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Original Articles

THE USE OF MORPHINE AND HYOSCINE IN OBSTETRICS*

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I think it our duty to relieve our patients during labor of as much of the pain and horror of labor as is consistent with the safety of mother and babe. Chloroform has its place in obstetrics, but its uses are limited. Generally speaking, chloroform given early in labor, lessens the frequency and force of uterine contractions, prolongs the labor, and so it is not advisable to give it until the patient is in the second stage of labor, and so if our patient is to be relieved of pain in the first stage we must use something else than chloroform.

Morphine and hyoscine, if given in proper doses and not commenced until the patient is having strong pains, does not retard labor, especially the first stage of labor, and on the other hand, if the cervix is rigid, or it is a dry labor, this combination relaxes the cervix and hastens dilatation of the cervix, and so, I think that in suitable cases labor is hastened by getting the patient under the influence of these drugs.

I have been using morphine and hyoscine in my practice for some years. My first method of using morphine and hyoscine was the H.M.C. tablet (Abbott Alkaloidal Co.). I used it in this manner: If the patient was a primipara and the cervix but slightly dilated I would give hypodermically a No. 1 H.M.C. tablet. If she was a little farther advanced in labor, or I had reason to think labor would be quicker than in the former case, I would give three-quarters of an H.M.C. tablet. In one hour she should be under its influence. If she is having much pain during this hour I give a little chloroform during the pains; this hastens the action of the drugs. This keeps the patient under its influence several hours and usually long enough for the cervix to become fully dilated. Then I would give a little chloroform for

*Read at the Annual Meeting of the Ontario Medical Association.

the pains when she showed signs of regaining consciousness, and if the second stage was delayed used forceps, so that I did not allow her to become conscious after getting under the influence of the hypodermic.

During the past two years I have altered my method a little in this way. I give a No. 1 H.M.C. tablet or three-quarters of a tablet hypodermically to start, according to whether I think the labor will be slow or more rapid. She should be under its influence in an hour. During this hour if pains are severe I give a few drops of chloroform during the pains. If she is not under its influence in one hour I give hyoscine gr. 1-200 hypodermically. In my first hypodermic was morphine gr. 1-4 (with hyoscine) I would not give any more morphine, but hyoscine alone. If, however, the first hypodermic was only 3-4 of a tablet or morphine gr. 1-6, I would give now morphine gr. 1-8 with hyoscine gr. 1-200.

I think I get more effect from using the Abbott alkaloidal combination than the ordinary morphine and hyoscine tablets. She gets no more morphine than mentioned, because we consider it is the morphine and not the hyoscine that has the bad effect on the babe. This morphine produces the analgesia (lessens the pain) makes her sleepy. The hyoscine causes the amnesia (loss of memory or forgetfulness of the past or of what is going on) so that when everything is over she does not remember anything after getting under the effect of the first hypodermic. This will keep her asleep for two or three hours. She should get 1-200 gr. hyoscine every two or three hours as she shows signs of coming out from the effect of the drugs, and by these repeated doses of hyoscine she may be kept in a twilight sleep for many hours. I like Burroughs & Welcome preparation of hyoscine best, as it is supposed to be identical with scopolamine.

When under its influence she sleeps between uterine contractions; when a contraction comes on she talks irrationally as in a semi-delirium and may be restless, then quiets down when the contraction ceases until the next one. A stranger or one not accustomed to seeing a patient under its influence may think she is somewhat conscious during the pains, and can hardly understand it when the patient tells them afterwards that she felt no pains after the first hypodermic.

She should be kept in a darkened room and absolutely quiet. When she talks the nurse should not speak, as it tends to keep her awake. When she is in the second stage of labor and she shows signs of "coming out" from its influence I usually keep her under with chloroform given during uterine contractions instead of giving more hyoscine.

If the second stage is delayed, apply the forceps, giving a general anesthetic first.

I use this so-called twilight sleep in a large percentage of my cases.

This method of relieving pains is not suitable for all labors. It is most suitable when the first stage is slow, especially a dry labor, as when associated with an occipito-posterior presentation, hence most generally useful in primipara.

We should calculate on at least three hours after the first hypodermic before the birth of the child (if you have given morphia gr. 1-4) otherwise the child may be blue and require resuscitation as the respirations are impeded.

If she is a multipara and has easy and quick labors I would not advise this method, but would let her go until her pains became severe and then use chloroform for the pains.

The results are good with this method of treatment in the majority of cases. In some cases it is difficult to get them asleep and free from pain. Others again require less to induce sleep and to keep them asleep, so that the results are not always the same. The results, as far as the mother is concerned, are always good in that if not entirely satisfactory it at least lessens her pains and gives her an easier labor.

The nurse must never leave the patient, because during a uterine contraction she may be restless and fall out of bed. There are no bad effects as far as the mother is concerned.

The effects on the babe, however, are not always so good. Occasionally the babe is blue, respirations are impeded and the heart beats slowly. This condition is usually due to the baby being born too soon after the administration of the first hypodermic containing morphine, especially if it was gr. 1-4.

I have never lost a babe due to the administration of these drugs, but I must confess I have been a little anxious in a few case for a few minutes, but the babe always came around all right by resuscitation.

If there has been difficulty with the babe, the nurse should carefully watch it for a time, keeping it warm, lest it stop breathing again, although that is very unusual. Usually once the babe commences to breathe and cry it goes along all right.

It has been noticed that patients who have had this treatment are not so likely to have a lacerated cervix, as the drugs relax the cervical tissues.

I do not give pituitary extract to patients while under the influence of these drugs. The action of pituitary on the uterus often causes such strong and frequent contractions that the circulation

to the child is so impeded as to cause death of the child and I do not wish the morphine and hyoscine to be blamed for death due to pituitary. There is usually difficulty with the child when pituitary has been given to patients when under the influence of morphine and hyoscine, and the babe is sometimes still-born.

If the second stage of labor is slow, use forceps. In conclusion, my experience is that this combination should have a place in the art of obstetrics. It can be given with absolute safety to the mother, although its results are not uniform. In the majority of cases it produces a perfect twilight sleep and she does not remember anything from the time she gets under its influence until the babe is born. In some cases it would seem that she required bigger doses than I mentioned to produce this sleep, and as I have been afraid to give bigger doses, owing to its possible action on the babe, was content with simply relieving her pains to a great extent, but not getting a perfect result.

As for the baby the results are usually good, the child crying as soon as born and not requiring any resuscitation, but you cannot be positive about this until it is born. If the baby is blue, with respirations impeded, a few minutes work removing mucus from its throat, spanking and the alternate use of hot and cold water will soon start the respirations and then it goes along all right.

Do not attempt too vigorous resuscitatory measures, as you may injure the child and do more harm than good.

I do not agree with those who say it is absolutely necessary for the obstetrician to remain with the patient during this treatment providing you have a competent nurse that can carefully watch the patient and give the hypodermics under your instructions. You should occasionally see the patient so as to be able to give the necessary orders for the hypodermics and should be within call or reach by 'phone, as labor sometimes progresses quicker than you anticipated.

Dr. John Ferguson, President of the Academy of Medicine, Toronto, entertained many members at dinner in the York Club, Tuesday evening, Oct. 2nd, to meet the guest of the evening, Dr. A. J. Carlson, Chicago.

THE DEFINITE TREATMENT OF PNEUMONIA:

With a Report of the Germicidal Power of Quinine and other Cinchona Derivatives upon Pneumococcus Cultures *in vitro*.

By Solomon Solis Cohen, M.D.
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(*Author's Abstract.*)

Clinical.

For generations quinine has had a traditional, empirical reputation as a potent agent in the treatment of lobar and lobular pneumonia and similar maladies. Systematic employment of the drug according to a definite plan, for a period of twelve years—thus during seasons of varying meteorology and epidemic virulence—has given abundant evidence of the correctness of this tradition.

In many of the cases so treated recovery would probably have been as certain without the drug as with it; but in no case did it prevent recovery, and in a large number it averted death. Some patients in the author's service do not receive it. As a rule, however, the initial dose is given on admission, and repetition is determined by circumstances. In those cases which give no indication for repetition of the dose, recovery is practically invariable. In the severer cases—those calling for repeated doses—mortality has been greatly reduced even among alcoholics and derelicts; and the clinical picture is commonly changed from profound distress to comparative comfort, not only in cases of happy ending, but also in the fatal ones. In other words, toxemia is overcome or minimized. Thus cough is not troublesome, delirium and insomnia are much less frequent, and respiration, even when rapid, is not labored in anything like the ordinary degree. Hence the use of hypnotics, of sedatives and of oxygen, is rarely called for. The best results are observed in patients seen not later than the third day of overt symptoms—which may be the seventh or tenth day, or even later, of actual disease—and in those less than fifty years of age; but surprising recoveries are met with in late cases and old persons.

Presented by invitation at the meeting of the Ontario Medical Association, June 1st, 1916.

Two significant features of the clinical picture are to be emphasized; first, the common change from critical to gradual termination (lysis); second, the extreme rarity of cinchonism (two cases in five hundred), notwithstanding the enormous doses of quinine sometimes administered. Cinchonism, profuse sweating, or marked fall of blood-pressure following the use of quinine call for caution; perhaps for withdrawal of the drug. In no case of the author's has there been quinine amaurosis. One case of amaurosis has been reported to him by a pupil, but the trouble was transient, and the patient was saved from what seemed to be impending death.

The treatment to be outlined, however, is not specifically treatment by quinine. Quinine is used as the "big gun" in its tactics, but if a better gun is found, this could be substituted without changing the strategy of the method. It is termed the *definite treatment* of pneumonia, to distinguish it from the vagueness of expectancy on the one hand, and the exactitude of specific treatment on the other hand. It is not primarily, or chiefly germicidal. In pneumonia, after the first day, more is needed than merely to slay the microscopic Goths and Huns. We must protect the body against the poisons which they manufacture, or which may be manufactured by the enslaved or struggling tissues. We do not know as yet what the pneumonia poisons are. We merely observe their effects. The definite treatment is directed chiefly against these. Its *strategical* plan is based upon an analysis of the phenomena of crisis, and seeks to avert the profound and dangerous disturbances of that period. Into this plan a number of *tactical* measures, old and new, are incorporated, varying with the condition of the patient, the environment, the available means; and modified according to the effects produced. As gradually developed in the writer's services at the Philadelphia General Hospital and the Hospital of the Jefferson Medical College, it comprises the following features:

A. GENERAL:

1. An abundant supply of *fresh air*, preferably in the open, and with due care to preserve the warmth of the body by adequate covering, and if necessary, external heat.

2. All the essentials of *good nursing;* including *rest*, proper *diet*, and the free use of *water*, internally and externally. Copious *diuresis* is especially sought.

3. Keeping the *thorax constantly warm* by poultices during the day and a lamb's wool jacket at night. This may be preceded,

in early cases, by *counter-irritation* with a mild mustard and flour poultice.

4. A due supply of *chlorides* by saline infusion (Henry's method), alkaline-saline beverage (author's method), or the administration of a mixture of the chlorides in capsule, followed by copious drafts of water (Quimby's method).

5. Such additional measures of *elimination* (and *alkalinization*) as may be necessary.

6. *Cleansing and* (relative) *disinfection of the upper air passages* by local applications to the throat and nose (phenol-iodine-glycerine or silver preparations), or by continuous inhalation (from the perforated zinc respirator of Yeo) of volatile antiseptics, stimulating or sedative (*e.g.* ethyl iodide, creosote, chloroform, terebinthinates).

This represents a *groundwork* upon which certain *definite* medication is superimposed.

B. SPECIAL:

1. ANTITOXIC AGENT. Quinine is given *promptly in massive and repeated doses* (for a vigorous adult, 1.6 to 1 gm. (25 to 15 grains) *circa q. iii h.*) with *progressive lessening of quantity and increase of interval,* according to effect; the drug being intermitted when the temperature (taken in the mouth) tends to remain below 102.5°F., and resumed when it tends to rise above 103°F. The temperature curve, however, is taken as an *index only,* since the treatment is not designedly antipyretic; and temperatures too low are not desirable. This medication may be kept up for one, two, or three days. There may be one dose of quinine only, or so many as fifteen. The rule is effect, not quantity—*enough and no more.* Perhaps four to five doses is a fair "average." *Quinine and urea hydrochloride* (25 to 50 per cent. recent (sterile) solution*) and *intramuscular injection* (through the *iodized skin*†) have been chosen as, on the whole, the most effective preparation and method; but other quinine salts, and administration by the mouth, are likewise employed. It is possible that other cinchona derivatives, for example *methyl-hydro-cuprein* (hydroquinine) *hydrochloride* may prove useful. The narrow interval between the toxic dose and the therapeutic dose of *ethyl-hydrocuprein* (optochin), however, inhibits the general use of this drug and its salts at present, despite their high bactericidal power. Some modification of the molecule may remove this drawback, and is a worthy objective of experiment.

*It is best made extemporaneously with boiling water, and used at a moderate heat.
†The point of puncture should be sealed with collodionized cotton.

2. Pressor Agents. *Cocaine hydrochloride, caffeine-sodio-salicylate, adrenalin, posterior-pituitary principle*—singly or in alternation or rotation—are used, *when necessary,* to maintain the line of *systolic blood-pressure* at or above the level of *pulse frequency,* as charted by Gibson's method. The *pituitary preparation* has the additional advantage of tending to prevent tympanites and dilatation of the stomach. Usually a precautionary injection of cocaine (½ grain, 0.03 gm.) or posterior-pituitary solution (1 mil.) is made with the first injection of quinine, since the latter tends to lower blood-pressure slightly. It is repeated every third hour, or as needed. In some cases so many as sixty doses have been given. In others from three to ten. In some, none at all.

3. Cardiants. *Diastolic blood-pressure* and *respiration* are charted on the same vertical (imitating Gibson's pulse-systolic pressure ratio); and an interval of less than ten points is considered a signal of danger, perhaps calling for the use of *camphor* or *digitalis* in full doses. Sometimes both agents are employed. In the majority of cases, neither of these drugs becomes necessary. Digitalis effects can be obtained more readily when the patient is under the influence of quinine than in other cases. Concerning both pressor agents and cardiants, care is, of course, necessary not to exhaust by overstimulation. One is to be "bold, but not too bold"—nor too timid. *Oxygen* is sometimes helpful in overcoming this condition; not by direct effect on the heart apparently, but indirectly through its general action.

4 Auxiliary and Symptomatic Measures. *Wet cupping, dry cupping, venesection,* and the continuous or occasional use of *oxygen, alcohol, strychnine, atropine, opium, musk, creosotal ammonium carbonate* and other drugs are reserved for *special indications,* which may or may not be present in any given case. Cases calling for *early bleeding* are not often seen, but *late blood-letting* to relieve the right heart is occasionally called for, and may prevent death by pulmonary edema, if done in time.

5. Roborant in Convalescence. *Tincture of ferric chloride* is given when the quinine is withdrawn, and continued during convalescence.

6. Specific Stimulation. In prolonged cases with extensive lesions, in certain cases of tardy defervescence, and in all cases of delayed resolution after defervescence, a *personal bacterin* (so-called autogenous vaccine) is used in progressively increased amounts, with appropriate intervals (three to seven days) between doses. Repetitions and increases of dose are largely guided by the temperature and leukocyte reactions.

The early employment of bacterins has not seemed advisable or beneficial, though in a few cases it was tried and did no harm.

7. Iodine. Observations as to the value of iodine (in colloidal and other forms) as an adjuvant in cases with extensive lesions and tardy defervescence, are as yet too few to be conclusive, though on the whole they seem to indicate a favorable action.

8. Individualization. In all features of the treatment there must be careful *adjustment* of means and measures to the *special needs* of the *particular patient* at the *moment*. One must not only know when and how to use medicines; but also watch and know when to *withhold them*. All the measures mentioned are not to be applied in every case. In most cases but one or two will be needed; but in some cases at one period or another, several may be indicated, and one must not fear to use them. Routine is inferior to discretion. Too much is worse than too little, but too little is not good. The aim is to be "just right."

Experimental.

Clinical observation has emphasized on a large scale—not merely in isolated instances—two facts in regard to the action of quinine in the pneumonias: (1) The conversion of *defervescence* from crisis to lysis; and (2) the virtual absence of *cinchonism* under repeated doses, at times enormous, of an active cinchonic. Adding to these the invariable abatement—if not suppression—of toxemic symptoms, the inference is natural that the drug acts as a *chemical antitoxic*. In other words, there seems to be *reciprocal neutralization* between the drug and something in the patient's body. Quinine overcomes the pneumonia poisons and the pneumonia poisons protect against quinine. This view is confirmed by the fact that despite the relief—sometimes wonderfully prompt and complete—to symptoms, the physical signs pursue the ordinary course, indicating that quinine does not affect in an appreciable degree either the evolution or the involution of morbid tissue changes. Rontgen ray studies and autopsies show this to be the case. Also, the occurrence of pneumococcus empyema in a certain proportion of cases and the continued findings of viable pneumococci in the blood and sputum, seem to confirm the opinion that the greatest value of the drug *does not depend upon its germicidal* action.

These views have long been before the profession, but only recently has it been possible, through a generous subvention from Mr. Samuel Fels, of Philadelphia, to undertake experimental studies to test and determine the facts with reference to the three distinctive types of pneumococci.

These experiments are still in progress, and only one phase is ready for report; namely, that concerning the germicidal action upon pneumococci of the various drugs studied. In this work the author has been so fortunate as to secure the co-operation of Dr. John A. Kolmer, of the University of Pennsylvania, in whose laboratory, and under whose direct supervision the observations have been made, with the assistance of Dr. George D. Heist.

A detailed report will be published elsewhere (*Transactions Association of American Physicians*). For the present it may be stated that the research has been carried far enough to show a distinct germicidal influence *in vitro*, of all cinchona derivatives, upon the three distinctive types of pneumococci. Certain differences appear in the relative values of the various salts of quinine, all of which are much less potent than ethyl hydrocuprein, but all of which show distinct and high germicidal activity—not only inhibiting growth, but also killing the pneumococci of all three types observed (I, II and III). Quantitative differences in the germicidal values of the different agents tested, with respect to the different types of pneumococci, have also been observed but these are much slighter than were expected.

Cross observations with other germicides (*e.g.* mercuric chloride, phenol. and arsenobenzol) show that while these exert some bactericidal effect upon pneumococci it is insignificant in comparison with that of the quinine group. Similarly, while the cinchona derivatives not only inhibit the growth of other bacteria (*e.g., Bacillus typhosus, Staphylococcus aureus*) but also destroy them, the concentration necessary is very many times greater than that fatal to pneumococci. It may thus be positively stated that the experiments show a distinctive relation (bacteriotropism) between cinchona derivatives and the three types of pneumococci. So far as *ethyl hydrocuprein* is concerned, these observations merely confirm the work of previous observers (Fränkel, Morgenroth and Levy, Moore and others) signalizing this drug as the pneumococcus-slayer *par excellence*. Clinical studies, however, do not show the same superiority of ethyl hydrocuprein over quinine in the treatment of any type of pneumonia, even when the former is reinforced by a specific serum—and this, notwithstanding the fact that such reinforcement has been shown to increase its germicidal value enormously in experimental pneumococcus infection in rabbits. (Moore.)

Moreover, ethyl hydrocuprein is much more toxic than quinine, causing in laboratory studies upon normal animals much greater central depression of blood-pressure and earlier cardiac paralysis. (Smith and Fantus.) A further fact to be noted in passing is

that in the tests made in Dr. Kolmer's laboratory by Wright's method, *the proportional decrease of germicidal activity in serum* below that shown in salt solution is much greater for ethyl hydrocuprein than for the quinine salts.

Experiments *in vivo,* and especially the more important experiments concerning the relation of quinine and allied compounds to the pneumonia poisons, are not yet sufficiently advanced to be the subject of report. So far as they have gone, however, they tend to confirm the observations *in vitro.* Meanwhile parallel studies by other investigators are invited, for confirmation, correction or extension of the results, clinical and experimental, obtained at Philadelphia.

HEALTH INSURANCE

(*U. S. Public Health Reports*).

REPORT OF STANDING COMMITTEE ADOPTED BY THE CONFERENCE OF STATE AND TERRITORIAL HEALTH AUTHORITIES WITH THE UNITED STATES PUBLIC HEALTH SERVICE, WASHINGTON, D.C., MAY, 13, 1916.

Health insurance, as usually operated under governmental systems, provides that all employed persons in certain occupations, and all persons in other occupations earning less than a specified annual income, be entitled in case of illness to certain benefits.

Benefits.—The benefits ordinarily provided are:

(*a*) Cash payment for a limited period (usually 26 weeks in any 12 months) of a proportion of the wage, or of a fixed sum, to employees, when disabled by sickness or non-industrial accident. (Industrial accidents are provided for under workmen's compensation laws.)

(*b*) Medical benefits, which include adequate medical and surgical care, medicines, and appliances in home, hospital, sanatorium, or physician's office, to employees disabled on account of sickness or non-industrial accident during a limited period (26 weeks in any 12 months).

(*c*) Maternity benefits, which include cash payment of a small sum in case of confinements of employees or wives of employees.

(*d*) Cash payment for deaths of insured persons due to sickness or non-industrial accidents of an amount calculated to cover funeral expenses.

Funds.—The funds are usually provided by payments from employees, employers, and Government appropriations. In Ger-

many the employee pays two-thirds, employer one-third, and the Government pays for certain expenses of supervision. Under the English National Insurance Act the employee pays four-ninths, the employer three-ninths, and Parliament appropriates two-ninths. In the case of women and persons employed at certain low levels of wages the payment of employer and Parliament are increased and the proportion paid by employee is decreased.

Administration.—The administration, both central and local, is usually according to some form of representative government. In the local Government, in addition to governmental bodies created for the purpose, unions, industrial establishments, and certain societies are utilized for purposes of the local administration of the funds.

Extent of health insurance.—In foreign countries voluntary health insurance systems have been subsidized by the Governments of France, Belgium, Denmark, Sweden and Switzerland. But more significant as an evidence of the recognition of the efficacy of health insurance is the fact that compulsory systems have been established in Germany, Austria-Hungary, Norway, Great Britain, Serbia, Russia, Luxemburg, Roumania, France (for miners, seamen and railway employees), and Italy (for railway employees).

In this country we are in the first stage in health insurance. No State, municipal, or other government in any way provides for or aids health insurance. There are, however, large numbers of private systems such as mutual benefit associations and other societies which provide for health insurance; in addition to these there are various employers' benefit associations, trade union benefits, and commercial insurance with health insurance policies.

Bills providing for the establishment of governmental health-insurance systems have been introduced in the Legislatures of Massachusetts, New York and New Jersey. In California a State commission has been created for the study of social insurance.

Occupational disease insurance.—In several States occupational diseases have been included in the workmen's compensation acts and the constitutionality of these laws has been upheld by the State Supreme Courts. This shows a tendency on the part of lawmakers to apply insurance methods in provisions for sickness. Few diseases, however, are altogether due to the hazard of the occupation; in fact, at times the occupational hazard may be greatly aggravated by other conditions which cause impaired resistance in the worker. Thus the responsibility for many of the so-called "occupational" diseases is divided and the classing of them with industrial accidents is not only often impracticable,

but tends to load on the employer a responsibility which is not altogether his.

The need for health insurance.—The economic cost to every community and to the nation of preventable diseases and deaths is greatly increased by the unusual prevalence of these diseases and deaths among the unskilled and low-paid industrial workers. All available statistics, both in the United States and in foreign countries, indicate that among those of a low economic status the morbidity and mortality rates are higher than in the rest of the population.

The result of an investigation made for the Federal Commission on Industrial Relations afforded the estimate that each of the 30,000,000 workers in this country loses on the average about nine days each year on account of sickness. Placing the loss in wages at $2 a day and the cost of medical attention at $1 a day, the total loss to the wage earner of the nation would approximate three-quarters of a billion dollars annually. To this should be added the economic loss resulting from invalidity and death, and the loss to industry on account of decreased efficiency due to partial disability. To this should also be added the tremendous sums that are being spent by States, communities, municipalities and volunteer organizations for the support of charities, free clinics, hospitals, and the like. When all expenditures are taken into consideration, the estimate of $750,000,000 seems an insignificant sum, indeed.

These cold calculations of cost, however, neither depict real conditions nor represent the real attitude of the American public toward such a situation. The generous response of the American public to the necessities of sufferers in the European war is striking evidence of the willingness of the public to deal promptly and efficiently with a situation when once its significance is understood. It needs only to be brought insistently to public attention that in this country the annual loss of death and lives among our industrial workers is not far behind that caused by the greatest war in history. To inform the public of such a situation is clearly within the province of the State health agencies.

Economic factors increase health hazard.—It is not necessary to inform health officials of the character and extent of the conditions which have caused such a situation, but it is doubtful if the underlying economic factors have been adequately analyzed, especially from the standpoint of responsibility for disease-causing conditions. Without going into detailed statements, it may be said that among the more important of these economic factors are occupational hazards, irregularity of employment, unhealthful

conditions of living, the employment of women in industry under modern conditions of work, particularly of married women, and the economic disadvantage at which a considerable proportion of wageworkers and their families are placed as the result of low wages and insufficient annual income. A number of recent investigations have shown that these factors are important underlying causes of disease. Any adequate remedial programme must fix the responsibility for these conditions in order to arrive at a proper basis for efficient measures.

Responsibility for conditions causing disease.—In a general way it may be said that there are three groups which are responsible for conditions that affect the health of the wage earner—employers, employees and the community. The employer's responsibility is largely limited to places of employment and conditions of work. The public's responsibility is limited in great measure to community conditions or conditions common to all groups of citizens. To the individual wage earner is largely left the responsibility for the healthfulness of the conditions under which he and his family live, but it should not be overlooked that under present conditions he is often handicapped by the effects of his occupation and of unhealthful community environment. This is a responsibility which a considerable proportion of wage earners are financially unable to meet.

These considerations—the presence of economic factors and the financial inability of so many wage earners to maintain a healthful standard of living—clearly indicate the necessity for a health programme which will co-ordinate the efforts of all responsible groups and of the numerous health agencies at present working too independently in their respective fields.

Advantages of health insurance.—The experience of foreign countries and a study of the situation in this country have shown that such a co-ordination of effort may be possible in a governmental system of health insurance if properly adapted to national or State governments. By providing for the insurance of all workers, adequate relief will be afforded to even the lowest paid worker.

The joint contribution of all employers, employees and the community to the support of a health insurance fund will give to each group a financial incentive to lessen the cost by the prevention of disease, since a definite money valuation would be fixed upon each day of sickness.

By providing medical service, with a continuance of a substantial portion of his income during sickness, the wage earner's family would not be rendered destitute when he stopped work on

account of sickness, and he himself could receive prompt treatment and not be compelled to continue at work until his health was seriously impaired.

Maternity benefits are calculated to conserve the health of the mothers and lower the infant mortality rate.

The joint provision and control of the fund by employers, employees, and the community will prevent any taint of charity or paternalism, afford a basis on which capital and labor can work together for a common end, and stimulate a spirit of co-operation in the movement for improving the welfare of the wage-working population in every industrial community. Just as the workmen's compensation laws have brought about the nation-wide "safety-first" campaign, so may we expect from the enactment of health insurance laws a movement for better health that will be intelligent as well as popular.

Relation to Medical Profession and Health Agencies.

As stated above, the local administration of health insurance funds is usually left to local boards created for this purpose, or to trade unions, industrial establishments, or societies which have been approved by the central governing board or commission. The German act has left the administration of the medical benefits to these local bodies, and this has resulted at times in restricting the insured persons' choice of physicians to a limited number of contract doctors employed by these local agencies, and thus caused so much friction as to result in a "doctors' strike." The English act, in the effort to remedy this defect, permitted free choice of physicians registered on the panels of the funds, but did not place proper restrictions upon the signing of certificates admitting insured persons to benefits. The result was that the physicians were entirely too complaisant in signing certificates and the funds were subjected to improper drain.

In the bill for health insurance that has been introduced in the several State Legislatures the German plan has been followed, the matter of providing medical benefits has been left in the hands of the local bodies, and no provision has been made for correlating the system with existing health agencies. These are serious objections, since without such provisions a health insurance law will have little value as a preventive measure, although it may meet with the approval of those who advocate it as a relief measure.

There must be a close connection of the administration of any health insurance system with the health agencies of the country and with the medical profession. It is believed that this can be done in three ways: (1) By providing efficient staffs of medical

officers in the Federal and State health departments to carry into effect the regulations issued by the central governing boards or commissions; (2) by providing a fair and sufficient incentive for the active co-operation of the medical profession; and (3) by providing for a close co-operation of the health insurance system with State, municipal and local health departments and boards.

Corps of full-time medical officers.—In view of the experience in both Europe and America, it would seem best to place the administration of the medical benefits directly under governmental agencies and to insert a provision that no cash benefits be paid, except on the certificate of medical officers of the national and State health departments acting as medical referees under the regulations of the central governing board or commission. Such medical officers should be selected according to civil service methods. Since these officers are the representatives of the health departments in the funds, their selection and appointment should also be based upon their knowledge of preventive as well as of clinical medicine. After a probationary period of service satisfactory to the health administration, they should be given permanent appointments, subject to removal only for inefficiency or immoral conduct. One of their duties should be to examine each disabled beneficiary and keep themselves informed as to the progress of his recovery. It is needless to say that the referees should not be permitted to engage in private practice.

Free choice of registered physicians.—With such a check on the payment of cash benefits, the medical and surgical treatment provided for beneficiaries could safely be left to the physician of the patient's choice, and payment made on a capitation basis regardless of whether the patient was sick or well, after the manner of the English National Insurance Act. This method of selection and payment of physicians for the medical and surgical relief would offer every incentive to them to keep their patients well and to endeavor to please by rendering their most efficient service.

Hospital and dispensary treatment.—In addition, free choice should be allowed to those who prefer institutional treatment by a selected staff, when available; and to this end the local and federated governing bodies might even provide dispensary and hospital units, each such unit to include a staff of physicians, surgeons, oculists, dentists and other specialists, and a staff of visiting and bedside nurses.

Health insurance a measure for prevention of disease.—The greatest value of such a system of administration of the medical benefits would be in the organized corps of medical officers and of attending physicians registered on the panel and in the oppor-

tunity it would offer for preventing disease among the insured persons and their families. It would be through the corps of full-time medical officers of the health department acting as referees, that the health insurance system would be linked up with other health agencies. It is not necessary to relate here the advantages which would arise from the visits of such specially trained men into the homes of all sick persons. Nor is it necessary to tell how these officers acting as health officers could further lower the sick rate. The objection could not be raised that such a corps would be too expensive. It would not require more than one such medical officer to every 4,000 insured persons, and at that rate they could more than save their salaries by relieving insurance funds from paying unjust claims. Furthermore, while an estimate cannot be made of the amount to be saved by their efforts in the way of lowering the sick rate, it is safe to say that it would amount to many times more than the sum of their salaries.

Health officials should realize now the necessity for correlating the administration of the medical benefits of any proposed health insurance system with existing health agencies. If health departments are at present inefficient, they should be strengthened and made adequate to meet all demands.

To enact a health insurance law simply as a relief measure without adequate preventive features would be a serious mistake, but with a comprehensive plan for disease prevention there is every reason to believe that it would prove to be a measure of extraordinary value in improving the health and efficiency of the wage-earning population.

Recommendations.

The following fundamental provisions should be embodied in any health-insurance measure proposed for national or State governments:

1. *Insured persons.*—Every person engaged in a gainful occupation and earning less than a specified annual income, say $1,000, should be entitled to the benefits provided under the law. Every person earning more than the specified annual income should be allowed to qualify for the same benefits or greater benefits according to annual income.

2. *Funds.*—To be provided jointly by contributions from employees and employers; the Government to appropriate for the expenses of supervision and administration.

3. *Benefits.*—The following benefits should be provided:

(*a*) *Cash benefits.*—Weekly cash payments in case of disability due to sickness, non-industrial accident, or to child-bear-

ing by the beneficiary, for a period not to exceed 26 weeks in any one 12-month period.

(*b*) *Death benefits.*—Cash payment (for funeral expenses) to legal heirs for death due to sickness or non-industrial accident.

(*c*) *Medical benefits.*—To include adequate medical and surgical care, medicines and appliances in home, hospital, sanatorium, dispensary, or physician's office, beginning with the first day of disability, whether due to sickness, non-industrial accident, or to child-bearing by the beneficiary or the wife of the beneficiary, and limited to a period of 26 weeks in one 12-month period.

4. *Administration.*—All matters of promulgation of rules and regulations and appeals should be vested in a national or State commission created for this purpose. All matters of local administration should be vested in local boards of directors, federated according to districts, subject to supervision by the central authorities, and rules and regulations promulgated by the commission.

The commission and all local and federated boards should be composed of persons representing the contributors to the funds. The number representing employees and employers should be in the same ratio as their respective contributions.

Provision should be made for free choice of any physician registered on the local panel, and provision might be made also for adequate institutional care for those who prefer this method of medical benefits.

A corps of full-time medical officers should be provided within the national or State health service to have supervision of all hospital and dispensary relief; to examine all insured persons claiming to be disabled, and issue certificates in accordance with the regulations promulgated by the commission; to advise the administrative authorities and all contributors to the funds as to the best measures for the relief and prevention of sickness; to advise with the physicians attending sick members as to measures which will shorten the periods of disability; and to perform such other duties as may be fixed by regulations.

The deaths of the following Canadian physicians have recently been announced: Dr. R. P. Campbell, Montreal, somewhere in France; Dr. Harry Goodsir MacKid, Calgary, Alberta—a past President of the Canadian Medical Association; Dr. George Wilkins, Montreal; Dr. John C. Mott, St. John, N.B.; Dr. Charles W. Hewson, Amherst, N.S.; Dr. E. H. Kertland, Toronto; Dr. I. R. Walker, Ingersoll, Ont.; Dr. Ernest William McLaughlin, Toronto.