itself. Usually the latter can be managed successfully with irrigations of potassium permanganate and biweekly dilation with Wales soft rubber bougies, in progression to number 7.

Resistant cases may require internal longitudinal incision of the stricture at three points (right, left and posterior) with diathermy, to be followed by routine dilation and irrigations. Multiple fistulas occurring with esthiomene or elephantiasis may require colostomy for relief. Rarely a stenosing tubular rectitis is best treated by perineal proctectomy. I did a perineal excision of the rectum on 2 patients having extensive strictures, intractable to other forms of treatment. One was a Negro woman aged 31, the other a white man aged 49. The result was excellent in both instances.

Carcinoma.—The majority of experienced surgeons and many pathologists now believe that the bulk of adenocarcinomas of the large bowel are mediated through adenomas and that their early detection and destruction is the surest measure for the prevention of cancer. Among the many adenomas of the lower part of the bowel which I have removed there were 18 specimens that showed precancerous changes or definite cancer. If the tumor is pedunculated, it is most simply and thoroughly removed with the high frequency electric snare; if sessile, it is destroyed by fulguration or coagulation.

Although definite palliation and a few five year cures have been reported of carcinoma of the rectum treated with irradiation, the results in general have been disappointing. One of the chief reasons for this failure is that the mucosa of the bowel is highly sensitive to the rays while the cancer is very resistant. Moreover, the unfavorable systemic effect of the roentgen rays, especially on the blood and blood-forming organs, tends to lower the vital resistance. As a consequence, the clinical consensus is that surgical excision is the best procedure in all operable cases, that is, if the patient's general condition is such that he can bear a major operation or he can be rehabilitated; second, that the lesion itself is so limited that there is reasonable expectation that it can be completely removed.

Extensive experience with the one stage abdominoperineal excision of Miles, with permanent colostomy, yields by far the greater number of five year cures than any other for cancer of the rectosigmoid, lower pelvic colon and rectal ampulla. This rectosigmoid segment is the site of about two thirds of all cancers of the sigmoid and rectum. The operative mortality is within 15 per cent in the hands of surgeons competent in this field but is much higher for the average surgeon who sees comparatively few cases. The moral is that some one surgeon on a hospital staff who is especially interested should have the care of these patients so that he may perfect his technic.

Carcinoma situated in the sigmoid 1 or more inches above the pelvic pouch may be resected safely by inverting the distal end and permanent colostomy, more rarely by an exteriorization procedure and later closure of the colostomy to reestablish continuity.

For a rectal cancer, the upper limit of which can be reached by the finger, perineal excision gives excellent results and a very low operative mortality. It is especially indicated in the treatment of obese subjects, the debilitated and the aged.

This brief survey of progress during the last twenty-five years augurs well for the future of proctology.

555 Park Avenue.

THE TREATMENT OF MODERATELY SEVERE SCARLET FEVER

A STUDY OF ALTERNATE PATIENTS TREATED WITH SULFANILAMIDE, CONVALESCENT SERUM AND SCARLET FEVER ANTITOXIN

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AND
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DETROIT

The value of scarlet fever convalescent serum and scarlet fever antitoxin in the treatment of moderately severe scarlet fever was demonstrated by a control study reported in a previous paper.[1] Early in 1937 sulfanilamide was introduced in this country as a therapeutic agent for the treatment of hemolytic streptococcus infections, and a similar therapeutic study including sulfanilamide was repeated. During the period Aug. 1, 1937 through July 31, 1938 sulfanilamide, convalescent serum and antitoxin were given to alternate patients who on admission to the Herman Kiefer Hospital showed scarlet fever of a moderately severe grade. As in the previous study, the determination of the severity of the condition and the necessity for a therapeutic agent was the responsibility of two resident physicians who had been in the service for more than ten years. They had no part in the choice of therapeutic agent to be used. Whenever antitoxin was in order a serum sensitivity test was performed; if positive, either convalescent serum or sulfanilamide was used and the patient excluded from the series, and the next patient with scarlet fever of a moderately severe type was given antitoxin if the serum sensitivity test was negative. Both convalescent serum and antitoxin were administered in the hospital admitting room, while sulfanilamide was given by mouth as soon as the patient reached the pavilion, a period not exceeding one hour after admission to the hospital.

The sulfanilamide used was obtained in the form of tablets during the early part of the study and later was furnished in powdered form. The doses administered initially and subsequently at four hour intervals, called respectively the initial dose and the maintenance dose, were chosen rather arbitrarily, for there was little information regarding dosage when this study was begun. The dosage shown in table 1 is based on weight and shows both the initial dose and the maintenance dose. At present an initial dose larger than the maintenance dose is unnecessary for infections which are not severe, but during the time that the study was in progress a large initial dose was administered. The patient's weight was roughly estimated and the prescribed dose for that weight was given. The average total dose for all patients treated with sulfanilamide was 12.4 Gm., and the average duration of therapy was six and three-tenths days. The weight of the patient had no influence on the duration of therapy. Sulfanilamide determinations were not determined as a routine because the amount of drug given was too small to warrant its use. In the instances in which the reading was determined, none were found to be above 5 mg. per hundred cubic centimeters of blood.

This study was aided in part by WPA Project 82-4-120.
The sulfanilamide used in this study was furnished by Merck & Co., Inc.

From the Communicable Disease Service, Herman Kiefer Hospital; the Detroit Department of Health, and Wayne University College of Medicine.

1. Top, F. H., and Young, D. C.: Specific and Nonspecific Serum Treatment of Scarlet Fever, Am. J. Pub. Health **29**: 443 (May) 1939.

The scarlet fever convalescent serum used was obtained from donors who had recovered from the disease within one year of their being bled in the serum clinic of the department of health. The various batches of serum were not tested for antitoxin content, but it is likely that the amount of scarlet fever antitoxin present in each cubic centimeter of serum was not greater than the amount (less than 2 units per cubic centimeter) determined by testing thirty-three batches of serum used in the previous study. Convalescent serum was given intramuscularly, and the dose was 30 cc.

Scarlet fever antitoxin was obtained from the laboratories of the state department of health, and one therapeutic dose of serum (6,000 units) was administered by the intramuscular route.

The therapeutic agents used in this study were given to alternate patients after they were admitted to the Communicable Disease Service. During the year 390 cases of moderately severe scarlet fever were divided equally among the three therapeutic agents used. The method by which the agents were assigned was considered paramount to obtaining comparable groups. The following characteristics, which should be similar for all treatment groups, were tested for statistical comparability by using the chi square test: distribution of cases by month, by age, by temperature on admission to the hospital, by the day of disease on which treatment was begun and by the proportion of cases in which there were significant associated conditions. The three treatment groups did not differ with respect to the characteristics enumerated and for the purpose of this study may be looked on as similar in all respects except the kind of treatment received.

TABLE 1.—*Dosage of Sulfanilamide*

Body Weight, Pounds	Initial Dose, Grains	Maintenance Dose, Grains
20- 30	10	2½
30- 50	15	5
50- 70	20	5
70- 90	25	5
90-110	30	10
110-130	35	10
130+	40	10

TABLE 2.—*Number and Proportion of Cases with Augmented Treatment by Type of Therapy*

Therapy	Total Cases	Augmented Treatment	Per Cent Augmented Treatment
Sulfanilamide	130	11	8.5
Convalescent serum	130	5	3.8
Antitoxin	130	10	7.7

RESULTS OF TREATMENT

The therapeutic effect of the agents utilized was tested by observing the result with respect to (1) the number of patients who needed subsequent therapy similar to that used in the study, (2) the decline in temperature, (3) the number of patients with complications, (4) the occurrence of complications, (5) the proportion of patients with multiple complications, and (6) the proportion of patients dismissed from the hospital at the end of the minimum isolation period. Duration of the rash was not estimated because it is difficult to evaluate unless based solely on the presence or absence of rash.

AUGMENTED TREATMENT

For purposes of this study only one dose of scarlet fever convalescent serum (30 cc.) and one dose of scarlet fever antitoxin (one therapeutic dose) were administered by the intramuscular route, while the dose of sulfanilamide was governed by weight. It is common clinical experience to find that some patients with moderately severe scarlet fever need additional therapy. Occasionally, twenty-four hours after admission, the temperature has remained the same as on admission or has risen or the patient's general condition has shown no improvement. Whenever additional therapy was necessary, this was considered as augmented treatment, was so recorded and the case excluded from the study. The number and proportion of patients needing augmented treatment is shown in table 2. It will be observed that but few patients in each treatment group were given additional therapeutic aid. In the convalescent serum group it was necessary for only 5 patients, and the number was 10 and 11 for the antitoxin and sulfanilamide groups respectively. Convalescent serum appears to advantage, but the differences noted and not significant for a study of this size ($p = 0.29$).[2] Patients needing augmented treatment were excluded from further consideration in this study, causing slight changes in the totals of the treatment groups.

TABLE 3.—*Temperature Pattern by Type of Therapy*

Temperature Pattern	Sulfanilamide		Convalescent Serum		Antitoxin	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Normal	71	59.7	79	63.2	90	75.0
Lysis (5 days)	28	23.5	21	16.8	12	10.0
Continued fever	20	16.8	25	20.0	18	15.0
Total	119	100.0	125	100.0	120	100.0

TABLE 4.—*Complicated Cases by Type of Therapy*

Therapy	Total Cases	Number Complicated	Per Cent Complicated
Sulfanilamide	119	55	46.2
Convalescent serum	125	63	51.2
Antitoxin	120	61	50.8

TABLE 5.—*Occurrence of Complications by Type of Therapy*

Complication	Sulfanilamide		Convalescent Serum		Antitoxin	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Rhinitis	31	26.1	41	32.8	47	39.2
Cervical adenitis, nonsuppurative	16	13.4	15	12.0	15	12.5
Otitis media, catarrhal	9	7.6	7	5.6	..	....
Otitis media, suppurative	8	6.7	9	7.2	7	5.8
Mastoiditis	2	1.7	2	1.6	1	0.8
Bronchitis	7	5.9	4	3.2	6	5.0
Arthritis	4	3.4	3	2.4	..	....
Paronychia	3	2.5	3	2.4	8	6.7
Abscess, soft parts	..	....	4	3.2	5	4.2
Nephritis	1	0.8	2	1.6	2	1.7
Bacteremia	..	....	1	0.8	..	....
Carditis	..	....	1	0.8	..	....
Ethmoiditis	..	....	..	....	1	0.8
Bronchopneumonia	..	....	..	....	1	0.8
Total cases treated	119		125		120	

2. When p is 0.03 or below, differences found are generally considered significant; that is, they are not considered to be due to chance variations.

TEMPERATURE PATTERN

The therapeutic response, as evidenced by an effect on temperature, is shown in table 3. The patients were divided into three groups with reference to temperature: the first, a group in which fever declined to normal or within one degree of normal within twenty-four hours; the second, a group in which fever declined by lysis within a period of five days, a result ordinarily noted in patients with moderate scarlet fever not treated with serum; third, a group in which fever was maintained or in which a temporary drop occurred, followed by a rise within twenty-four hours.

A temperature decline to normal occurred in 75 per cent of patients given antitoxin, in 63.2 per cent given convalescent serum and in 59.7 per cent given sulfanilamide. Among the remaining patients in each treatment group a decline by lysis occurred most frequently among the sulfanilamide-treated group, followed in order by the convalescent serum and the antitoxin-treated group, the respective proportions of each treatment group being 23.5, 16.8 and 10 per cent. Continued fever occurred less commonly among patients treated with antitoxin and sulfanilamide, while convalescent serum showed the poorest results in this respect. The differences noted appear to be significant and statistically are borderline ($p = 0.04$). A larger series of cases might demonstrate real differences. However, variation between antitoxin and convalescent serum is not appreciable and bears out past experience.

COMPLICATED CASES

Complications occur in moderately severe scarlet fever more frequently than one would surmise, and this is particularly true of hospitalized cases. This would not be so evident if only major complications, such as otitis media, mastoiditis, cervical adenitis and other less frequent but equally severe complications were solely included. In this analysis all complications incident to scarlet fever infection are considered, even such mild conditions as serous rhinitis and paronychia. Table 4 shows the number of complications in each of the treatment groups, and it is readily apparent that the proportion of complicated cases in the three groups is similar. The advantage shown by sulfanilamide is very slight and not significant.

OCCURRENCE OF COMPLICATIONS

The commonest complications of scarlet fever encountered in hospital practice are, in order of their frequency, rhinitis, cervical adenitis and otitis media. This is borne out in this study by the data in table 5. Rhinitis does not occur with equal frequency in the three treatment groups. The proportion of patients with rhinitis is lowest in the sulfanilamide treated group (26.1), the proportion in the antitoxin group is highest (39.2), while the convalescent serum group is midway between (32.8). The differences are not significant ($p = 0.09$). No real differences are noted for nonsuppurative cervical adenitis. The number of times that catarrhal or suppurative otitis media developed was small for the entire experience. Catarrhal otitis media occurred with the same frequency in the sulfanilamide and convalescent serum groups but did not occur in the antitoxin group. With respect to suppurative otitis media, the proportion is about the same for all treatment groups. When catarrhal and suppurative otitis media are combined, it is apparent that there is a difference in favor of the antitoxin group, but this is not statistically significant ($p = 0.08$).

The remainder of the complications listed in the table occur too infrequently to warrant comment. Consideration of the entire table must lead to the conclusion that variations in the treatment groups are not striking (table 5).

MULTIPLE COMPLICATIONS

The number of complications per person is shown in table 6. As might be expected with the mild form of scarlet fever now encountered, few persons had more than two complications each. The proportion of complications in each group is about the same, and differences are due to chance variation ($p = 0.84$).

The table also shows the number of complications per person with complication, which is the same for each treatment group. The number of complications is less than 1 per treated patient and is similar for each treatment group (table 6).

TABLE 6.—*Number of Complications per Person by Type of Treatment*

Treatment	Number of Complications per Person				Complications Group			Entire Group	
	1	2	3	4	Number of Persons	Number of Complications	Complications per Person	Number of Persons	Complications per Person
Sulfanilamide									
Number	35	14	6	..	55	81	1.5	119	0.7
Per cent	63.6	25.5	10.9						
Convalescent serum									
Number	42	14	6	1	63	92	1.5	125	0.7
Per cent	66.7	22.2	9.5	1.6					
Antitoxin									
Number	36	19	5	1	61	93	1.5	120	0.8
Per cent	59.0	31.1	8.2	1.6					

DISMISSAL STATUS

As previously noted,[1] the dismissal status is not a particularly good criterion for evaluation of treatment, especially if only one dose of serum is administered. Both antitoxin and convalescent serum cannot reasonably be expected to exert much influence on the incidence of complications which occur two weeks after the administration of serum. The same is true in the

TABLE 7.—*Dismissal Status of Cases Admitted to the Hospital*

Age	Total in Group			Late Dismissals			Proportion of Late Dismissals		
	S	C	A*	S	C	A	S	C	A
Under 1 year									
1- 4 years	27	30	37	12	12	21	44.4	40.0	56.8
5- 9 years	57	47	52	19	18	8	33.3	38.3	15.4
10-14 years	21	22	18	5	3	5	23.8	13.6	27.8
15-19 years	6	11	4	—	3	—	....	27.3	....
20+ years	8	15	9	—	1	1	....	6.7	(11.1)†
Totals	119	125	120	36	37	35	30.3	29.6	29.2

* S = sulfanilamide, C = convalescent serum and A = antitoxin.
† () = a percentage based on less than 10 cases.

instance of sulfanilamide, the administration of which was maintained only during the first week in the hospital. An influence might be exerted on the incidence of complications during the first two weeks of illness, but a large proportion of complications occur during and after the third week of convalescence. However, the soil may be prepared, so to speak, during the first two weeks for what the patient may be exposed to in the hospital during the remainder of his stay. For this reason, data on the dismissal status are included. In the previous study, no difference was noted in the proportion of patients dismissed at the end of the required minimum period of isolation, and in this clinical experiment the proportion of late dismissals in each of the treatment groups (total cases) is practically the same. There are striking differences observed when age is considered, but too much weight cannot be given to the results because of small numbers.

COMMENT

Although the clinical study was completed in the late summer of 1938 and the analysis early in 1939, there was some reluctance on our part to publish the results. Timidity was due not to lack of confidence in the validity of the data or in the manner of collection but rather to the fact that in our hands sulfanilamide appeared to be only slightly less valuable in the dosage given than one therapeutic dose of antitoxin (6,000 units) or 30 cc. of convalescent serum administered intramuscularly. By this time it was already evident experimentally that sulfanilamide did not affect the clinical manifestations or complications directly caused by toxin elaborated by hemolytic streptococci.

In recent years scarlet fever has become a progressively milder disease. Both septic and toxic attacks still occur, but the number is proportionately smaller. The therapeutic agents used in this study would be inadequate in amount for septic and toxic attacks. Moderately severe scarlet fever also occurs less commonly, as shown by the fact that this type represented 37.8 per cent of 10,666 cases of scarlet fever dismissed from the Herman Kiefer Hospital during the five year period 1927-1931, while during the five year period 1932-1936 the proportion of this type among 10,777 dismissals was 21.7 per cent, a considerable decline. Both the organism and its toxin contribute to the clinical syndrome called scarlet fever, but the quantitative effect of each in any given case would appear at best controversial. Antitoxin is valuable in the treatment of moderately severe scarlet fever and is particularly indicated for toxic manifestations. It has been amply demonstrated that scarlet fever convalescent serum is of value in the treatment of moderately severe scarlet fever. Soon after sulfanilamide was used in the treatment of streptococcic infections it was found that it had little effect on toxic manifestations of streptococcus origin. This finding was borne out in early reports. Any value that sulfanilamide might have in the treatment of scarlet fever would likely be due to antibacterial properties, and it is now generally conceded that the effect is bacteriostatic rather than bactericidal.

During the past three years, there have been numerous reports dealing with the use of sulfanilamide in the treatment of scarlet fever. These clinical reports fall into two groups; first, those which include scarlet fever among other streptococcic infections treated and, secondly, those which deal solely with scarlet fever. The first group does not lend itself to evaluation, while the second group includes few studies which are adequately controlled. The use of sulfanilamide in the treatment of scarlet fever has been reviewed sufficiently often to allow its omission in this paper. We are interested in the fact that there is a difference of opinion concerning the value of sulfanilamide in moderate or moderately severe scarlet fever.

Of all articles published thus far, that of French [3] appears on inspection to be the best planned and the most exact in the method of assignment of cases to treatment groups. She finds that the use of sulfanilamide is not justified in the treatment of scarlet fever. The dose used was large and therapy was maintained for the entire period of isolation. However, when indicated, she gave scarlet fever antitoxin on admission to any patient who was thought to require it, irrespective of whether the patient was to receive sulfanilamide or not. Although the number receiving antitoxin in each group was the same, we feel that any therapeutic agent to be tested should be given alone and not in conjunction with another agent, particularly one of such proved value as scarlet fever antitoxin. For this reason we excluded patients with augmented treatment from further consideration in the series. French probably labored under the same difficulty that we did, namely the undesirability (in the eyes of the medical and nursing personnel) of withholding a known valuable therapeutic agent from one half of the cases (controls). We partially circumvented this problem in the previous study by introducing as an unknown serum diphtheria antitoxin one dose of which contained 1,000 units, alternating this with scarlet fever convalescent serum and antitoxin.

In the present study sulfanilamide replaced the diphtheria antitoxin and we feel that, with each patient in the study receiving but one therapeutic agent instead of two, the exact effect of any one can better be determined. For this reason the present study is submitted. Additional studies are needed to confirm or refute the findings because clinical evaluation cannot feasibly be based on deaths but must rely on differences in behavior in cases in which recovery occurred and this entails a few large studies or many well conducted small ones. When results of therapy are so nearly alike, as noted in this study, it is impossible to state that any of the therapeutic agents used are of value, unless the impression is based on other clinical or experimental studies. In the previous study 30 cc. of convalescent serum and one therapeutic dose of antitoxin (6,000 units) given intramuscularly were found to be of equal value in the treatment of moderately severe scarlet fever. The same statement applies in this study.

SUMMARY AND CONCLUSIONS

1. During the one year period Aug. 1, 1937 through July 31, 1938 a series of 390 patients with moderately severe scarlet fever were treated under control conditions with (*a*) sulfanilamide, (*b*) scarlet fever convalescent serum and (*c*) scarlet fever antitoxin.

2. Status-on-admission factors known to influence the course of the disease, such as (*a*) the month of attack, (*b*) age, (*c*) temperature on admission, (*d*) day of disease on which treatment was begun and (*e*) proportion of cases presenting significant associated conditions, were similar and not significantly different for the three treatment groups.

3. French, Jane O.: The Sulfanilamide Treatment of Scarlet Fever, J. Hyg. **39**: 581 (Sept.) 1939.

3. The results of this study indicate that there is no great difference in the therapeutic effect in cases of moderately severe scarlet fever when sulfanilamide, convalescent serum and antitoxin are administered in the dosage used. Antitoxin and convalescent serum give better results than sulfanilamide, but the differences are not statistically significant.

4. In a previous study, 30 cc. of scarlet fever convalescent serum and one therapeutic dose of scarlet fever antitoxin (6,000 units) gave equally good results when administered by the intramuscular route. Their similarity in value in the dosage cited is again demonstrated.

5. No attempt is made to explain the results obtained. The study is presented as an addition to the literature on the subject.

Taylor and Hamilton Avenues.

HEALTH EDUCATION

AN APPRAISAL

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Perhaps the time has come, as is apt to be the case periodically in most fields, for a fresh orientation as to what in general we mean by health education. There are still those in public health who see little or no value or scope in health education. There are also those, in increasing numbers, who appear to think that health education and public health are practically synonymous terms—coextensive in range and content. Between these two extreme views, what is health education's real status?

Parenthetically, let me make it clear at the start that I am attempting to appraise the relative importance of health education in the public health field as compared with other elements. I am not attempting an analysis from a psychologic or other angle, of what constitutes effective health education or what technics will or will not arouse real interest and action. This is another story, though indeed a very important one.

We might, in a few words, remind ourselves of the origin in time and in its interrelationships of the health educational aspect of our public health program. Recently Dr. W. W. Bauer has said that "All public health workers are health educators whether they know it or not." This is more nearly true today than at any time in the past, and it is at least a laudable aspiration. Still, there are even now some essential workers in the public health field who have little or nothing to do with health education, such as the laboratory man typing sputums in pneumococcic infections or examining blood specimens in sulfonamide therapy. What these men are doing is basic in the public health program but really cannot be called health education. The same would apply to the engineer operating a water purification or sewage treatment plant, and in the main to the research work that developed the antigen for the pneumococcus vaccine or that originally purified the antibody in serum therapy. These men may do extremely important work and still not undertake even professional teaching activities, let alone popular health education.

As a matter of fact, health education played little or no part in the beginning eras of modern public health. It came into play, for obvious reasons, as public health evolved into the period of preventive medicine, where the attainment of disease preventive objectives (particularly in a democracy) is dependent on individual motivation. But back in the sanitary era the typhoid epidemics and other sanitary catastrophes of that earlier time were in fact the "educators" of the citizens and of the voters, inducing them, among other things, to appropriate adequate funds for the collective provision of sanitary measures, such as those that insure a safe water supply. But the community collectively did the job for the individual.

On the other hand, beyond the safe use of water to restrict the transmission of disease, the community cannot, by law, compel the individual to the proper constructive use of water for the attainment of certain hygienic and physiologic advantages. It cannot make him take enough water daily to meet the chemical needs of the body (though the importance of this has been somewhat overemphasized by health education); it cannot compel him to bathe with sufficient frequency, although here too health education has exaggerated the importance of the measure; it cannot even compel him to wash his hands with hot water and soap before he eats and after toilet. These uses of water must depend on personal information, on individual motivation—in fact, on health education (or, perhaps, on custom built on the commercial advertising of sanitary equipment, soap, and so on), though it must indeed be recognized that individual initiative won't be effective unless the water and the necessary utensils also are available.

In any event, we are now in the age of personal hygiene and preventive medicine, where health education comes fully into its own. Yet this modern phase of public health grew out of and is based on sanitation and is, in fact, the superstructure of public health. Health education is an essential part in that superstructure. How is it built into that framework? How much of a part does it play in the functioning of this whole public health mechanism? Let us ask ourselves these and a few other concrete questions.

WHAT CAN REASONABLY BE CLAIMED FOR HEALTH EDUCATION?

Well, there are some perfectly reasonable claims as to its accomplishments, though these claims are often confused, and the evidence is almost always fairly intangible. Yet we are all convinced that health education not only has important direct products to its credit but some by-products of outstanding importance.

By way of illustration, let us look for a moment at the diphtheria prevention program. Certainly health education of the lay public has contributed materially to the mortality improvement for this disease. Throughout the whole of 1940 Toronto, Ont., and Newark, N. J., two large cities, went without a single case of this disease. New York State, including the city and upstate area, with over 13,000,000 population, had several consecutive winter months in 1941 without a death from diphtheria. The million and more weekly industrial policyholders of the Metropolitan Life Insurance Company in the Pacific Coast and Mountain states went through the first eight months of this year without a diphtheria death. Certainly all of the literature, films, exhibits and lectures have played a big part in these accomplishments. Personal initiative by physicians, parents, teachers and others has been influential. Yet many