course of the case. The transportation should be in the hands of people naturally humane and accustomed to deal with mental cases. In Los Angeles the sheriff's office has gone some distance in this direction by picking out some experienced men and women to act in such matters, and they seem to accomplish their object with little friction.

The trial in court is an anachronism which has been eliminated in progressive states. A tragic affair is too often turned into a comedy through the ridiculous testimony of ignorant friends and neighbors, and this absurdity is raised to the nth power in the jury trial, frequently demanded, and which the court must grant.

To educate the public as to the necessity for reform, the medical profession must coöperate. We ask the California Medical Association to stand behind us in our drive for a modern "State Department of Mental Hygiene," or whatever you prefer to call it, which will have supervision of the mentally ill and which, while insisting upon a proper standard of care, will not oppress but rather support physicians interested in the private treatment of such unfortunates.

Doctor Myers' paper will furnish valuable aid in our efforts to effect the needed reforms.

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DOCTOR MYERS (Closing).—I have no further comment, but wish to express my thanks for the discussion of this paper, and particularly wish to express my appreciation of the widespread interest displayed throughout the state in the humanitarian objectives embodied in A. B. 539.

For the information of the readers who may not have learned the eventual fate of this bill, the following may be added:

Assembly Bill 539, with amendments, was passed with a wide majority by both houses of the State Legislature, but was vetoed by the governor at the request of representatives of the California Sheriffs' Association.

ASTHMA IN CHILDHOOD*

By HYMAN MILLER, M. D.
AND
GEORGE PINESS, M. D.
Los Angeles

DISCUSSION *by Francis Scott Smyth, M. D., San Francisco; Edward Matzger, M. D., San Francisco; William W. Belford, M. D., San Diego.*

AN attack of asthma in a child is only an episode in what is a long story, beginning with that child's forbears and to be continued throughout the child's life, even into the lives of his offspring. The story is never static, and only the long view of this present attack of asthma will give the physician a proper picture of the problem which he faces in getting the patient well. If, then, much is said here of symptoms other than asthma and of people no longer children, it is with the thought in mind that we are treating of a disease which is lifelong, hereditary, and many featured. This disease is known as the allergic constitution.

Before taking up the many ways in which the life of the patient may be influenced by this disease or describing its many features, it will be well to examine the nature of the allergic group as a whole. This should tell us how often we are apt to meet the allergic constitution in practice.

* Read before the Pediatric Section of the California Medical Association at the sixty-second annual session, Del Monte, April 24-27, 1933.

NATURE OF THE ALLERGIC GROUP

In July, 1925, a special clinic for allergic disease was founded at the Los Angeles Children's Hospital. All patients referred to this clinic first came through the general out-patient clinic where, from July, 1925 until January, 1933, a period of seven and one-half years, 41,000 cases of all types were admitted. Despite the fact that many cases of allergy undoubtedly were not recognized, and that a certain number did not enter, there were 1,411 children admitted to the allergy clinic. This is 3.4 per cent of all the children seen in the general out-patient department; in other words, of every one hundred children seen by the physicians, four were recognized as allergic. These four out of one hundred have a greater importance than their mere number would suggest. In going over some seven thousand case histories of allergy from both clinic and private practice, including both adults and children, it was found that 50 per cent began to have symptoms before the age of puberty. Therefore, the 4 per cent of children mentioned is one-half of all those who will at some time in life suffer from a more or less crippling sickness. It has been said (Cooke and Van der Veer [1]) that allergy occurs in 7 per cent of the general population. We may then conclude that, of the 8,400,000 allergic people in the United States, one-half, or 4,200,000, began to have symptoms in childhood.

A study of the nature of this group must include a study of the common belief that children tend to "outgrow" asthma. To speak of "outgrowing" a constitutional disease is as absurd as to speak of "outgrowing" blue eyes or Mongolian idiocy. We may only speak of a more or less permanent, spontaneous relief of symptoms. That this happens once in a while we know, but scientific proof that it is a general tendency in the allergic group is lacking. We may perhaps learn something of this from the histories of 731 patients first seen between twenty-one and thirty years of age. Of these, 731 patients, 175, or 25 per cent, began to have symptoms in childhood and had not "outgrown" them. Because those who do "outgrow" their symptoms do not visit the physician, we do not have the data to say that more than three out of every four children "outgrow" their symptoms. But with 4 per cent of all children, and 7 per cent of the general population known to be allergic, it appears to be likely that outgrowing really is but a temporary state of affairs.

The hereditary nature of the allergic group is well known. The allergic constitution is probably transmitted as a dominant Mendelian characteristic. In the 7,000 allergic patients examined, 58 per cent gave a positive hereditary history. This is more than matched by the report of the British Asthma Research Council,[2] which states that, of more than 1,000 children suffering from asthma, two out of every three had some relative or relatives affected.

DIAGNOSIS

Enough has been said of the nature of the allergic group to bring out the important fact that

we must see in the child suffering from asthma not just the present illness, but all the possibilities of illness which may later follow, and, paradoxically, the possibility of diagnosing asthma before asthma occurs. It is with this possibility that we next concern ourselves, using a certain amount of foresight with which the long view has armed us. Looking for this possibility, we shall consider various parts of the body.

Skin. — Allergic eczema is not always full-blown, widespread, unmistakable. Often it is merely a generalized or localized itching without any visible change in the skin. Or there may be only a slight roughness of the cheeks or a redness about the lips or buttocks, never passing beyond the stage of erythema. These also should be recognized as allergic eczema, for they often foretell the coming of asthma. Of the 3,995 asthmatics that we have observed, 772, or 20 per cent, had had eczema. Now 772 is 57 per cent of the 1,354 eczemas that we have observed. Many of these eczemas were seen in infancy and early childhood, and therefore had not had time to develop other symptoms; so we can conclude that eczema in childhood foretells asthma in more than half of the patients.

Gastro-Intestinal System.—Frequent bouts of colic in infancy, and abdominal pain and distress in childhood, are at times due to allergy. Dislike of certain foods or inability to eat certain foods without being followed by abdominal pain or distress, or vomiting or burning of the mouth with itching and possibly swelling of the tongue and lips, are more than enough to make one say that the patient is allergic. Attacks of so-called appendicitis, with removal of a normal appendix, are at times not a rare first sign of the allergic make-up of the patient. We have no definite data as to how often asthma follows these episodes of infancy and childhood, but we do know that we get such a story from many asthmatics.

Respiratory System.—Of the 7,000 allergic patients whom we have observed, 5,700, or 80 per cent, had respiratory symptoms. Asthma without nasal symptoms, or allergic nasal symptoms without asthma at some time in life, are very unusual. Where there is one there is the other, and to recognize the true nature of allergic nasal symptoms has proved of great value in the diagnosis of mild or impending asthma. Frequent so-called colds—colds that begin in the morning and are over by noon—are usually allergic in nature. Sneezing spells during sleep or in the morning on arising, itching of the nose, ears or palate, and chronic stuffy nose are other more easily recognized symptoms. The history of several operations on the nose or throat often foretells asthma. In 1925 we [3] reported that among 834 cases of asthma, 413, or 49 per cent, had had operations on the nose and throat. In this group of 413, 704 operations, or 1.7 operations per person, had been performed. It is not strange, then, that a history of repeated removal of the tonsils and adenoids is in itself enough to make one suspicious of the allergic cause of the patient's troubles, especially if the symptoms for which these operations were done were not relieved.

Examination of the mucous membrane of the nose and throat often foretells asthma. Usually the mucous membrane is edematous, glistening with fluid, pale or dusky red in color, and in the throat studded with many lymphoid nodules of varying size. The most extensive overgrowth of adenoid tissue is to be seen in allergic patients and, added to the chronic stuffy nose, makes the sagging jaw and mouth breathing of the so-called adenoid facies which is almost pathognomonic of allergy—at least in this part of the world.

Another important aid in separating nasal allergy from nasal infection is the examination of the nasal smear for eosinophils. We have made 237 such examinations at the Children's Hospital Clinic and 224, or 95 per cent, have been positive. When negative on repeated examination, the nasal symptoms have almost always been due to causes other than allergy.

Finally, the history of repeated attacks of bronchitis with or without fever, or of many attacks of pneumonia with or without wheezing, bespeak future frank attacks of asthma.

With any or all of these findings (since nearly 60 per cent of allergic patients give a positive hereditary history) we can often say, if such a history is gotten, that the patient will probably have asthma.

Whether asthma is foretold or is already present, it is clear from what has gone before that the future of the patient should now be an open book to the physician. We now turn to ways of modifying the future for the benefit of the patient.

METHODS OF EXAMINATION

Skin Tests.—Skin tests are used to find out what things make an allergic patient sick, and not to find out whether or not he is allergic. This latter can always be done by a clinical history and examination, keeping in mind the things already spoken of. Skin tests give the physician knowledge which will help him control the future of his allergic patient. Nothing has yet approached skin tests in their value for getting this knowledge. However, to trust them, the physician must know that

1. Reliable test substances were used.
2. A sufficient number of test substances were used.
3. A reliable method of testing was used.
4. A proper interpretation of tests was made.
5. Repeated testing was done, when necessary.
6. A correlation of results of tests with clinical findings [4] was made.

Under these conditions the knowledge gotten from skin tests will be of great value to the physician in planning the patient's life, controlling his illness and turning out an adult who may lead a normal existence.

The question now comes up as to how often this knowledge can be obtained, if tests are carried out as they should be. From the records of 3,463 allergic children so tested, we have found 85 per cent to give positive reactions. That is, skin tests give us the knowledge we need in nine out of every ten allergic children. At this point it will be well to remember that this knowledge is not

to be used blindly; its limitations must be known. We know that positive reactions do not always mean that the substances giving such reactions must cause symptoms, nor, on the other hand, that negative reactions mean that the substances not reacting will not cause symptoms. But with the results of the skin tests to start from, and by correlating them with the clinical findings, it is usually possible to work out those exceptions which may occur.

Because exceptions do occur, and because one out of every ten allergic patients does not react to skin tests, elimination diets [5] have been developed. The principle of the elimination diet is to give a patient foods to which he is probably not sensitive until his symptoms are relieved, and then add single foods to the diet at intervals. Then, as symptoms do or do not follow, one may say that this or the other food is one to which the patient is or is not sensitive. This practice is of use in the exceptions already spoken of; but unfortunately, because its limitations are not known, it is now being used not only to find what foods make a patient sick, but also to find out whether or not he is allergic, which rightly should and can be done by ordinary clinical means. This is brought out because there are so many diseases aside from allergy which may be affected by changes in diet.[4]

Elimination Diets.—Let us, then, examine some of the limitations of the use of elimination diets, and some of the fallacies which allow these limitations to go unrecognized.

1. Elimination diets have to do with foods alone, and yet we know that only one child (or adult) out of one hundred is sensitive to foods alone. It is not true that foods are the only cause of asthma in childhood, for even though we remove offending foods from the diet, symptoms do not clear up unless we also take care of the pollens and other inhaled substances. Nor is it true that eczema, which is almost always thought to be due to food sensitivity alone, will always clear up without the same care being taken with inhaled and contacted substances. These the elimination diet of course does not include. In other words, foods are not the only cause of symptoms even in the very young, nor in those patients suffering with symptoms which are usually considered as due to foods alone.

2. Elimination diets are based on the use of a group of foods which do not ordinarily give positive skin reactions; in other words, they are based on the results of skin tests in a large group of patients. It is quite plain from this that many patients will be sensitive to foods in the elimination diet, and for this reason more than one diet is usually given in case the first does not relieve the symptoms. Each diet is given a trial of from five to fourteen days.[5] If successful in relieving symptoms, foods are added one at a time until a diet of sufficient variety, calories, vitamins and salts is reached. Each relapse of course means a longer period before this stage is reached. In any event, many weeks, and possibly months, are needed to develop this diet. It would seem logical, therefore, since the elimination diet is based on the results of skin tests, that the skin tests be done first and then, if no reactions are obtained, or positive and negative reactions do not jibe with the clinical results, to begin an elimination diet based on the skin tests done on the patient with whom the physician is personally concerned.

3. Elimination diets require a great deal of intelligent coöperation on the part of the patient. This is not always forthcoming. On the other hand, the physician who depends on elimination diets alone will be at a loss where to turn if they fail him. It is well, then, to have pointed out their limitations and their uses, just as we have in the skin tests in order that he may know just how useful each tool is.

IN CONCLUSION

With the knowledge gotten from testing, the physician is able not only to relieve the symptoms from which the patient is suffering, but in many cases to ward off others. This is true not only for allergic symptoms, but also for those complications which often accompany allergy, such as undernutrition, nasal operations, abdominal operations, pulmonary emphysema, bronchiectasis, deformities of the chest, nervous disturbances, economic and social misfitting, and whatever else may come from chronic sickness. All these may and do occur in the life of many allergic patients, and are here spoken of to emphasize what has already been said of the long view to be taken of the child asthmatic, and also to emphasize what has already been said of the necessity for early diagnosis. If one recognizes the less obvious early signs and turns to the skin tests for the needed knowledge, one may aid in giving these patients comparatively normal life.

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REFERENCES

1. Cooke, R. A., and Van der Veer, A., Jr.: Jour. Immunol., 1:201, 1916.
2. The British Asthma Research Council, London Letter, J. A. M. A., 99:2043 (Dec. 10), 1932.
3. Piness, G., and Miller, H.: J. A. M. A., 85:339, 1925.
4. Piness, G., and Miller, H.: Jour. Allergy, 4:18, 1932.
5. Rowe, A. H.: Food Allergy. Philadelphia. Lea & Febiger, 1931.

DISCUSSION

Francis Scott Smyth, M. D. (University of California Hospital, San Francisco).—The paper on "Asthma in Childhood" by Doctors Miller and Piness, presents a very helpful discussion of allergy.

As to the allergic constitution, which is demonstrably hereditary, we are still groping for further identification. Basal metabolic rate, blood pressure readings, and various laboratory studies have failed to show uniform characteristics in the allergic group.

I rather like the suggestion of Woringer that eczema is a para-allergic manifestation. It is peculiar that the clinical manifestations (eczema) develop before the skin test, and that the substances, such as egg white, so often the first and most marked reactors, may have had little or no part in the diet. While I would not minimize the importance of foods, I should, however, mention the disparity that may be found when dietary therapy alone is tried. Not one of us would neglect the importance of physical agents, especially trauma. Restraint from scratching, avoidance of wool and silk,

soap and sudden changes in temperature, and proper ointments play as important a rôle as the various allergens.

I believe it particularly wise to reassert the value of the skin test and individual study. While granting the variability of the former and necessity for repeated observations, it remains a most helpful guide.

Regarding dietary restrictions for growing children, I think that we should be most careful not to neglect the necessary protein requirement for growth. Animal protein is particularly desirable as a source of body protein. Sweeping restriction may produce a malnutrition most dangerous to the general health. I am not sure, for example, that a well-nourished eczematous infant is not a better risk than a malnourished, poorly resistant infant without so marked an eczema.

EDWARD MATZGER, M. D. (909 Hyde Street, San Francisco).—I congratulate Doctors Miller and Piness for again publishing on the general subject of the allergic constitution. The bulk of the contributions on allergy have to do with the discovery of new excitants, of methods of study and of types of treatment. While this information is valuable, all of us treating allergic individuals are anxious to know more about the fundamental nature of the allergic constitution. Surely a statistical compilation of large groups of allergic patients who have been observed, tested and treated over a period of years, must contribute much to our understanding of the nature of the allergic group.

As the authors so graphically emphasize, we also must realize that an asthma attack in a child is just the beginning of a long series of allergic episodes. The proper treatment of each hypersensitive manifestation will tax the physician's diagnostic acumen, and he must be alert to the early recognition of each etiologic factor.

A new excitant, if quickly recognized, can be eliminated from the patient's environment, or an active immunity be induced before secondary factors assume importance. This procedure may save months of suffering and often surgical intervention.

Elimination diets, in one form or another, have been used ever since mothers have observed indispositions following the ingestion of certain foods, and certainly are to be advocated wherever they can be built up clinically. Elimination diets, however, based on average skin test reactions are obviously of less importance than elimination diets based on individual skin test diagnoses.

WILLIAM W. BELFORD, M. D. (2545 Fourth Avenue, San Diego).—Our thanks are due to Doctors Miller and Piness for this paper. Those of us in the field of pediatrics are often hard-pressed to care for our asthma patients. It is likely each member of this section has seen asthma develop in a patient that has been under care for eczema. I doubt if any of us realized that the percentage of eczema patients later developing asthma was so large.

I am sure that the frequency of nasal symptoms of an allergic condition is not generally recognized. The frequent "colds," insignificant as they often are, yet quite a bother to the parent, with itching and frequent sneezing, are perhaps as common complaints as any that we hear of in the whole field of allergy. All too often we forget the allergic possibility until asthma or some other equally striking manifestation of the child's extreme sensitivity appears.

In the well-developed allergic rhinitis, eosinophils are found readily enough on study of a nasal smear. The same is true of a careful study of a series of blood smears when an elevation of the eosinophil count is very frequently found. In the early case (and each has to begin some time) this eosinophilia is not so common.

It seems that the scratch tests have been replaced by the intracutaneous tests. Doctors Miller and Piness check each negative scratch test with an intracutaneous test. They find about 80 per cent of the patients sensitive. So many parents are discouraged when an accurate study of their child is proposed, because they have seen a few scratch tests done with negative results. When the tests are done properly and carefully, a vast amount of information is obtained. With sufficient study and industry on the part of the physician doing thorough allergy work, about 80 per cent of these children can be brought "into balance." A "cure" cannot be expected, as Doctor Miller most aptly points out.

DIPHTHERIA IMMUNIZATION *

By LILLIAN KOSITZA, M. D.
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DISCUSSION *by H. E. Thelander, M. D., San Francisco; George M. Stevens, M. D., Los Angeles; A. J. Scott, Jr., M. D., Los Angeles.*

IN this article will be given a brief sketch of the prevalence of diphtheria in California, with special reference to the city of Los Angeles; also an evaluation of the various immunizing agents now employed to prevent the spread of the disease.

In most large cities diphtheria prevails endemically with periods when outbreaks of considerable severity are observed.

LOS ANGELES FIGURES

Our statistics show that during the decade 1921-1931 the diphtheria rate in Los Angeles steadily dropped. In the incomplete fiscal year 1931-1932 an increase in the number of cases and deaths has been noted.

The rates on the basis of one hundred thousand population are as follows:

TABLE 1.—*Los Angeles Figures for Ten-Year Period*

Fiscal Year	Case Rate	Death Rate
1921-1922	355	15.6
1930-1931	64	5.6
1931-1932 (estimated)	105	7.04
Cases to date, total	986	Deaths to date, total 66

Morbidity figures for the state since 1923 show between 55 to 60 per cent of cases occurring in children under ten years of age. State figures, likewise, indicate that the fatality per cent is greatest in the preschool group. Morbidity and fatality per cent in age groups for children throughout the state are available since 1928.

Our own figures for Los Angeles City for 1931 show that fifty-four deaths out of a total of seventy-one occurred in children under ten years of age.

From analysis of the above figures we must conclude that the morbidity is greatest in the age group five to nine years, but that the danger to life is greatest in infants and the preschool group. We therefore cannot sufficiently stress the importance of protecting the preschool children from the dangers of diphtheria.

A recent report by Kinnaman [1] on the status of diphtheria in the State of Kansas indicates that

* Read before the California Lutheran Hospital staff, April 19, 1932.