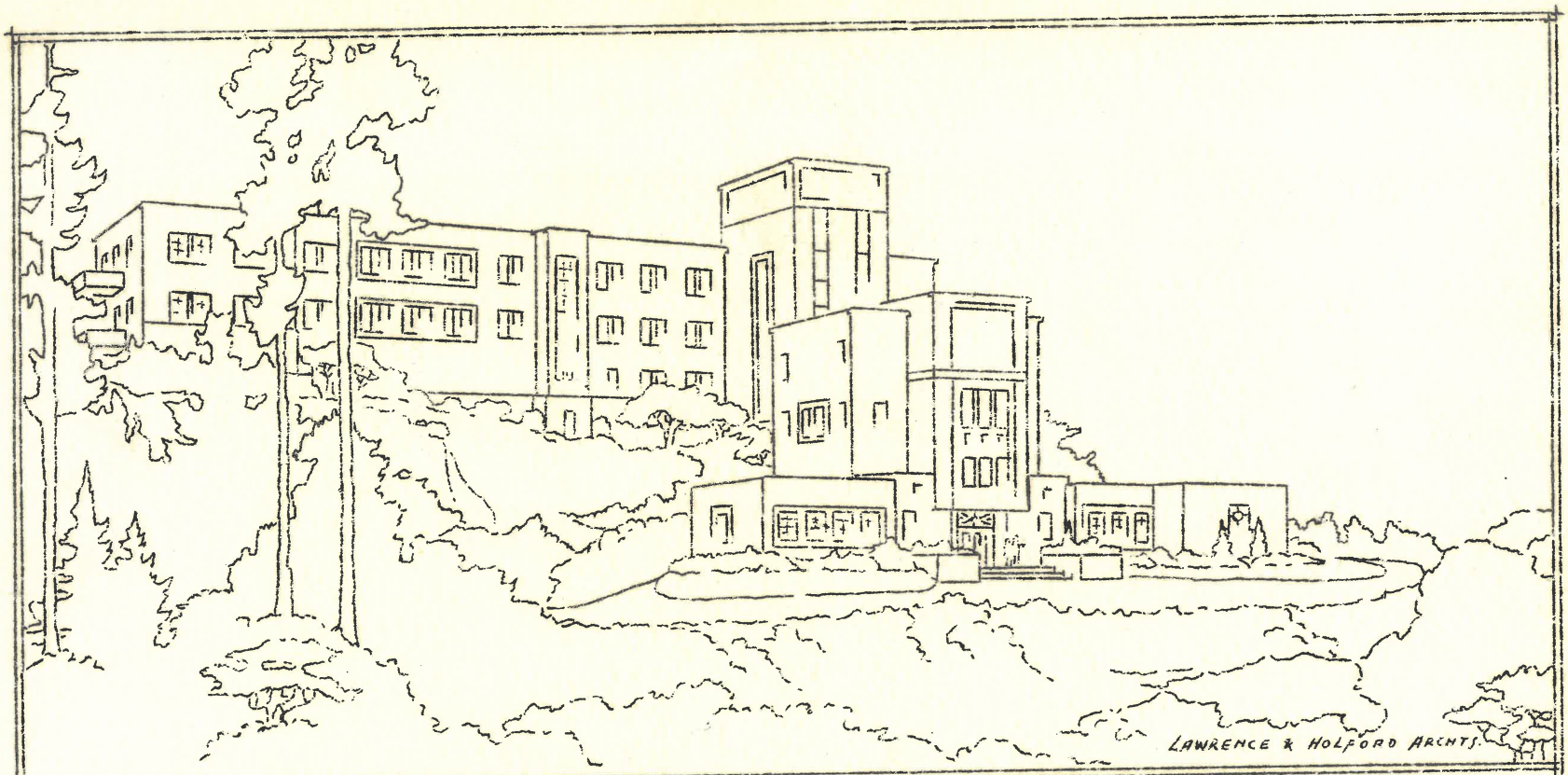


THIRD STATE TUBERCULOSIS HOSPITAL
TO BE LOCATED ON THE CAMPUS OF THE
UNIVERSITY OF OREGON MEDICAL SCHOOL

—AFTER THE ARCHITECTS DRAWING

"Optimism is a mixture of faith and imagination and from it springs the vision which leads one from the beaten paths, urges him to effort when obstacles block the way, and carries him finally to achievment, where pessimism can see only failure ahead. Optimism may and often does point to a road that is hard to travel or to one that leads nowere; but pessimism points to no road at all." Dr. Earnest Trudeau

Tuberculosis is probably as old as man. The oldest evidence we have is that presented by the bones of a person dead some ten thousand years. When these bones were uncovered and examined, it was found that this prehistoric man had been a hunchback. This deformity had, without doubt, been caused by tuberculosis. Several of the mummies found in the tombs of Egypt show clear signs of the disease and there is mention of it as far back as written history goes. The Babylonian Laws, written in 2250 B. C., includes vague references to tuberculosis. Later in 1000 B. C. the Hindu physicians exhibited a broad clinical knowledge of tuberculosis. The disease was considered unclean and incurable, a definite barrier to marriage. The Old Testament contains vague references to a wasting disease, probably tuberculosis.

Hippocrates, who lived from 460 to 377 B. C. is called the Father of Medicine. The writings attributed to him are probably not all his individual work, but includes those of his colleagues and followers. Before the time of Hippocrates, disease was generally regarded as the expression of the displeasure of the Gods and due to the influence of demons. Hippocrates strove to account for disease by studying its natural history. His description of phthisis, or consumption was so accurate that it has a modern ring even today.

His was the first real contribution toward the nature and treatment of the disease. He did not know the cause of tuberculosis or what took place in the lungs, but he did recognize the value of nourishing food and good health practices.

The Greek school of medicine, which sprang from Hippocrates' teaching, long dominated medical thought. During the middle ages further progress was slow and few scientific advances were made. Men were content to accept the teachings of the masters and research was discouraged. Consumption was generally regarded as a hopeless malady. Nothing was known to cure it, and how it was spread was not even guessed at.

In the seventeenth century, when Sylvins first described tubercles, men began to learn something of the characteristics of tuberculosis. He found little nodules in the lungs of those who had died of tuberculosis. He did not understand their nature and assumed that they were lymphatic glands of the lung.

Morton, in 1689 definitely associated such tubercles with consumption and believed that they always preceded the disease. A few years later ,Boyle proved Morton's theory by tracing tubercles through the successive stages of the disease. He showed that when many such tubercles unite, they form a large nodule or tubercle, which later may break down, leaving a cavity in the lung.

The next important person in the history of tuberculosis was René Laënnec, a young French physician, born in 1781. He was a victim of the great white plague and devoted his life to the study of the disease. He showed that scrofula, a disease very common in the eighteenth century, is in reality tuberculosis, evidenced mainly by diseased glands. Laënnec also invented the stethascope. The first one, it is true, was a simple thing, made of paper, but by this method he could listen to what was taking place in the lung. His contribution to the knowledge of tuberculosis was of great importance and his followers all based their work on his findings.

J. A. Villemin, in 1865, showed that tuberculosis is a contagious disease by experimenting on guinea pigs. He proved that it could be passed from one animal to another. Twelve years later, Tappenheimer did some work along this same line. He caused dogs to develop tuberculosis by allowing them to inhale sputum from a consumptive patient, showing that the virus is in the sputum of those who have the disease. At this time, several other workers produced the disease in animals by feeding them milk from cows that had tuberculosis.

In 1855, Louis Pasteur began his work which was to lay the foundation for the science of bacteriology. One of his followers was Robert Koch. In 1882 this country doctor, who

had been working out methods of growing the germ in his small laboratory, proved that the tubercle bacillus is the direct and only cause of tuberculosis. Koch devised a special method of staining for this bacillus that enables it to be studied under the microscope. His discovery gave new impetus to the search for the solution of tuberculosis.

George Cornet, six years later, showed that the tubercle bacillus are spread by the expectoration of patients suffering from the disease. The germs are found in large numbers in the sputum of one who has the disease in an active form. If this material is promptly burned, these germs can do no harm. Education campaigns against spitting all over the world followed this discovery.

Several years later in 1895, Wilhelm Roentgen accidently discovered the X-ray. This was used at first only for locating fractures and discovering bullets or other foreign substances in the body. It is now used extensively in diagnosing tuberculosis, even in the very early stages before symptons appear.

Theobald Smith, in 1898, proved that there are at least two types of tubercle bacillus. The bovine type caused the disease in cows and the human type, somewhat different, causes the diesease in man. It was shown later that the bovine type many also cause the disease in man. For his research work,

Dr. Smith was honored by the National Tuberculosis Association in 1926. He received the Trudeau medal, given for the first time that year. This medal is awarded annually to the scientist who has made the most contribution on the cause, prevention, or treatment of tuberculosis.

Much had been learned of the cause and pathology of tuberculosis, but little had been done in the way of treatment until the time of Trudeau.

George Bodington, in 1840, had advocated rest and fresh air, but his ideas were so radical and so severely criticized that he became discouraged and closed the institution he had established in England.

In 1859, a German physician, Hermann Brehmer, opened a sanitorium for tuberculosis. This is generally credited as being the first tuberculosis sanitarium in the world. It was located in the Black Forest of Southern Germany. Rest, fresh air, and carefully supervised exercise was the basis of his treatment.

We have reviewed briefly some of the main events leading to our present knowledge of tuberculosis. Most of these contributions came from the scientists of Europe. We are now ready, however, to consider some of the work done in America on the treatment of tuberculosis.

The one name that leads all ~~that leads all~~ the rest when we think of the treatment of tuberculosis is that of Edward Livingston Trudeau. He is remembered, not only for his work, but also for his great kindness and ability to inspire enthusiasm in others. Trudeau was born in New York City in 1848, but at three years of age went to Paris to live with his mother, brother, and grandparents. The Trudeaus remained in France for nearly 15 years. After the Civil War, they returned to New York where they had many friends. Edward met his future wife, Charlotte Beare, during this period in his life, and in his own words describes something of the devotion which he came to feel for her. "It was the tall, slender girl in black, with the heavy traveling bag, who soon inspired me with a love which made me, in time, give up all the wilde mode of life into which I was fast slipping in New York, and work for three years to obtain a medical degree, and for a lifetime to try to be worthy of her. I am often asked if I would be willing to live my life over again, and as I look back on most of it, I can say very positively, 'I have my doubts'; but that part which has been lived in contact with the 'tall, slender girl with the heavy traveling bag', I would gladly live over again indefinitely."*

* Trudeau, An Autobiography, pages 27-28.

Trudeau was not sure what he wished to work at but finally decided to go into the navy. He was about to inter the naval academy when something happened to change his whole life. His brother, whom Edward loved very dearly became seriously ill. Edward gave up his appointment to the Naval Academy and returned with his brother to his grandfathers house where he nursed him devotedly. It was soon discovered that his brother had tuberculosis. In those days this discovery was the same as pronouncing the death sentence. It was not known that the disease was infectious and the treatmentfor it was not the same as today. Trudeau says: "We occupied the same roon and sometimes the same bed. I bathed him and brought his meals to him, and when he felt well enough to go downstairs, I carried him up and down on my back, and I tried to amuse and cheer him, through the long days of fever and sickness. Not only did the doctor nevere advise any precautions to protect me against infection, but he told me repeatedly never to open the windows, as it would aggravate the cough; and I never did, until toward the end my brother was so shot of breath that he asked for fresh air. How strange that after helping stifle my brother and infecting myself through such teaching as was then vogue, I should have lived to save my own life and that of many others by the simple expedient of an abundance of fresh air!"*

* Trudeau, An Autobiography, pages 30-31.

His brother died when Edward was seventeen years old. In after years, he liked to think that his work was a tribute from him to the brother he had lost.

Trudeau soon realized that if he were to marry the girl he loved, he would have to choose a career in which he could earn a living. In the fall of 1868, he entered the college of Physicians and Surgeions in New York City.

Edward and Miss Beare were married shortly after his graduation. They went abroad after their marriage in 1871. On the return trip, Trudeau began to show symptoms of tuberculosis. He and his wife, took a cottage on Long Island and remained there a year. After this they took a house in the city, and Trudeau was offered a partnership with a prominent physician. After becoming settled in New York, he began to feel tired all the time. He was examined and told that he had active tuberculosis of the left lung.

Consumption was considered absolutely fatal in those times, and this diagnosis left Trudeau stunned. He now had the added responsibility of a baby, and his dreams of success were shattered.

Dr. Trudeau decided if he only had a short time to live he would like to spend that time in the wilderness he loved so well. In May 1873, after a long journey, he and a friend reached Paul Smith's famous hunting lodge in the Adirondacks.

Life in this mountain retreat had a wonderful effect on Trudeau's health. He began to sleep better and eat more and lost his fever entirely. In September, when he returned to the city he had gained fifteen pounds. However, he soon lost ground again, and the next year he decided to spend the winter in the mountains. This was a spartan undertaking, but his wife agreed bravely that she and the children would stay with him.

After much persuasion, Paul Smith finally agreed to keep the family for the winter, although he felt that the winter sould be too much for Trudeau. A blizzard introduced Mrs. Trudeau and the two children, Ned and Chatte, to their first Adirondack winter. Paul Smith and Trudeau met them at Malane, and it took them 48 hours to make the trip back to the lodge through the heavy snow.

All during that winter Trudeau kept well and rarely had any fever. When people began to come in the spring, they were amazed to hear that the Trudeaus had spent the winter in the mountains. Dr. Trudeau made many friends among these regular summer guests. He agains began to do medical work at this time administering to the guests.

As winter approached again, Trudeau found that he would have to find other living quarters as Paul Smith intended to close his lodge for the winter. He looked about and finally decided on Saranac Lake. At that time the settle-

ment consisted of sawmill, hotel, schoolhouse, and perhaps a dozen houses. Trudeau was finally able to get a house and Mrs. Paul Smith loaned the family some furniture.

Dr. Alfred Loomiss, who had examined Trudeau from time to time, was astounded by his improvement and he sent other tuberculosis invalids to try the winter climate. In this way Saranac Lake Village began to grow.

The idea of building a sanatorium at Saranac Lake came to Trudeau when he read an account of Brehmer's sanatorium in Europe.

In 1882, Trudeau met Dr. Loomis and told him of his plan of building a few cottages where patients could stay at less cost than at a hospital. Dr. Loomis agreed to send Trudeau patients and to examine them free of charge.

When Trudeau went to New York that summer, he called on all the people he thought would be likely to help and asked for subscriptions. Most people could not understand his plans, but nevertheless many were willing to help. By the time he returned home, Trudeau had collected more than $3,000 and this sum kept growing.

He was now able to think about putting up his first cottage. He chose his favorite fox runway as the site for the future cottage. It commanded a beautiful view of the mountains and river, and Trudeau had spent many happy hours there. The guides of Saranac Lake purchased the sixteen acres that comprised the site and presented it to him.

The first cottage, known as "The Little Red" was completed in February 1884. It had only one room and a small porch. It cost about $400. The first patients were two factory girls sent up by Dr. Loomis.

At about this time Koch announced his discovery of the tubercle bacillus. Trudeau was very interested in his work but was unable to read German. However, a friend of his had a copy of Koch's paper translated into English and gave it to him as a Christmas present. After reading this paper, Trudeau went to New York where he learned to identify the tubercle bacillius under the microscope. On his return to Saranac Lake, he built a small laboratory where he spent many hours working over his microscope. This laboratory burned down some years later, and a new and better one was built upon its site.

During this time the sanitarium was struggling for existence. Trudeau has to depend entirely on his friends for its support. However, they gave generously of their time and money, and slowly new cottages appeared.

It was about this time that Trudeau did his experiment on rabbits that has since became famous. One set of rabbits were inoculated with tubercle bacillus and then allowed to roam wild in the fresh air under the best of conditions and with plenty to eat. Another set was inoculated and

kept in a very poor environment with insufficient food. The results showed that of the rabbits allowed to run wild, all but one recovered while of those kept in unfavorable conditions, four died within three months and their organs showed extensive tuberculosis. This experiment proved to Trudeau that the course of the disease is greatly influenced by a favorable or unfavorable environment.

As the years went by, the sanitorium grew steadily in building, equipment, and staff. The fame of Saranac Lake spread and Trudeau was deluged with patients from all parts of the world.

In these days when thesanitorium was growing so rapidly, great sorrow came to Trudeau and his wife. They lost their daughter, Chatte, and also their son Ned, a young man of great promise, who had just started to practice medicine in New York. All through this trying time, the friends of the Trudeaus stood staunchly by them, relieving their sorrow in any way possible.

In spite of his sorrow and his failing health, Dr. Trudeau kept at his work, enlarging the sanitorium and adding to our knowledge of tuberculosis. This man is remembered not only for his great work, but also for his kindness and great capacity for friendship. People often helped him, not because of a great interest in his work, but because of their regard for him as a man and a physician.

His name will always be an inspiration to those dedicated to the study of tuberculosis. Dr. Trudeau died in 1915 and a monument was erected to his memory with this inscription: "To cure sometime, to relieve often, to comfort always."

The first clinic for sun treatment was opened by Rollier, a Swiss Surgeon, in 1903. He believed that sunlight is a powerful source of healing, especially in cases of bone tuberculosis. He established his clinic in the Tyrolian Alps and it has now grown to a celebrated hospital where children spend most of their time out of doors unclothed, summer and winter.

The first dispensary, established expecially for the treatment of the poor, was founded by Sir Robert Philip in Edinburgh in 1887. Calmette was instrumental in opening one in Lille in 1901. The first one in this country was opened in 1904 in New York City by the health department.

Dr. Hermann Biggs, commissioner of health of New York City, wrote and published in 1887, the first educational pamphlet on tuberculosis for non-medical readers. This was a recognition of the fact that, without the understanding and cooperation of the general public, little headway could be made in the fight against this disease. Millions of pieces of printed matter have since been distributed.

The first association to be established to fight

tuberculosis was organized in Pennsylvania in 1892 by Dr. Lawrence F. Flick. Later in 1904, when tuberculosis was the leading cause of death, a group of 400 farsighted physicians and laymen organized the National Tuberculosis Association. Dr. Trudeau was elected as the first president and served the organization faithfully. The founders of the National Tuberculosis Association were not content to be defenders. Their organization immediately took the offensive. From its earliest days the aim of the association has been the ultimate control of tuberculosis. During the years the number of deaths from this disease have decreased and it has been largely through the work of this organization. In all of the forty-eight states, the District of Columbia, Puerto Rico, Alaska, and Hawaii, these organizations are working toward the eradication of tuberculosis. These state and territorial associations in turn have county, city, and towm organizations. The National Tuberculosis Association is the leader under whose direction state and local associations combine to carry on their successful efforts.

The objectives of this association are many. Now that efforts for nearly thirty-five years have had such beneficial and wiedespread results, the association is waging a more intensive and offensive campaign than ever. It conducts a a continuous research program dealing with the medical, social and administrative problems of treatment and prevention.

The other services include health education, public relations, publications, training of personnel, statistics, rehabilitation, Christmas seal sale, and a central supply bureau.

Under the leadership of the national organization, the sums of the money, raised in state and local communities by voluntary tuberculosis associations, are spent in accordance with approved plans. These funds have promoted the establishment of the following agencies:

1. 1,200 institutions--sanatoria for tuberculosis and hospitals having tuberculosis departments, providing 95,000 beds for the treatment and prevention of tuberculosis, chiefly for adults.
2. 10,000 public health nurses engaged in tuberculosis work.
3. 1,000 clinics holding more than 100,000 sessions annually for diagnosing and finding tuberculosis.
4. 1,000 preventoria, summer camps, open air schools, and similar institutions for the care and treatment of children with various forms of tuberculosis.
5. 1,500 tuberculosis associations and 1,200 smaller committees including a state-wide organization in every state and local agencies in all of the larger population areas.

Practically all of the support of the national, state, and local tuberculosis associations comes from the annual sale of

Christmas seals. The Christmas seal was conceived by Einar Holbaell in 1904. This Danish postal clerk struck on the idea of issuing a stamp or seal at Christmas time to be used, not as a postage stamp but merely as a messenger of good will. Letters and packages carried the seal and the money brought in was used to build a sanitorium for childfen.

Jacob Riis, who found one of the seals on a letter addresoed to him, secured information about it, and wrote enthusiastically about it in The Outlook. This story inspired Miss Emily P. Bissell of Wilmington, Deleware, to design a similar seal in 1907, to raise money for a small sanitoium of eight beds in which she was interested. The next year, the American Red Cross offered the seal to the nation. Since 1920, when the American Red Cross withdrew from the seal sale, the National Tuberculosis Association has been the sole proprietor of the Christmas Seal Sale, and throught its annual contract, authorized the various state and local organizations to use this unique fund raising method under specified standards. Five percent is used in the states in which the money is raised.

This organization has a membership of physicians, nurses, health workers, and public-spirited citizens. Membership is open to anyone wishing to join, the membership fee is $5.00 a year.

In order to gain more complete scientific knowledge with the aim to control tuberculosis, the National Tuberculosis,

Association organized in 1920, a Medical Research Committee. The plan of this committee is to utilize the existing universities and other laboratories in the country to carry out specific research projects laid down and approved by the committee in advance. In order that the various institutions and workers may not be operating at cross purposes, each individual project is closley coordinated with every other one and a system whereby there can be a careful comparing of notes and techniques has been devised as further check against promiscuous study of unrelated problems. The laboratories of some twenty or more universities and other institutions have been put at the disposal of the association for its research work. The staffs of these various institutions are giving their services gladly for the development of the research program in the hope that a specific cure may some day be found.

The National Association is represented in each state by a state association and in turn each state has its County Health Associations. These county associations must meet certain standards of affiliation decided by the state organizations.

Following are the standards of affiliation for the Oregon County associations. These were adopted by representatives of the County Public Health Associations at the Annual Meeting of

the Oregon Tuberculosis Association, Portland, February 24, 1926.

County Public Health Associations, affiliated with the Oregon tuberculosis Association must have:

-1- A membership which has representation and participation in its affairs.

-2- A president and other officers, an Executive Committee and community groups representative of the territory covered by the Association.

-3- The membership must meet at least once a year; the Executive Committee or Executive Board must meet at least four times a year.

-4- The Association must operate under a constitution and by-laws, with an annual program and budget.

-5- All accounts shall be kept on book-keeping forms to be provided by the State Association; shall be audited at least once per year and copy filed with the State Association. (A free audit is available from the State Association).

-6- An annual report of accomplishments, receipts and expenditures shall be prepared and made available to officers, members and the public, and given all possible publicity.

-7- All County Associations shall comply with and carry out the aims and objects of the State Association, submitting such reports as may be required by the State Association, and must accept the responsibility of working out and sharing with the State Association means of financing their mutual activities.

Each county association must have certain designated officers and committees; the duties and responsibilities of each are outlined as follows:

President

Represents the association when occasion requires;

Calls all meetings of the Executive Board and of the Association;

Presides at all such meetings;

Presents, or causes to be presented, to the members at the annual meeting a full and complete report of the work of the Association for the preceding year;

Directs and stimulates the work of the Association through the Executive Board, to the committees and community groups;

Requests from chairmen reports of each meeting held or other committee and group activities.

Vice President

Assumes the dutues of the president whenever necessary;

Serves as chairman of Membership and Recruiting Officer for new Board Members.

Secretary

Keeps the records and minutes of meetings and attends to the correspondence pertaining to the work of the Association.

Treasurer

Keeps proper accounts of assets and liabilities, receipts

and disbursements, which accounts shall be subject to supervision of Executive Board;

Deposits monies received from Christmas Seals, membership dues, bequests and all sources except tax funds, in the Association treasury to be used for defraying expenses of the Association and furthering it objects under the direction of Executive Board;

Disburses Christmas Seal funds to conform with the "authorized expenditures", as included in the Christmas Seal Sale contract.

Advisory Committee

Personnel: Representatives of organizations with allied interests - i.e., Medical, Dental and Nursing Organizations, County Court, County Board of Health and County Relief Agency; Education departments; Men's and Women's clubs; Grange; American Red Cross; American Legion; Parent Teacher Associations; Mental Hygiene Society; Social Hygiene Organization.

Function: To confer with the Executive Board, upon request, when policies are to be considered or new activities outlined.

Standing Committees

Chairmen are elected or appointed and may be official members of Executive Board.

Membership consists of representatives of each organized community center of the county, with certain other members appointed by the Board of Directors because of special qualifications.

The work of each committee should be planned to strengthen,

support and join with other committee programs as closely as possible.

1. Education

Membership should be thoroughly conversant with public health literature publications.

Promote exhibits of health films, posters and literature, and be ready to plan or assist with exhibits on any health subjects desired at special meetings, county fairs, etc.

Stand ready to assume responsibility for the educational phase of any program planned by Executive Board.

Organize a group of speakers who can appear on the radio and before schools, clubs, churches and other gatherings.

Stimulate interest in laws that will result in healthier living conditions.

Be ready to cooperate with school health education programs and ready to secure or supply health educational material.

Stimulate interest in special classes, such as mothers' and preschool conferences, Home Hygiene, First Aid and Nutrition.

2. Finance

The Treasurer of the Association should be a member of this committee.

Submit to the Executive Board a financial budget to cover approved projects.

Conduct Christmas Seal Sale or refer it to special committee.

Devise ways and means for raising additional funds.

Stimulate interest among other agencies in raising funds, for projects for specific purposes, such as County Courts, County Board of Health, American Legion, relief organizations and other health and civic groups.

3. Public Health Activities

Formulate a year-round program of public health activities for approval of the Executive Committee, each member to present the needs or requests from her local community.

Cooperate in carrying out the program decided upon by the Executive Committee.

Organize and furnish, upon request, volunteer assistants for clinics and similar undertakings.

Cooperate with the Education and Publicity Committees in promoting community health education programs.

4. Publicity

Keep in touch with Association officers, chairmen and members for the purpose of securing items of interest in connection with health work.

Prepare newspaper publicity and supply all newspapers with items regarding Association's and nurse's work or any development of the health program, including advance notices and reports of meetings.

When possible establish a "County Health Association Corner" in a local paper where educational material, as well as news, may be regularly presented.

Furnish state worker with local public health news items.

Keep a scrap-book of county-wide and local publicity for loan, exhibit and historical purposes.

Cooperate with other committees in representing association at meetings of other health, welfare and civic organizations.

5. Supply

Establish and maintain (by donation or purchase) in local organized communities loan closets of sick-room supplies, available for use by any family.

Record these supplies when loaned and returned.

Keep inventory and make provision for replacement.

Consult with county nurse on standard method of disinfection and sterilization of supplies.

Community Groups

Hold regular meetings (monthly advisable), when the county nurse can be present, of representatives of county committees and local members.

Chairman of community group brings reports of Executive Board meetings to local group and presents plans for discussion

Requires reports from each group member responsible for particular phase of work (i.e., members of standing committees).

Secretary-Treasurer (chosen by group) keeps record of meetings and finances. Dues of local members are paid to County

Association Treasurer and may be refunded to community for local activities, i.e., replenishment of loan closet, postage, telephone and transportation.

The county Health Associations have played a great part in reducing the death rate of tuberculosis. They have stimulated interest in the subject, educated the public to the dangers of the disease and the value of early diagnosis, and have spent considerable sums on tuberculin testing programs and X-rays.

In the following page is a chart showing the trend in deaths from tuberculosis in the last thirty years.

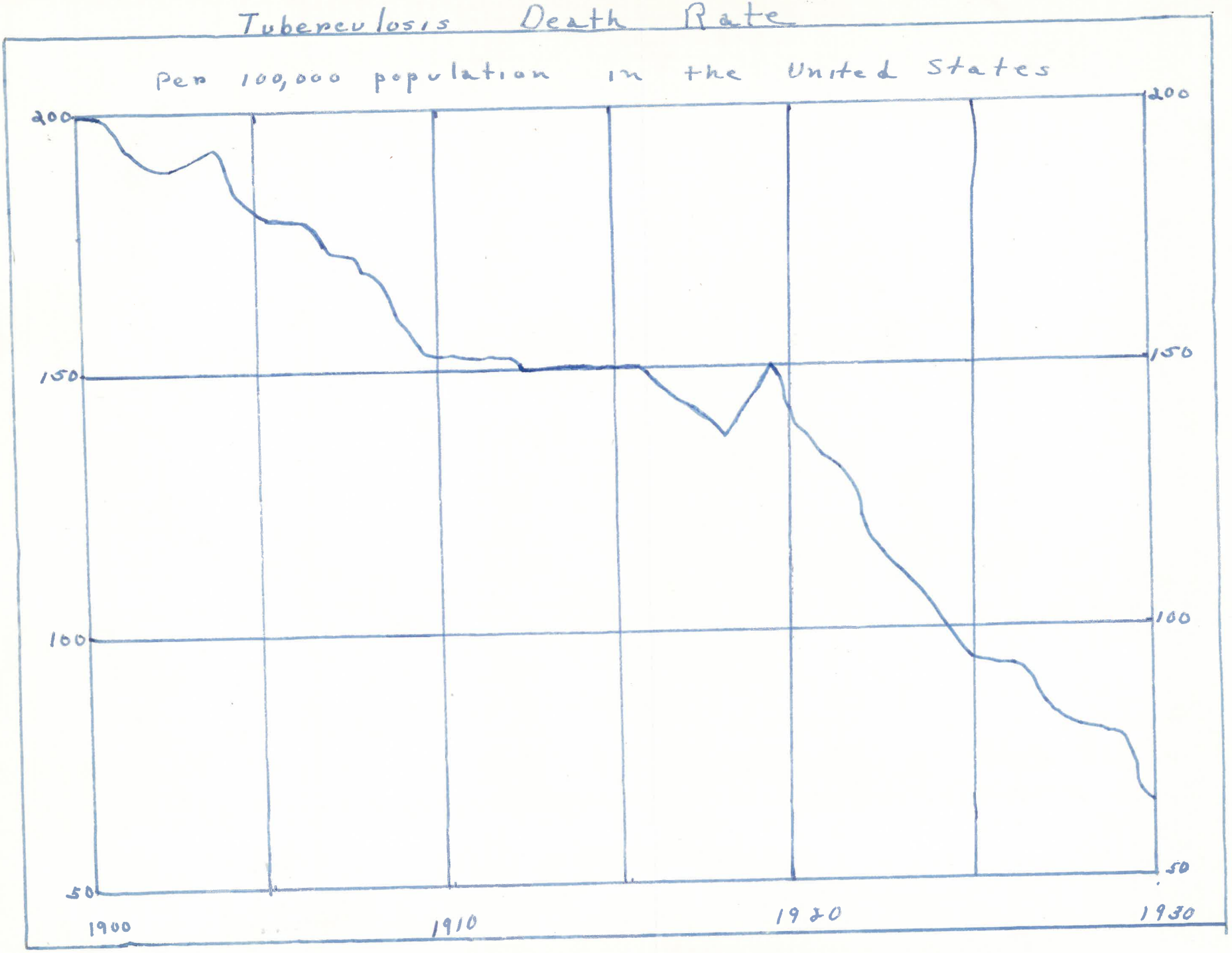
Our knowledge of the care and treatment of tuberculosis is increasing every year. A nurse dealing with this disease must have a sound basic knowledge of each phase of the treatment from the simple tuberculin test to the more complicated surgical procedures.

Tuberculosis is caused by the tubercle bacillus. It does not occure in the absence of this organism.. Malnutrition, fatigue, poverty, and other environmental factors are contributory factors in lowering physical resistance, but unless the tuber cle bacillus is present they cannot cause the disease.

Although four types of tubercle bacillus have been identified, human bovine, avian, and piscine, only the first two are known to produce tuberculosis in man.

Tuberculosis Death Rate

Per 100,000 population in the United States



There is no known incubation period in tuberculosis. The length of time it takes to acquire the disease depends essentially upon the number and virulence of the bacilli entering the body and the age and general physical resistance of the individual. Naturally the chances of getting the disease are greatest among persons living in contact with an open case of tuberculosis. For this reason, the family becomes a potential source of other cases.

The most common source of infection is throught the inhalation of droplets of sputum from an active case. For this reason, the observance of sanitary precautions cannot be stressed too strongly.

Although the nurse does not diagnose disease, she should be familiar with some of the terms used and the significance they have. A few of the most common ones are given below.

Definition of Pulmonary Lesions

Minimal. Slight lesions without demonstrable excavation donfined to a small part of one or both lungs. The total extent of the lesions, regardless of distribution, shall not exceed the equivalent of the volume of lung tissue which lies above the second chondrosternal junction and the spine on the fourth or body of the fifth thoracic vertebra on one side.

Moderately Advanced. One or both lungs may be involved, but the total extent of the lesions hall not exceed the following limits:

A. Slight disseminated lesions which may extend through not more than the volume of one lung, or the equivalent of this in both lungs.

B. Dense and confluent lesions which may extend through not more than the equivalent of one-third the volume of one lung.

C. Any gradation within the above limits.

D. Total diameter of cavities, if present, estimated not to exceed 4 cm.

Far Advanced. Lesions more extensive than Moderately Advanced.

Symptoms

A. None.

B. Slight. Constitutional and functional symptoms, such as a loss of weight, ease of fatigue, and anorexia are slight and not rapidly progressive. Temperature not more than one-half degree above normal at any time during the twenty-four hours. Slight or moderate tachycardia. Cough, if any, is not hard or continuous; sputum, if any may amount to one ounce or less in twenty-four hours.

C. Moderate. Symptoms of only moderate severity; fever, if any, does not exceed two degrees. No marked impairment of function, either local or constitutional, such as marked weakness, dyspnea and tachycardia. Sputum usually does not exceed three or four ounces in twenty-four hours.

D. Severe. Marked impairment of function, local or constitutional. Usually there are profound constitutional symptoms, such as weakness and continuous or recurrent

fever. Cough often is hard and distressing and the sputum may be copious.

Result of Treatment

Quiescent. No constitutional symptoms. Sputum, if any, may or may not contain tubercle bacilli. Lesions stationary or retrogressive according to X-ray examination; cavity may or may not be present. These conditions to have existed for at least two months.

Apparently Arrested. Constitutional symptoms absent. Sputum, if any, must be concentrated and found microscopically negative for tubercle bacilli. Lesions stationary and apparently healed according to X-ray examination; no evidence of pulmonary cavity. These conditions shall have existed for a period of six months, during the last two of which the patient has been taking one hour's walking exercise daily, or its equivalent.

Arrested. Constitutional symptoms absent. Sputum, if any, must be concentrated and found microscopically negative for tubercle bacilli. Lesions stationary and apparently healed according to X-ray examination; no evidence of pulmonary cavity. These conditions shall have existed for a period of six months, during the last two of which the patient has been taking one hour's walking exercise twice daily, or its equivalent.

Apparently Cured. Constitutional symptoms absent. Sputum, if any, must be found negative for tubercle bacilli, not only by concentration and microscopic examination,

but also by culture or animal inoculation. In case there is no sputum, the fasting gastric contents should be obtained and similarly examined. Lesions stationary and apparently healed according to X-ray examination. These conditions shall have existed for a period of two years under ordinary conditions of life.

Unstable (or Active). Symptoms unchanged, worse or less sever, but not completely abated. Lesions not completely healed or progressive according to X-ray examination. Sputum almost always contains tubercle bacilli.

Symptoms

The symptoms of pulmonary tuberculosis may be divided into two groups, constitutional and local.

Constitutional Symptoms.

Loss of strength may be described as a lack of endurance, an increased susceptibility to fatigue, or a constant sense of fatigue that is not relieved by ordinary rest.

Loss of weight refers to a progressive loss which may not occur in the presence of tuberculosis when the patient is working or otherwise actively engaged.

Fever of some degree is rather characteristic of advancing tuberculosis. Rest in bed modifies the temperature course by tending to lower the range considerably. In children temperature changes occur with less provocation than in adults.

Increased pulse rate. In general the pulse rate increases and decrease with the temperature, but is apt to remain

rapid for some weeks or months after the temperature keeps within normal limits.

Gastro-intestinal symptoms may be due solely to toxic effect, in which case anorexia is most common. Indigestion, diarrhea or colicky pain may be due to tuberculous enterities when pulmonary tuberculosis is present.

Night sweats. The excessive perspiration which may occur in a febrile case is not to be confused with occasional perspiration caused by excessive covering or poor ventialtion. In children night sweats are less suggestive than in adults.

Local Symptoms.

Cough and expectoration. Cough is usually unproductive until a cavity drains in a bronchus. A cough that persists longer than three or four weeks is significant. Some patients, particularly women and children have no expectoration because they swallow the secretions from the lung.

Bloody expectoration or hemoptysis. Any amount of blood coughed up with or without sputum necessitates the the exclusion of tuberculosis as a cause.

Hoarseness and huskiness may be the first evidence of tuberculosis althought the lesion in the throat is nearly always secondary to one in the lungs.

Pain in the chest and pleurisy. Unfortunately most cases of pulmonary tuberculosis proceed to advanced stages without severe pain, even through the pleura is involved.

Before going any further into the diagnosis of tuberculosis and its treatment, we want to speak briefly of the tuberculin test and its value. This test is of especial value in large groups of children where an X-ray for each is not feasible. In this manner the positive reactors can be determined and x-rayed at a great deal less expense than the entire group.

A positive tuberculin test in a child does not mean that the child is diseased, but it does mean that he should be examined by the doctor and have his chest X-rayed. This helps to determine if the germs have done any damage and if so how much. To prevent a child with a positive tuberculin test from getting serious tuberculosis, he must be given a chance to build good health and it must be made certain that he is no longer in contact with someone who has tuberculosis. Young children do not intimately associate with many people outside the home, there fore if the child has a positive tuberculin test, it is usually easy to find the person who gave him the bacillus.

Pupils in high school should also be tested for they are at the dangerous age when tuberculosis strikes hardest. A positive tuberculin test is of litte value, however, unless it is followed up by an X-ray. Before starting an extensive tuberculin testing program, one should make sure that X-ray facilities are available and that provision can be made for those unable to afford X-rays.

Scientists all over the world are still working on the treatment of tuberculosis in the hope of finding a drug or

miraculous procedure that will cure the disease. Perhaps someday this dream will come true and tuberculosis will take a place in history, such as that held by smallpox today.

The modern treatment of tuberculosis is based on the work done by Trudeau and other such men. Rest, fresh air, and nourishing food still hold the spotlight. Ther are many hospitlas through out the United States designed especially to provide such care and environment for tuberculous patients.

Surgical procedure is also playing a major role in the treatment of tuberculosis. Most surgical procedures are designed to furnish the maximum of rest to the affected lung. The nurse is not called on to perform any of these treatments but she should know what each consists of and the reason behind each. Considerable emphasis is placed on collapse theraphy and the principal is that of rest applied locally to the tuberculous lung.

Following are some of the major types of collapse therapy with which the nurse should be familiar. Artificial pneumothorax is quite common. The major purpose is to limit the motion of the lung so that healing can take place more readily. It consists of injecting air between the layers of the two pleura through a small needle. Connected to a reservoir. The air fills the pleural cavity allowing the lung to retract and rest. In some cases the presence of adhesions between the lung and chest wall will prevent a complete collapse and make the pneumothorax unsuccessful. In

such cases an operation to cut the adhesions is necessary. This operation is called pneumolysis and is comparatively simple. A pneumothorax is not a permanent procedure and must be done from time to time to keep the lung collapsed.

Another procedure for partially collapsing the lung is the phrenic nerve operation. This nerve may be injected with alcohol, crushed, or cut to produce a paralysis of the diaphragm thus giving the lung partial rest.

One of the major surgical operations often performed in tuberculosis is the thoracoplasty. This is a major surgical procedure in which portions of the ribs on the affected side are removed. It is usually performed in two or more stages. The purpose is to bring about complete and permanent collapse of the lung.

Usually this operation is advisded in those cases where irreparable damage has been done to the lung and where the other lung is endangered by infection from the diseased side. In successful operations, sputum may be reduced markedly in quantity or disappear entirely. When the operation is performed under skilful hands, the resulting deformity is slight or entirely absent when the patient is fully dressed. Any nurse dealing with tuberculosis patients should know something about these surgical procedures as it is often up to her to interpret them to the patient and show how they may be beneficial.

Tuberculosis control is a community problem because of the intermingling of the infectious patient with other members of the community through the school, place of work, and other group relationships. It is apparent that nursing responisbility cannot rest exclusively with any one group of nurses but must be shared by the nurse working in the home, school, industry, clinic and hospital.

To assure the best possible work all agencies must cooperate as closely as possible with the well being of the patient and family always the fist thing in mind. This cooperative responsibility should in no way lessen the effectiveness of the service to the community. Where it seems desirable to have nurses from two agencies visit in the home, caution will be necessary in order to avoid giving the family conflicting advice. Occasional conferences between the nurses should result in mutual strenghtening of services.

Whether employed by the health department or a private agency, the nurse should be familiar with the state laws and local ordinances and rules relating to the control of tuberculosis. Their value to the community is dependent, in large measure, on the ability of the personnel to administer them effectively through cooperative methods of teaching. Securing voluntary compliance with legal regulations becomes a stimulating challenge to teaching methods. The responsibility for reporting a case of tuberculosis may devolve

upon any member of the community. It should be kept in mind, however, that reporting is only one of the steps in control. Medical supervision is equally important. Every efforst should be made to have the patient consult a physician. When there is undue delay on the part of the patient in seeking medical advice, the situation may be discussed with the supervisor or executive in the private agency before the case is reported to the health department. It is much better to have a patient do voluntary what is best for himself and the community than to force him to do so by law.

One of the first and biggest problems a public health nurse faces in tuberculosis work is case-finding. To prevent the further spread of the disease, all active cases should be known and should be under medical care. The unknown case constitutes a major community health problem and every effort should be made toward its discovery. Few, if any, community health agents are favored with the same opportunities for finding cases as the public health nurse. She has entrance into homes, schools, industries and many other places. Whether or not her work is primarily tuberculosis, she should be health-minded enought to be on the alert for its danger signs where-ever she goes.

The examination of contacts is of first importance in a case finding program. They may come to the attention of the nurse through the diagnosed case or through the family history. The discovery of a contact is of litte value,

however, unless the individual and family are convinced of the need of an examination. The nurse must give the family an understanding of the nature of the disease and the value of a periodic medical examination. Another thing the nurse should be on the alert for is clinical symptoms of tuberculosis. Of course, it is much better to pick the case up before these symptoms become manifest but this is not always possible. If symptoms are present, the patient must be made to see the necessity of medical advice.

Tuberculin testing programs are of value in case-finding when provision is made for adequate and trained personnel to do a thorough job of tracing the source of infection back from the positive reactor.

However, very few methods offer such possibilities for case-finding as a thorough medical examination at regular intervals. The X-ray is an indispensable part of the examination. This method not only helps in case-finding but it also offers an invaluable teaching opportunity.

Home visiting is of a good deal of importance in tuberculosis nursing. Courtesy, respect for the family viewpoint, and friendliness on the part of the nurse are essential. She must never try to force the family to do anything but rather lead them to the place where they wish to do it. The purposes of home-visiting, as they relate particularly to tuberculosis are to share information about tuberculosis and its

control with the patient and family and to secure action by the patient and family in applying control measures.

It is impossible to say how often a family should be visited. This may depend on the extent of the disease, the intelligence of the family, and the nature of the home conditions. In some families of low intelligence, a daily visit for several weeks is not too much. In others, several visits with the aid of some literature is quite sufficient. The frequency of visits may also depend on the nurses teaching ability.

The nursing case load should be limited to a number in which effective service is possible. Results that are satisfying to the patient, family, community, and nurse are possible only when each case can be visited as frequently as the situation requires. No definite limit can be given for the size of the case load to be carried. This will depend on the cases, the community, and the nurse.

Obviously, the nurse with a generalized program cannot be expected to carry as many cases of tuberculosis as would be possible is the program were limited to tuberculosis. However, results in individual families may be equally satisfactory. Case load and the number of visits are not the final criteria of worth while service. One enlightened family that needs no more supervision, shows more achievement than several families where a weekly visit is still

to discover the reason. The successful nurse will formulate her questions in such a way as not to offend the family.

The first tuberculosis clinics were places for the treatment of patients and the free distribution of medicine. The clinic is now regarded as a place where patients may be examined and diagnosed.

Diagnosis is the chief function, but occasionally treatment may be given. With the advance in our knowledge of diagnosis and treatment of chest diseases these clinics are no longer confined entirely to tuberculosis, but provide diagnosis and treatment for all chest conditions.

The nurse plays a leading role in handling and directing clinics. She can make the patient feel happy and at home or miserable and out of place. A kindly word or two and a friendly smile will do much to put the patient at ease and influence his return. All patients, irrespective of social or economic status, should be regarded as guests and treated with appropriate courtesy.

Clinics should be utilized as teaching centers, and as treatment centers. The nurse has a opportunity to give the patient many helpful suggestions on each visit. She can utilize the time the patient must wait and the few minutes after treatment for teaching purposes.

There are many things that the tuberculous patient must be taught. The nurse must use her judgement and discretion

in deciding what to teach first. This often depends on the patient and home conditions. Some of the things that should be taught are: safe disposal of sputum; value of covering the mouth and nose when coughing or sneezing; handwashing; sterilization of dishes; separate room for the patient; disposal of waste; and the method of terminal disinfection. The thing of prime importance may be different in each case.

One of the most difficult things a tuberculous patient is obliged to learn is how to rest. To give the patient a clear understanding of the importance of rest in the curing process it is necessary for the nurse to explain that exercise or activity of any kind, interferes with the healing of the pulmonary lesion. When the physiology of rest is understood it will become a constant slowing up of all bodily and mental activities at all times during the day, rather than a periodic cessation of activities for limited periods only. The very active patient will require time to adjust to a slower tempo of life. Inability to restrain the movement of the body may be due to worry, loneliness, or inadequate mental diversion. Every effort should be made for the discovery and removal of the cause of worry. Activities that are within the patient's physical limits must be found to provide a wholesome diversion from too prolonged periods of inactivity. All acitivity should be thought of as exercise and suggested only with the approval of the physician. The things that constitute exercise and the

reason for limiting it should be explained fully to the patient so that he will come to know how to limit his own activity and mode of life.

As in rest and exercise, the nurse should explain as simply as possible the meaning of adequate diet and the part played by the food in the recovery from tuberculosis. The family frequently needs assistance in budgeting the income so that an adequate allowance is made for food. Help should also be given the family in preparation of the food to make it as attractive as possible to the invalid.

More and better hospitals are being built for the care of tuberculosis patients, every years. When the institution is equipped to give instruction, it is generally conceded that a period of hospitalization can be beneficial to all patients. In all instances recommendations for hospitalization is a function of the physician. If hospital care is recommended, assistance should be offered in carrying out such procedures as are necessary for admission. The reasons for and benefits to be derived from hospital care should be explained to the patient and family before admission. If the patient and family understand beforehand what will be expected of both, adjustment will be facilitated for them after the patient arrives at the hospital and during his stay there.

Although, the hospital is the most satisfactory place for the treatment of active tuberculosis, there are times when the

physician feels it advisable to treat the patient at home. The nurse must then set upoan environment that embodies as many of the features of hospital care as possible. In this situtaion there is the added opportunity of teaching a responsible adult member of the family to give bedside care and to supervise the health of the other members of the family during the absence of the nurse.

The rehabilitation of the patient is one of the greatest challenges to the nurse. The patient should be advised whether he should go back to the old job or seek other and different employmentby the doctor. Acertain team work is producing results in many states where the state vocational rehabiliation service and the chest clinicians have become well acquainted with each others work. In these states the problem of employment is not difficult.

Fundamental in the adjustment of the patient to the outside world is the gradual realization that his handicap is not unique, that much of the world's work is performed by persons more handicapped than himself. Frequently the nurse can help her patient to realize that the outside world contains more suitable elements for work and play than the sanitorium and that there is no conspiracy against the tuberculous but only against those who will not believe in their own power to succeed.

The decline in the death rate from tuberculosis is a matter of gratification to all health workers. There is a

renewed effort under way now for the complete eradication of this disease. What part the public health nurse will play in this campaign will be largely up to her to determine. With adequate knowledge of the disease, skill in nursing and teaching methods, and a willingness to analyze, evaluate, and improve nursing performances, there is little doubt that the public health nurse can increase her usefulness to the tuberculosis program. However, no matter to what technical skill and efficiency she may rise let us hope that she will never lose sight of the human side of the problem, never lose the patient in the treatment, nor let the family anxiety go unheeded. In closing let us quote and reflect on the world of meaning in Dr. Trudeau's words: "To cure sometimes, to relieve often, to comfort always."

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