The Journal of the American Medical Association

Published under the Auspices of the Board of Trustees

VOL. XLIX.

CHICAGO ILLINOIS, NOVEMBER 2, 1907.

No. 18.

Original Articles

THE THREE-CLASS (FREIBANK) MEAT SYSTEM AS AN AID IN ERADICATING TUBERCULOSIS.

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The federal meat inspection system is essentially a two-class meat system, that is, meats which come to inspection are either "passed" for unrestricted trade or they are "condemned" and thus excluded from use as food.

In certain other countries, meats are divided into three classes, namely, a *first class* containing meats which are "passed" for unrestricted trade, a *second class* (*Freibank* meats) containing meats which are allowed on the market under certain restrictions, and a *third class* containing meats which are condemned, and thus excluded from the food supply.

The purpose of this article is to bring the three-class system to a more general knowledge among physicians and, in particular, to point out certain advantages it possesses as an aid in eradicating tuberculosis. The discussion will be confined to "meat inspection" in the more strict sense of the term, and will not deal with that portion of the law which involves points frequently classified in other countries under "food inspection."

THE FEDERAL MEAT INSPECTION LAW.

The federal meat inspection law provides for inspection of cattle, sheep, goats, and swine, the meats or meat food products of which are to enter into interstate and export trade. It is administered by the Bureau of Animal Industry, under direction of the Secretary of Agriculture. It makes a postmortem inspection mandatory, and this inspection is conducted by veterinary inspectors, who, under the regulations, must be graduates of recognized veterinary colleges, and who, in addition, have passed a civil service examination in order to obtain appointment. The law gives the Secretary of Agriculture discretion to require an antemortem inspection of the animals in question, and under present regulations this has been made mandatory for all animals killed at abattoirs.

The law provides for three important exceptions, namely for farmers, for retail butchers, and for retail dealers. In order to exercise some control over these excepted cases a system of certificates (to be made out by the farmer, the butcher, or the dealer) has been provided for by the regulations, and by means of this system the Department of Agriculture is able to discover whether a person claiming to be a farmer, a butcher, or a retail dealer is in reality a wholesale dealer or a packer.

From a study of the law and the regulations, the following points develop:

1. Cattle, sheep, goats, and swine, which are slaughtered at an abattoir standing under federal supervision, are subjected to both antemortem and postmortem inspection, with a view to preventing the use of meats and meat food products which are "unsound, unhealthful, unwholesome, or otherwise unfit for human food."

2. If an animal be slaughtered elsewhere and brought, with all the organs except the stomach and intestines attached, to a registered abattoir, it may be certified in case it can pass the postmortem inspection; in other words, it is possible for an animal to come to certification without having been inspected antemortem; as a practical proposition, however, this involves only a very few hogs.

3. A farmer or a retail butcher or a retail dealer may, on complying with certain prescribed conditions, enter into interstate trade with meats which have not been subjected to veterinary inspection; but such meats do not bear federal stamp.

4. Local butchers and packers engaging solely in intrastate (not interstate) trade do not come under the federal inspection.

5. Meats of animals other than cattle, sheep, goats, and swine do not come under the present meat inspection law.

LOSS THROUGH CONDEMNATIONS.

According to Solicitor McCabe of the U. S. Department of Agriculture, at a conservative estimate, the value, if healthy, of the carcasses and parts destroyed for food by federal inspectors during the course of one year is more than \$2,500,000. Doctor Dyson, the chief consulting veterinarian for certain large packing interests, places the loss at about \$3,000,000 to \$3,500,000 annually.

Accepting the more conservative estimate by Solicitor McCabe, and accepting 83,931,695 as the population of the country (for 1906), it is seen that at present the annual federal condemnations alone amount approximately to only 2.9 cents per capita of population. As a per capita loss this seems almost infinitesimal; still, in the aggregate, it amounts to nearly as much as the present annual appropriation (\$3,000,000) for the meat inspection.

In this connection it may be pointed out that under the new law the number of veterinary inspectors has already increased from 324 to 531 (on Dec. 1, 1906), namely an increase of about 63 per cent. There has also been an increase in the number of houses under inspection. In the words of Solicitor McCabe, "The number of establishments under inspection is 632, and the number is increasing daily."¹

1. Circular 101, B. A. I., p. 12.

This increase naturally means that under the rules in force in 1906, the actual (not proportional) federal condemnations will increase with the increased number of houses inspected. Hence the foregoing estimates will increase even when viewed solely on the basis of federal condemnations.

It is not difficult to foresee that the tendency of the existing federal law will be to eliminate the most diseased animals prior to the federal antemortem inspection and to bring these animals into the local slaughter houses which do not stand under federal control. This will naturally follow efforts of the packers to avoid purchasing animals which can not be reasonably sure of passing the federal antemortem inspection. State and local authorities will eventually see themselves forced, for self protection, to adopt meat inspection regulations. When this occurs, it is to be expected that the proportion of condemnations under such state or local inspection will exceed the proportion of federal condemnations. This increase will be due, not to more stringent regulations, but to a greater proportion of disease among the animals presented for slaughter. This point has, in fact, already made itself felt in at least one stage, where, according to information which I must consider trustworthy, the proportion of tuberculous animals killed at the slaughter houses has greatly increased since the enforcement of the new federal law.

Thus, as meat inspection spreads in this country, the natural tendency will be to gradually increase the \$2,500,000 or \$3,000,000 annual condemnations to a much greater sum, which it is difficult to estimate conservatively. Considering the differences which may exist in state or local regulations, an eventual annual condemnation of \$7,000,000 to \$10,000,000 per year for the entire country does not seem impossible. This would mean a per capita loss of no insignificance, namely, about 10 cents or more.

The figures quoted (\$2,500,000 to \$3,000,000) do not represent the net loss, but the value of the meat if it were healthful. As a matter of fact the packers are able to utilize a portion of this material for purposes other than meat (grease, lard, dry tankage, etc.). For the following estimates as to the values of healthy and diseased carcasses treated in various ways I am indebted to Dr. Dyson:

BEEF.

1. Dressed steer of 600 pounds at 8½ cents.....	\$52.50
2. Same, if tanked:	
113 pounds No. 1 non-edible tallow at 6½ cents.....	\$7.63
98 pounds dry tankage at ¼ cent.....	.24
[Percentage lost, 85; percentage saved, 15.]	\$7.87
3. Same, if made into canned meat:	
504 pounds canned meat at 4 cents.....	\$20.16
96 pounds bone at 1½ cents.....	1.44
[Percentage lost, 58.86; percentage saved, 41.14.]	\$21.60

PORK.

4. Dressed hog, 203 pounds at 10½ cents.....	\$21.82
5. Same, tanked for grease:	
94.4 pounds white grease at 6½ cents.....	\$6.13
[Percentage lost, 71.91; percentage saved, 28.09.]	
6. Same, if tanked for lard:	
94.4 pounds prime steam lard at 9.15 cents.....	\$8.64
[Percentage lost, 69.04; percentage saved, 30.96.]	
7. Same, with cuts boiled:	
26.3 pounds boiling hams at 15 cents.....	\$3.94
17.4 pounds boiling shoulders at 9½ cents.....	1.70
25.7 pounds boiling loins at 9½ cents.....	2.44
Fat to tank 133.6 pounds at 6¼ cents.....	8.35
[Percentage lost, 24.70; percentage saved, 75.30.]	\$16.43

In the vast majority of cases the hides of condemned cattle can, of course, be utilized, but as the foregoing estimates are based on the dressed carcasses, the hides do not enter into the present computation. It should

also be remarked that the foregoing cash estimates will vary slightly according to the varying market price.

THE FINANCIAL LOSS.

When it is recalled that the condemnation of a carcass means a net loss of 30 to 85 per cent. to the packer it is seen that the condemnation of meat involves much more than a purely academic problem. Any classification of meats necessarily means a financial loss to some one, with potential increase in price to the public. It follows, therefore, that in connection with any classification adopted it is necessary to consider the public health, the public purse, the butcher and the stock raiser. While public health should not be sacrificed to the purse of the butcher and stock raiser, the commercial interests should not be sacrificed to matters of ungrounded sentiment.

When meat is condemned in a large packing house a loss of one or two extra animals may represent an insignificant proportion of the invested capital. But when we extend the system of condemnations from the packing houses to the local butcher who kills only one to ten animals per week, the condemnation of a steer worth \$60.00 becomes a very much more serious matter. In justice to the small butcher, condemnations should be cut down to the lowest possible point consistent with a proper safeguarding of the public health.

If now, by any method not inconsistent with the public health, it is possible to realize from condemned carcasses a higher percentage than those given in the foregoing estimates, 2, 5, 6, it is clear that the amount thus realized would represent a saving in the economics of the country, and since the value lost by condemnation (by decreasing the supply) has a tendency to increase the price of meat, it seems reasonable to assume that any increase in the price of meat attributable to a condemnation could be inhibited in proportion to the greater value which might be saved by utilizing a portion of the condemned meat in some way other than by rendering it into lard or grease.

Such a method of saving meat is presented by the so-called *Freibank* system.

THE FREIBANK SYSTEM.

The system of the German *Freibank* and compulsory declaration of the condition of inferior meats is very old. The municipal laws of Augsburg in 1276 prescribed that inferior meat should not be sold without giving notice as to its quality. In 1404 the municipal laws of Wimpfen provided that the *Freibank* (from the German *frei*, free, here in the sense of unconnected or separated, and *bank*, a counter or stall) should be situated three paces away from the regular counters. The *Freibank* was, therefore, a counter which was free or separated from the counters on which the first class meats were sold. The term *Finnenbank* is sometimes used for these special meat stalls, because the measly meat (*finniges Fleisch*) especially is sold at these places. This system of *Freibank* has been extended quite generally in Germany and is rapidly extending in France, Belgium, Italy and other countries of Europe.

It has been more or less general experience that the introduction of the *Freibank* system has at first been met by prejudice from various sides, but it is also experience that this prejudice gradually wears off and that in some places the demand for this meat becomes greater than the supply. If introduced into this country the *Freibank* system will doubtless experience the same history it has had elsewhere.

If a form of the *Freibank* system, slightly modified to suit the conditions in this country, could be adopted in place of our present two-class system of meats the result would be that not only would we have a method by which a considerable economic loss could be saved to the country but, more important still, we would have a method at our disposal which would doubtless be a great aid in helping to eradicate tuberculosis from the dairy herds.

Meats could be divided as follows:

1. *Inspected and Passed.*—These meats should be only such as are placed on the market without restriction. They would include fresh meats, certain canned meats and cured meats. They would correspond to the present "U. S. Inspected and Passed."

2. *Inspected and Passed as Freibank Meats.*—This class would include all meats which could hardly be allowed on the market without restrictions and in fresh condition, but which could be safely (viewed from a sanitary standpoint) allowed on the market if they were properly cooked. In order to eliminate any possibility of fraud or any unfair competition with the "inspected and passed," it would seem wise to require that all *Freibank* meats be cooked. If prepared in a registered abattoir they could best be canned, and the cans should bear some such mark, in raised or depressed letters, as "Inspected and passed as *Freibank* meat." If sold uncanned by a local butcher, state and local regulations should provide that they be cooked and sold under declaration.

3. *Inspected and Condemned.*—This class would contain the meats which are unconditionally condemned as food, and would thus represent all those meats of the present "inspected and condemned" class which could not be properly passed even in cooked condition.

OBJECTIONS AND DISADVANTAGES.

In preparing this article I am not unaware of the fact that at first thought the average American will not be enthusiastically in favor of the *Freibank*; that some persons will view it as a wild, academic theory; that some will claim that what is not good enough for one class of persons to eat is not good enough for another; that some will say we have so much good meat in the country that it is unnecessary to eat inferior meat; or that there will be no market for this meat; that it will be used in orphan asylums, prisons and cheap boarding-houses and restaurants; that it will jeopardize our entire canned meat industry; that it will produce another meat scandal, etc. These are, to a great extent, practically the objections which have been raised against the system elsewhere, and the same objections may be expected here. It seems legitimate, therefore, to discuss at least some of them.

ITS SANITARY ASPECT.

Since the regulations could be so framed as to allow only such meats to come into the *Freibank* class as could be safely consumed when cooked and canned, it is self-evident that, from this point of view, the public health would be amply safeguarded; hence no valid sanitary argument can be raised against the system.

EXCLUSION OF FRAUD.

If the cans were stamped in raised or depressed letters with the words "Inspected and passed as *Freibank* meat," or with some other descriptive designation, the purchaser would be aware of the class of the meat he was buying. If he did not desire to purchase meat of that

class it would be possible for him to recognize immediately whether such meat were being sold to him. The person who desires this meat, which would naturally be of lower price than would be the first grade of meat, would be given opportunity to purchase it.

It would hardly seem reasonable for any person to oppose the *Freibank* system solely on the ground that he personally does not wish to purchase a second grade of meat. On the contrary, such person should logically welcome the general introduction of this system, for it would eventually give him a protection which he does not have at present.

ITS MARKETABILITY.

Admitting the sanitary safety of the *Freibank* system, the important question arises whether *Freibank* meats could find a market in this country. In regard to this point attention may be invited to the following facts:

There are at present tens of thousands of persons in this country who have immigrated from countries (such as Germany) in which the *Freibank* system has been in existence for decades and even for centuries. It is, therefore, reasonable to assume that at least not an inconsiderable number of families already familiar with the system are now in the United States. That some of these families used *Freibank* meats in their native country can not well be questioned, and having once used these meats and having found that they are wholesome, it is reasonable to suppose that they would use them again. The system would, therefore, not have to start *de novo* with the entire population.

That it would take some time to introduce the system among native-born Americans is self-evident. But in view of the economic losses which will eventually result from a general introduction of state and local meat inspection, it would seem reasonable to assume that it will be easier to begin that educational movement now, with federally inspected meats, than to postpone it to a time when state and local inspection becomes general and when on this account the amount of *Freibank* meats would be vastly in excess of the present available stock. It would also seem reasonable to assume that the federal guarantee of the non-dangerous quality of *Freibank* meats, as implied in the federal stamp, would be of great importance in leading to the adoption of the three-class system by state and local authorities.

NOT ENTIRELY AN INNOVATION.

The point might be raised that this system is a radical revolution in our present American meat trade. This point would not be altogether well taken. It may, for instance, be recalled that in some cases certain carcasses are permitted to be used only for lard; this is in itself a beginning of the three-class system. Again, during the period when the microscopic inspection of swine for trichinosis was practiced by this government certain trichinous carcasses were allowed to be cooked and sold; yet no harm has been reported as a result of this action, which is in itself a modified three-class system. Further, under existing regulations, localized lesions are cut out and the rest of the carcass is passed; this is a step toward the three-class system.

The system suggested for consideration contains no principle of meat inspection new either to this or other meat-inspecting governments; it simply carries out well-recognized principles to their logical conclusion and informs the purchaser more in detail of the official action taken by meat inspectors than does the two-class system.

CHEAP MEALS.

If a man takes a 10-cent dinner in a cheap restaurant he does not expect to be served with the finest porterhouse steak. He pays for what he receives and receives what he pays for, namely, a cheap meal of inferior monetary though not necessarily of inferior nutritive value. Under existing conditions he may be eating meat purchased by the cheap boarding-house or cheap restaurant from some local butcher whose uninspected meat may be of too poor a quality to enter even into the *Freibank* class; certainly in such cases it would be no injustice to him to serve a better class of meat guaranteed under the three-class system by the government.

So long as local meat inspection (as distinguished from federal inspection) is on such a low basis as it is in this country, or on no basis at all, it would seem just a little strained to maintain that it would be an injustice to the public to guarantee the safety of sterilized *Freibank* meats, inspected by competent veterinarians. The cheap boarding-house and cheap restaurant argument is so weak under existing conditions that it is rather difficult to consider it seriously. If, however, the local meat inspection in any given city is sufficiently high to justify such a measure (New Orleans, for instance), local regulations could be enforced prohibiting *Freibank* meats in boarding-houses and restaurants.

THEORY AND PRACTICE.

The objection that the three-class system is a theory can be made only by persons who are uninformed as to the history of the system and who will not take the trouble to inquire into it. It is not a theory, but a practice of long standing in a number of countries which stand on a much higher plane of local meat inspection than does this country.

To the person who objects on the ground that what is not good enough for one person is not good enough for another, the reply is simple: So far as safety is concerned, *Freibank* meats are good enough for any person in the country. At present thousands of persons in this country are eating uninspected local meats of a quality inferior to that which would permit the meats to come into the *Freibank* class.

As for there being such a great amount of meat in the country that we do not need the *Freibank* meats, it may be replied that local butchers are daily selling these very meats and meats of much lower quality, uninspected and unlabeled. The public is daily purchasing and eating such local meats without any guarantee. The *Freibank* system would give the public a guarantee and a safeguard in reference to these local meats which is not given by the local butchers to-day.

As for the orphan asylums and prisons, the reply is that they ought to be glad of the opportunity of obtaining *Freibank* meats, of a better quality and at a lower price than much of the local meats they purchase to-day.

THE CANNED MEAT INDUSTRY.

If any packer believes that the *Freibank* meats would jeopardize his canned meat trade he has it in his power to protect his trade by not adopting the system. The system is elective, not obligatory. If the packer prefers to render into lard or grease carcasses which can be equally well cooked, canned and sold as *Freibank* meats, there is nothing in the system which would prevent him from following his own views, so far as his own trade is concerned. If the *Freibank* meat be objectionable, the packer ought not to ask for a better

chance to advertise his meat than by showing that he cans no goods of *Freibank* quality.

ANOTHER MEAT SCANDAL?

It is rather difficult to understand how the introduction of the three-class system could result in another meat scandal. A scandal might easily be worked up by describing in detail some of the things which occur in local slaughter houses not under inspection, but when inspection is placed on a higher plane it is not the improvements, but the conditions which led to the improvement, that result in a scandal. The last meat scandal was not caused by the present meat inspection law but by the conditions which the law was framed to correct.

EFFECT ON ERADICATION OF BOVINE TUBERCULOSIS.

Quite aside from the points advanced in the foregoing let us turn to what I view as the greatest argument in favor of the *Freibank*, namely, its possibilities in connection with the eradication of tuberculosis from dairy herds, an effect which is illustrated in Denmark.

The laws existing in certain parts of the United States to the effect that all animals which react to the tuberculin test, thus showing tuberculosis, shall be condemned and destroyed are unnecessarily and unscientifically severe. Not an inconsiderable amount of this meat could safely be placed on the market without restrictions after the removal of the localized tuberculous lesions; an additional amount could be cooked, canned, marked as *Freibank* meat, and safely sold for food. The remaining portion should be destroyed.

If the ungrounded popular prejudice against the first two classes of meats mentioned in the foregoing paragraph can be reduced or removed, and if the farmers can be educated into shipping to such packing houses as are operated under inspection all of their tuberculous cattle a great gain will be made in the eradication of tuberculosis from the dairy herds.

If a packing house utilizes as *Freibank* meat such meat from tuberculous cattle as is suitable for this purpose, there would be decreased financial risk in admitting to slaughter animals which had reacted to tuberculin, or the packing house might purchase the animals subject to result of inspection—a plan already in vogue in certain places.

Feeding of all the tuberculous cattle of the country into abattoirs, inspecting these cattle to determine how much of the meat can, without danger, be used for food, and condemning the remainder, would be a great desideratum in the movement to eradicate tuberculosis from our dairy herds, hence also to decrease whatever danger of tuberculosis, especially in infants and children, may exist from using the milk. The eradication of this disease from the cattle of this country would naturally result in a decrease of tuberculosis in swine, hence a decrease in condemnations of meats and a tendency to a lower price for meats.

THE DAIRY HERD.

In any movement looking to the eradication of tuberculosis we should gain if possible the cooperation of the man who owns the dairy cows. To test his cows with tuberculin, then to destroy those which react to the test, is hardly the most promising method of obtaining his cooperation in the movement. In some states he is partially reimbursed for his loss. Such reimbursement, however, involves state appropriations, which are not always easy to obtain.

If in place of such a plan a method of procedure is

adopted which will enable the owner to obtain full packing value for his cattle, not only would the plan of eradication be more self-supporting (hence it would be more likely to meet with legislative support), but the owner of the diseased cattle would see that it lies in his financial interest to eliminate the tuberculous animals from his herd. Why not permit him to sell his tuberculous cows to some abattoir under inspection? If a cow is shown on postmortem inspection to have only a localized tuberculosis it is worth practically 100 per cent. If the tuberculosis is such that the meat may be canned it is worth about 59 per cent. for its meat, plus an additional sum (approximately \$9.75) for its hide. If so tuberculous that it is rendered into tallow it is worth about 15 per cent., plus the value of the hide.

Should the state wish to add a bonus because of the condemnation, such bonus could be justly placed at a figure below that now given by certain states. Or if a state desires to reimburse to the extent of 30 per cent. for generalized cases and 60 per cent. for localized cases, why not permit the owner to save an additional percentage by which he could reduce his loss still further? It would not be a difficult matter (in case of state reimbursement) to arrange the scale in such a way that the owner would save from 80 to 90 per cent. of the value of the animal. To have a herd free of tuberculosis would be worth some loss on his tuberculous animals.

Finally, the point may be mentioned that if tuberculosis can be eradicated from dairy herds with no, or at most with little, loss to the owner, the increase in the price of milk will, to some extent at least, be inhibited, and the children of poor families will thus be in less danger of having this very important article of their diet decreased.

PERCUSSION OF THE CHEST IN INFANTS AND CHILDREN.*

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It seems to be a tendency of the present day to neglect percussion of the chest in early life. This is rather natural, since we find that more valuable, or at least more easily obtainable, results can be secured by auscultation. Furthermore, percussion of the chest in early life is a more difficult procedure and, unless properly done, less satisfactory in its results than is percussion of the adult chest. But, appreciating the valuable assistance one can obtain in the determination of obscure conditions in the thorax by means of properly carried out percussion, I am stimulated to offer this communication as a sort of protest against the neglect of so valuable a procedure.

Successful results from percussion depend on a full knowledge of the subject and its limitations. One must realize the importance of the position of the patient and the necessity of a proper technic and be capable of rightly interpreting the sounds produced by percussion.

PERCUSSION IN SOUNDS.

It is not my intention to go into a discussion of the physical qualities of these sounds, nor of the terms used to describe them. Some perception differs so much in different individuals that each will interpret differently the quality of the sounds he elicits on percussion. This, of course, makes no difference in the interpretation of

the conditions in the chest, which the various sounds represent, as long as the individual investigator is capable of correctly determining the indications pointed out by the sounds as they are imparted to his ear.

The fewer terms used to describe them the less confusing. For this reason it is best to limit oneself to the following: Tympanitic, hyperresonant, resonant, relatively dull, dull, absolutely dull and flat. Of course, as Sahli expresses it, there is a consecutive series of sound qualities which range in countless gradations between the two limits—resonant and dull—differences depending on the amplitude of the sound vibrations. If desired, these can be indicated by modifications of the above terms.

The sounds produced on percussion depend, for their quality, on the nature of the organ percussed. The resonant sound developed over the normal lung is dependent on two factors: The air contained in the lung—the principal factor—and the vibration of the chest wall.

It was claimed by Williams, Bristowe and others and, to some extent, endorsed by Fagge, that the thoracic percussion sound was mainly due to the vibrations of the chest wall. In support of this view they pointed out that, without any apparent abnormality in the parietes, deformities of the chest gave rise to absolute dullness. In lateral curvature of the spine, for instance, the markedly convex projection formed by the ribs on one side of the back, generally, if not always, yields a dull sound. This is due to the fact that the peculiar conformation of the chest wall diminishes its vibrating area. The same result is obtained, to a less marked degree, in the normal chest, if percussion is made over the most convex portion of the chest wall just behind the posterior axillary line. It is generally conceded, however, that the percussion sound is chiefly due to the vibrations of the columns of air contained in the organs within the chest wall, but that the wall itself is a contributing factor. In children the chest wall, on account of its greater flexibility, contributes largely, and it is this feature that accounts, in the main, for the distinctly more resonant sound obtained on percussion of the chest of the child.

CHEST AREAS.

To percuss the chest of a child satisfactorily, it must be bared. In order to locate the positions of the normal organs, as well as the position of pathologic lesions in these organs, in their relationship to the chest wall, the divisions of the chest wall used in topographic anatomy (supraclavicular and infraclavicular, the mammary, the axillary, the suprascapular, the scapular, interscapular and infrascapular) and the vertical and horizontal lines are used; (anteriorly the midsternal, the suprasternal and midclavicular; laterally the anterior, middle and posterior axillary lines, and posteriorly the posterior medium and right and left scapular lines and the horizontal mammary).

POSITION.

The only satisfactory position for the percussion of the chest is the one which produces complete relaxation of the muscles and symmetry of its two sides. This is much more difficult to attain and much more important in children than in adults.

In infants and young children the front and antero-lateral areas can be examined best with the patient lying flat on his back, with the head in direct contact with the bed, and maintained in the median position

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.