

LECTURES AND DEMONSTRATIONS TO SANITARY OFFICERS.

INTRODUCTORY ADDRESS

TO THE TWENTY-SIXTH COURSE

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Delivered October 17th, 1898.

I ACCEPTED the duty of delivering this inaugural lecture because the occasion is an important one for the Sanitary Institute.

I must in the first place give you a short historical *résumé* of the causes which led to the formation of The Sanitary Institute, and the establishment by them of Examinations for Sanitary Inspectors and others.

The Public Health Act of 1875 was the first effort which the legislature made to deal with the health of the country as a whole, and that Act has been supplemented by numerous other Acts of Parliament as well as by Bye-laws.

This legislation recognized that whenever people congregate together in towns or villages, their tendency is to pollute air, soil, and water, unless very strict regulations are made and enforced to prevent one person from doing things which will injure his neighbour; and by the formation of sanitary districts, the Act created an administrative machinery for remedying sanitary defects.

In urban districts, the Medical Officer of Health, and the town or borough Surveyor are the chief executive officers responsible for the sanitary supervision of the district. In rural districts the chief executive supervisor is the Medical Officer of Health.

But the Sanitary Inspector is the agency through which the sanitary authority becomes acquainted with the detailed sanitary wants of the district, and on whose vigilance the sanitary authority must rely for securing the detailed application of remedies.

For these reasons the Sanitary Inspectors require a knowledge of the laws which control sanitary administration, of the

principles which govern sanitation, and of the methods which have been devised to give effect to those principles.

This knowledge relates to drainage, scavenging, and water supply; the control and improvement of the dwellings and lodgings of the poorer classes; the removal of sources of impurity from within and from the vicinity of dwellings; the restriction of offensive trades; the sale of unsound or adulterated food; and the power to deal with that most important subject, namely, the spread of infectious and epidemic diseases.

Soon after the passing of the Act of 1875, the Sanitary Institute was formed with the object of fostering sanitary knowledge, and of diffusing throughout the community a knowledge of the principles of sanitation.

It proposed to effect this object partly by holding Examinations in Sanitary Science, and granting Certificates of competency to Local Surveyors, to Inspectors of Nuisances and others charged with the administration of the Public Health Act, and to disseminate sanitary knowledge over the country; by holding Congresses in different localities, where opportunities would be afforded for the discussion of sanitary problems by sanitary authorities, medical officers, and others charged with the supervision of sanitation under the Act; and by arranging to make an Exhibition of Sanitary Appliances an integral part of its Congress.

At an early date in its career it associated itself with the Parkes Museum of Hygiene.

The Parkes Museum had been established in memory of Dr. Parkes' admirable teaching of the science of Hygiene, and was intended to illustrate:—

(1) Engineering and local hygiene, including climatology, and causes of disease and death-rates appertaining to physical geography; information on health resorts; botanical hygiene; geology as bearing on salubrity and water supply; plans for the healthy arrangement of towns; principles of town drainage, water supply, scavenging, and disposal of refuse, &c.

(2) Architecture.

(a) Designs and models connected with health in dwellings of every sort, factories, workshops, schools, &c.

(b) Materials and details of construction.

(3) Household requisites, including fixtures and furniture, and embracing all matters connected with lighting, warming, cooking, cleaning, and other domestic sanitary purposes.

(4) Clothing, embracing materials, shape, climatic influences, &c.

(5) Food: the chemistry of food as obtained either from the

animal or from the vegetable kingdom ; and the relative nutritive value of different kinds of food. Beverages, dietaries, adulteration, diseases of plants or animals affecting the use of food, and so forth.

(6) Preservation and relief.

(a) Personal hygiene.

(b) Protection and rescue, including protection against disease, poison, dangerous insects. Life-boats, fire-escapes, lightning conductors, &c.

(c) Industrial pathology, or the prevention of accidents, injuries, and diseases incidental to industrial employments.

(d) Special hygiene of professional occupations.

You will thus see that the subjects which our Institute would illustrate are spread over the principal proceedings of our daily life.

The Parkes Museum possessed a valuable library of works on hygiene, which we have added to and made available for students.

The Exhibitions held at the Congresses afford an unrivalled opportunity of keeping the Museum absolutely up to date.

The awards given at the Exhibition are settled by means of a most careful system of judging the exhibits, which gives stability to its Court of Judges, accompanied by the practical testing of those exhibits whose merit cannot otherwise be determined.

The Examinations revealed the fact that there was no machinery available for acquiring the theoretical and practical knowledge necessary for passing these Examinations, and consequently the Institute established the important and very valuable courses of lectures and demonstrations in connection with the Museum, with which you are all familiar.

You will thus see that one of the first problems which occupied the attention of the Founders of The Sanitary Institute was to improve the knowledge, and through that the status of Sanitary Inspectors.

With this object The Sanitary Institute has through many difficulties, during a course of more than twenty years, laboured to perfect its system of examinations, of lectures and demonstrations, and its Museum and Library.

By means of these long continued exertions, we finally compelled the country and the Government to recognize the importance, indeed the necessity, of these Examinations.

The first result of this recognition has been that in the Public Health Act, London, 1891, Parliament has required that

Sanitary Inspectors shall possess a Certificate of competency for the performance of their duties, from some Examining body approved by the Local Government Board.

The syllabus of the courses of lectures, supplemented by inspections and demonstrations established by The Sanitary Institute, is before you.

This syllabus is founded simply upon what Parliament requires Sanitary Inspectors to know. You will see that it embraces a wide field.

But the most astonishing fact connected with this recent legislation of Parliament is, that whilst the Sanitary Inspector is required to possess considerable knowledge and technical skill, he is nowhere protected either as to his emoluments, or as to the tenure of his office.

In order that you may appreciate the importance of paying careful attention to the lectures and demonstrations, not only as a means of passing the examination, but because of the importance of mastering the knowledge they convey to you for use in after life, I will draw your attention to what the Sanitary Inspector is expected to know, if he is to carry out his duties properly.

The duties of Sanitary Inspectors have been defined by the Local Government Board briefly as follows:—

I. They are to obey the directions of the sanitary authority and of the Medical Officer of Health, and they are to attend the meetings of the sanitary authority when required.

II. They are to inspect their district systematically, and keep themselves informed of the sanitary condition of their district; and whenever they receive notice of the existence of a nuisance, or of a breach of the bye-laws or of the regulations made by the sanitary authority, they are to inspect and report thereon to the sanitary authority, as well as upon any noxious or offensive trades established in the district: they have to see that the provisions of the Common Lodging Houses Act are duly carried out: and under the Housing of the Working Classes Act they may be called upon to ascertain whether any dwelling-house is in a state so injurious to health as not to be fit for human habitation.

III. They are to report to the sanitary authority when the water supply for domestic purposes is either wasted, polluted, or defective.

IV. They are to inspect slaughter-houses and all shops and markets for the sale of butchers' meat, poultry, fish, fruit, vegetables, corn, bread, flour, or milk; and they are to cause any such articles as may appear to be unfit for food, but which are intended for the food of man, to be dealt with by a Justice

of the Peace, subject to the opinion of the Medical Officer of Health.

V. They are to collect samples of food and drugs when necessary, and to take such further proceedings in respect thereof as may be required under the Sale of Food and Drugs Act.

VI. They are to give immediate notice to the Medical Officer of Health of the appearance of any contagious, or infectious, or epidemic disease. They are to take necessary measures under the direction of the Medical Officer of Health for preventing the spread of such diseases; and when it appears to them that the intervention of such Officer is necessary, in consequence of the existence of any nuisance injurious to health, or of any over-crowding, or otherwise, they are forthwith to inform the Medical Officer of Health.

VII. They are to be competent to superintend the execution of works for the suppression of nuisances, ordered by the sanitary authority, and to see that they have been duly executed.

VIII. They are to keep a record of the sanitary condition of houses, in respect of which action has had to be taken under the Public Health Act of 1875, as well as to keep such other systematic records as are required by the sanitary authority; and they are to report fully on all matters to the Medical Officer of Health.

You will see by this summary that the Sanitary Inspector is intended to be the eye and right hand of the Medical Officer of Health; and it is only by keeping himself fully informed of the sanitary state of every part of his district, that he can bring to the notice of the Medical Officer all matters injurious to health in the district.

When I have advocated the importance of Sanitary Inspectors possessing a certain amount of technical education, I have often been met with the remark, that all that a Sanitary Inspector requires is common sense. Now common sense is a rare but most useful quality to possess, and combined with experience, common sense will go far to make up for want of special knowledge; but the duties laid on the Sanitary Inspector are wide, and since he has to keep the Medical Officer informed of any shortcomings in sanitation which occur in his district, he must possess special knowledge of the points which he has to observe, and upon which he has to report to his chief.

Let us consider for a moment what is the special knowledge which the proper performance of the duties of a Sanitary Inspector involves.

He requires a knowledge of the laws which control sanitary administration; he requires a knowledge of the principles which govern sanitation; and he must be conversant with the methods

which have been devised to give effect to those principles. Now this knowledge covers a very large field, and I purpose to explain briefly what it implies.

I. In the first place his general education must be such as to enable him to keep accurate records, and make reports, accompanied, if necessary, with sketches illustrating such reports.

II. He requires an accurate knowledge of the numerous Acts of Parliament which confer his duties upon him, as well as a knowledge of the bye-laws of the Local Government Board.

III. He must have a knowledge of the conditions which affect the health of dwellings, and must be cognisant of the various questions connected therewith, such as:—

(a) Overcrowding; and he must be able to measure and calculate the cubic and floor space in rooms.

(b) He must understand the principles of ventilation, and know simple methods for applying these principles to houses.

(c) He must have a general knowledge of the constructional conditions affecting warmth, that is to say, both in respect of the generation and distribution of heat in the most favourable manner, as well as in respect of the methods of construction which prevent the loss of heat.

(d) He must understand construction as bearing upon light and window space, and the proportion which window space should bear to floor space and cubic space.

(e) He should be conversant with the conditions which foster damp, and with methods for preventing damp and dry rot.

(f) He must have a knowledge of the general conditions required for good drainage; he must be able to apply simple methods for testing drains.

(g) He must be able to advise upon the best forms of sanitary fittings and appliances, and understand how to test them effectually.

This knowledge involves a certain acquaintance with details of building construction, and a knowledge of what constitutes good plumbing.

IV. He must possess some knowledge of the physical characteristics of good drinking water, and of the various ways in which water may be polluted, either in consequence of the position of wells and streams in relation to nuisances, or by other sources of injury, either to the sources of supply, or from the retention of water in cisterns and in houses; and he must be acquainted with the means of preventing pollution of water.

V. He should understand the conditions to be observed in

the construction and maintenance of dairies, cow-sheds, and slaughter-houses, so as to avoid sanitary dangers.

VI. He should be able to report upon noxious and offensive trades, and manufactures, and whether the operations of the trade are carried on under due regulation.

VII. He should understand the best and most efficient method of scavenging, and be able to advise upon the storage and disposal of refuse.

VIII. He is also bound to know the general characteristics of good and bad food (such as meat, fish, milk, vegetables, etc.), as well as to understand the duties assigned to him under the Sale of Food and Drugs Act.

IX. He has, further, to possess a knowledge of the regulations affecting persons suffering from infectious diseases; he must be acquainted with the use and value of disinfectants, and he must be able to apply the various methods of disinfection suited to the circumstance of each case.

This brief statement of the various matters with which the Inspectors must be cognisant, if they are to perform their duties efficiently, abundantly shows that they must possess a certain amount of technical knowledge, and this is not to be obtained without special training; hence you will easily understand that something more than mere common sense is wanted. No doubt in many of these matters the Sanitary Inspector has at hand the advice and assistance of the Medical Officer of Health; but if he is to be an efficient help to the officer, and if his advice is to be of value and to carry weight with the householder, he must himself possess a large amount of this technical knowledge, the heads of which I have enumerated.

For instance, in the matter of sanitary appliances, Sanitary Inspectors should know the reasons which have led to the adoption of the various appliances for sanitation, because you may sometimes by advising remedies for one insanitary condition, introduce, through want of such knowledge, fresh unforeseen causes of disease.

As an illustration of this I would mention that when, some fifty or sixty years ago, the evils of cess-pits in towns were seen to be very great, the proposal was made to turn the privies into water-closets, and to send this refuse away in the sewers; but although, until then, the sewers had only been constructed in a manner suitable for removing rain-water, and had been only allowed to be so used, no one thought at that time whether the actual condition of the sewers was such as to permit of their being efficient carriers of this sort of refuse, nor was any thought given to probable evils from sewer gas, and many deaths resulted from this ignorance. Indeed, I know more than one case where the water-closet soil

pipe was led into the rain water pipe, which was connected with a water cistern under the house; the contamination of which caused much disease and some deaths. You cannot make a new departure in sanitary progress without much careful consideration, for each step you take introduces fresh conditions; this of itself is an evidence that it is highly important that the Sanitary Inspector should have sufficient knowledge of the principles of sanitation to enable him to appreciate these new conditions.

At the present time, one of the most important functions of the Sanitary Inspector is with reference to infectious and contagious disease. The Public Health Act of 1875 authorises the local sanitary authority to provide hospitals and places for disinfection of bedding, clothing, etc., as well as ambulance carriages for the conveyance of sick persons. Recent Acts of Parliament enable sanitary authorities to require the notification of infectious diseases, and to isolate patients suffering from such diseases, as well as to pay the lodging of persons who must vacate their houses during the disinfection of the house and premises where a case has occurred.

I will give you an instance of the efficiency of isolation, and how the efficiency can be marred by the neglect of necessary precautions.

You all know that the anti-vaccination cry has been very rampant lately.

It is scarcely necessary for me to tell you that vaccination properly practised with good lymph is, when accompanied a few years later by re-vaccination, an almost absolute protection against small-pox.

In Germany every child is vaccinated. The German Army, which enforces vaccination and re-vaccination, is entirely free from small-pox.

In this country many towns have very imprudently repudiated vaccination, one of those towns was Gloucester, near which place Jenner's wonderful discovery took its rise.

You will remember that last year that town suffered from a dreadful visitation of small-pox. Then when too late every one endeavoured to resort to vaccination.

Let me contrast with the epidemic at Gloucester, the condition of another town, which also has foolishly repudiated vaccination, namely, Leicester.

You all, no doubt, know that the people of Leicester are much opposed to vaccination, and that a considerable proportion of the population is not vaccinated. They have, however, managed to escape during a long series of years from the ravages of small-pox, whilst epidemics of small-pox have occurred in

their vicinity, and indeed have raged in many towns and country districts of England.

Leicester has obtained this immunity by paying very careful attention to the general sanitation of their town, and especially by maintaining a very efficient isolation in all cases where the disease manifests itself. They have an isolation hospital, to which anyone attacked with small-pox is removed unless adequate isolation can be afforded at home; and they isolate not only the patient, but they place in quarantine the family who have been in contact with the patient; they pay the wages, and keep them isolated under supervision for a sufficient period, to ascertain that they do not develop small-pox.

Moreover, they do recognize the advantages of vaccination, in that they endeavour to induce all such persons and their attendants to submit to vaccination.

I will give you another instance. Vaccination has been very perfunctorily enforced in London.

We had a very serious epidemic of small-pox in London in 1884-5. According to the usual course of past epidemics of small-pox it should have recurred between 1889 and 1891, or 1892, and again between that period and 1898. But every case of small-pox in London which cannot be isolated effectually in the patient's own dwelling, is removed by ambulance carriages and steamers to ships placed in the lower Thames, and up to the present time the epidemic tendency has been kept under. There occurred however, some five or six years ago, a sudden outbreak of some ten or twelve cases, which afford a striking instance of how failure to isolate a patient may easily lead to a spread of the disease. The cases were all traced to one man who had fallen ill soon after landing from a foreign ship. His illness had not been recognised at once, and he had remained in his lodgings for some days before the case was notified, and before his removal to the hospital ship. The other cases were all traced to have had communication with this man or his surroundings, under circumstances which showed that if he had been removed at once probably all the others would have escaped the disease.

Inasmuch, however, as vaccination and re-vaccination afford an almost complete immunity from small-pox, the majority in this country wisely prefer the absolute safeguard of universal vaccination, to the risk of small-pox, which Leicester incurs; but we may learn from the Leicester practice in regard to small-pox, how to treat other infectious diseases, and by taking steps to isolate immediately every case of infectious disease, arrive at almost stamping them out. I would, however, add that the real objections to vaccination have arisen, either from

impurity in the lymph and the conveyance of some disease from one child to another, or to some carelessness in the operation.

But these are evils which might be avoided with care.

You must also remember that one of the conditions necessary to make isolation effective, is the careful, immediate disinfection of premises, furniture, and clothing. Now this is especially the duty of the Sanitary Inspector. He must, therefore, possess adequate knowledge of the various materials to be used in disinfection, and how to apply them; he must also be furnished with adequate appliances for disinfection. It cannot be too strongly urged that, if the notification of infectious disease is to be really effective as an instrument for preventing the spread of disease, careful immediate isolation and disinfection is imperative.

The watchword of the sanitarian is, pure air, pure soil, pure water. In our large towns the purity of air is much neglected.

The impurities in town air arise partly from the decomposition of the organic matter, thrown off in the processes of life, partly from the coal carelessly burnt, both in our domestic fire-places and in manufactories, a large portion of which is carried unconsumed to float in the atmosphere as dust.

Let me briefly explain the effects of dust in the atmosphere. Where watery vapour condenses in the atmosphere it always does so on some solid nucleus; particles of dust floating in the air are very convenient nuclei on which it can condense, and when it does so it forms visible fog.

If there was no dust in the air there would be no fogs, no clouds, no mists. But dust pervades the air everywhere. The haze in the air on a summer's day is caused by dust, which is probably largely composed of the pollen of flowers.

In town air, in addition to the organic matter from houses, from stables, from horse manure in the streets, and from gaseous products of combustion, the air is filled with particles of dust, with soot, and also with tarry matter, which coats the particles of aqueous vapour condensed upon the dust particles on a foggy day and prevents their dissipation, and thus town fogs are more persistent than country fogs.

Hence, smoke and fog act and re-act on each other to keep the atmosphere polluted. Rain partially cleans air from dust, and the air in a town is made distinctly purer by a heavy shower of rain.

If the atmosphere of a town were stagnant, the continuous emanations of impurity into the air in large towns would soon render existence impossible.

But air is always in movement. This movement arises from perpetual changes of temperature on the surface of the globe—

changes which are the causes of all our winds and hurricanes. The average movement of the atmosphere in England is at the rate of about twelve miles an hour. On the very calmest day it rarely moves less rapidly than five or six miles an hour. Therefore, in a town, the streets should be so laid out as to encourage the free movement of air round the buildings.

There is another point on which, I think, I can usefully say a few words, that is on the disposal of household refuse. This subject is indeed one of growing importance, for our population increases rapidly, and the refuse which has to be disposed of increases in proportion. This refuse consists of

1st, fœcal matter;

2nd, of house slops; and

3rd, ashes, kitchen waste, and other household refuse.

In country districts, where houses are separate, the utilization of these matters is comparatively simple. They can generally be utilized without sanitary danger, in increasing the fertility of the garden and the field. But where houses are close together, as is the case in large villages and in towns, the difficulties are greater. You will hear in the course of these lectures what are the most effectual modes of disposing of these matters. I would only observe that the refuse, on sanitary grounds, ought never to be allowed to remain long in the house itself, nor ought it to be accumulated near the house, either in heaps where it contributes to pollute the air, or in pits where it may contribute to pollute the wells. The only safe plan is to place it in a metal receptacle and to have it removed to a distance, for purposes of utilization, every morning. In the final disposal of town refuse, it has sometimes been the custom to adopt very unsanitary proceedings. In the vicinity of many large towns this refuse has been sometimes used as the means of raising the level of the ground to afford a foundation for new houses. The continued rising of vapour from the ground makes this a most dangerous proceeding, and fevers and other diseases have been thereby occasioned in the dwellings built on such a foundation. This method of disposal is now fortunately comparatively rare.

The process of dust sorting by hand, which is still to some extent practised, is an insanitary occupation, and a large number of towns resort to destruction by fire as the simplest method of getting rid of it. Where refuse is burnt without smell the method is not insanitary; it saves trouble, and the refuse affords a fuel which may be utilized to assist in driving engines, to make electric light, or otherwise.

But there is another important matter under the cognizance of the Sanitary Inspector, and that is the contamination of

food. This arises partly from diseases in live animals which furnish our milk and meat; partly to the deleterious adulteration with which the grocer, the baker, the publican, the wine and spirit merchant and others find it advantageous to qualify our food; partly to the positions in which food supplies are kept, and in which the food may imbibe some noxious matters.

A perusal of the syllabus of the lectures will show you how large is the number of details of which practical sanitation is made up. All these details have had to be worked out by the researches of the Chemist, the Physicist, the Physiologist, the Engineer, and the Agriculturist. It is through these various sciences that we are daily acquiring a wider knowledge and control of the intricate influences which affect our health. The Chemist explains to us the quality of air, whether on the mountain, in the fields, in towns, or in your houses, whilst the Physicist shows us how to control its movements; and together they are opening to our view new possibilities of counteracting deleterious surroundings.

On the other hand, the Physiologist is showing us not only that minute organisms pervade all nature and assist in many of its operations, but he is classifying them according to their good and bad characters, and is learning to control their tendencies for evil, and to develop their useful qualities as general scavengers, so as to render our sewage innocuous.

You will see from this summary that in order to deal intelligently with these apparently small matters, the Sanitary Inspector must possess a very considerable amount of technical knowledge, and each year these requirements are increasing. Now, although one of the chief functions of the Sanitary Inspector is to give attention to these apparently small causes, in order to bring them to the notice of the Medical Officer of Health, and thus assist in preventing the spread of the disease, you are all aware that if a house and its surroundings are to be kept in a healthy condition, it must be so kept by those who live in the house, that is to say, by the householder himself. But the householder is often careless about such matters; more frequently indeed he is not aware of the evils which defective sanitation entails on himself and on his neighbours. The Sanitary Inspector is, however, or should be, always at hand to point out the requirements of sanitation to the householder when he is careless, and to teach him these requirements when he is ignorant of them. In carrying out the duty of explaining his shortcomings to the householder something more than mere knowledge is required. If he is to spread the cause of sanitation efficiently he requires eminent tact.

There are two ways of approaching people under an Act of

Parliament. One way is to threaten legal proceedings, and to order things to be done without explaining the object of the work required. That is a very injudicious way. It hinders rather than advances sanitation. The other way is to use the position of a Sanitary Inspector as a means of teaching people and educating them in sanitary methods, so as to make them understand that they thereby diminish the causes which lead to infectious disease. That is the true way to insure proper attention to the subject. It is far better for people to do the work of sanitation willingly, and look upon the Sanitary Inspector as their friend, than to regard sanitation in a hostile spirit, and look on the Sanitary Inspector as a prying, intolerant autocrat, who would force upon them the principles of sanitation, whether or not they like and understand them.

I do not think that I can impress upon you too strongly that all sanitation depends very largely upon care in details, which must be looked after by the individuals among the public; and therefore that our sanitary progress depends upon the recognition by the public, that sanitation is desirable and necessary.

If you look into the Bible you will see that Moses included his sanitary precepts as a part of the religion of the people, and that he committed the duty of enforcing sanitary regulations to the care of the priests, and Christ told his disciples to go into all parts and heal the sick.

The priests of the Christian Church preach the removal of sin, but leave untouched the healing of the sick.

So far as what we term preventable disease is concerned I would urge that Sanitation should be made a branch of our elementary education: but meanwhile with us the Sanitary Inspector is the missionary upon whom devolves the duty of explaining to the people the importance of paying a close attention to sanitary details.

I look upon this duty, which lies upon the Sanitary Inspector, of educating the people in sanitation as a great and important mission, and I should like to impress upon all Sanitary Inspectors the importance of the educational position which they hold. They are continually in direct touch with the people, and they possess admirable opportunities ready to their hands for explaining to the people the importance of paying close attention to sanitary details. Until the people themselves feel the importance of sanitation, very little real and substantial advance can be made by the nation.

Acts of Parliament may be necessary to assist sanitary progress and to enforce sanitary discipline, but laws can do little unless aided by the earnest, the strenuous co-operation of every individual member of the community.

The Sanitary Inspector has it in his power in the daily exercise of his duty, to explain, to teach, and to show practically to the artizan and to the labourer how by care and attention to cleanliness in their persons, their food, their homes, and their surroundings, they can preserve their own health, and save their children and families from preventable sickness and death.

Therefore I would urge upon you that your motto is contained in the proverb—"Prevention is better than cure." And I cannot, perhaps, more appropriately conclude my remarks than by quoting four lines from Oliver Wendell Holmes' poem, entitled "The Two Armies," which sum up in a few words the duty, which it should be the aim of the Sanitary Inspector to fulfil:—

"Along its front no sabres shine,
No blood-red pennons wave;
Its banner bears the single line
'Our duty is to save.'"

