The eruption may come on after the first application, or not until after it has been used for months. Some subjects who do not have an eruption complain of a prickling sensation in the eyes for days after its use. The intense itching is another characteristic. This may be most marked in the scalp and is the usual precursor of the eruption, which appears as bright red plaques, with irregular borders along the margins of hair. The skin becomes thickened and also stretched, and the plaques disappear under pressure. The lids become swollen after a few days of itching. Under light desquamation the spots become pale and disappear, constituting the benign form. In the medium form, such as our case, with an eruption of bright red erythematous patches, with rare intervals of normal skin, the color does not disappear under pressure. In places there are urticarial elevations, papules, small vesicles filled with clear serum, or milky fluid; in places dried crusts, often yellow and impetiginous. The ears are swollen, the skin thickened, exuding serum where vesicles become broken. Itching may be so intense as to break sleep. There is slow return to normal, the skin remaining rough and edematous, desquamating for weeks.

Brocq,⁵ in addition to the above light and medium forms, describes a third or grave form with violent erysipelatoid eruption, with fever, adenitis, extensive desquamation, etc. He mentions the case of a young American woman whose entire body desquamated, who had great depression and fever, with prolonged convalescence and tardy recovery. He recommends that in view of the increasing number and severity of these cases, the law should insist upon a label stating that this substance is "dangerous for all persons who have had eczema or who have irritable skins." G. Tissot⁶ arrives at the conclusion that all hair dyes at present known are dangerous, that they may determine inflammatory or toxic accidents, and that it is necessary to regulate the sale, inasmuch as accidents are becoming more and more numerous as their use becomes generalized. The paraphenylene diamine he considers most constantly productive of accidents. Balzer⁷ relates a case of an eczematous eruption produced by the irritation from a dye used in hose, which dye proved on chemical analysis to be the chlorate of paraphenylene diamine. The eruption came on twenty-four hours after wearing new hose, which were dyed black, with red, yellow, and green stripes. There was violent itching and the back of the foot presented typical lesions of acute eczema—small papulo-vesicular eruption, and diffuse redness not extending higher than the ankles. The soles of the feet, while presenting no eruption, itched intensely. It was curious to remark that the eruption was in bands corresponding to the black and green stripes; there was no eruption corresponding to the red and yellow stripes. The chemist reported that it was precisely the black and green portions where the coloring matter was the paraphenylene diamine.

Résumé: The duration of eruption may be from several days to several weeks. Sometimes exacerbations may occur when one thinks the patient nearly well. In the etiology one must always take into consideration, as in all chemical or medical eruptions, the personal predisposition or idiosyncrasy, and avoid in the treatment any application containing resorcin, which Laborde and Mellièrè⁸ have shown often is used combined in the hair-dye, and under oxidizing influences becomes an irritating coloring product. The prognosis is in general good, but the patient should be warned

against continuance of the dye for fear of the grave form described.

Differential diagnosis: Confusion might arise with acute eczema, especially where patients usually deny the use of a dye. Nevertheless, the suddenness of the manifestations, enormous swelling of the lids, the metamorphosis of the physiognomy are good guides.

Treatment: The usual calmative agents employed against erythematous eruptions due to external causes may be used. The hair must be sacrificed in the grave forms, as the dye in the hair still acts as an exciting cause. As a question to be studied there remains the query, does the eruption appear on the body from transference of the irritant by the hands, from nervous erethism, or it is absorbed in quantities sufficient to cause systemic effects?

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DIFFICULTIES AND DANGERS OF ANESTHETICS.

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Ever since the first deaths resulting from the administration of ether and chloroform, there has been considerable discussion as to the manner in which they cause them. One of the most important contributions was that of the Hyderabad Commission, which concluded from its experiments on animals that chloroform kills by its effects on the respiratory system. Mellish believes that it exerts its bad effects primarily upon the circulatory system, an opinion which is supported by Leonard Hill. Practically all observers agree that chloroform causes lowering of blood pressure at all stages of the anesthesia. Ether produces a slower fall than chloroform. Whether the paralysis of the respiratory precedes or follows that of the circulatory systems is of but little practical importance, for the interval between them is so slight as to be almost imperceptible. The writer has in some cases observed a cessation of respiration before that of the heart's action, and in others the reverse condition. Leonard Hill has shown that there are two kinds of syncope, a primary and secondary. The former occurs in the very earliest stages, the latter later. It may be due to fright or other psychic influences. In some cases there seems to be no apparent cause. Respiratory difficulties may be spasmodic, asphyxial or paralytic. The two former occur more frequently during ether than chloroform anesthesia. The last-named danger is far more frequent after chloroform. When this takes place, the respirations gradually become slower and more shallow, the color of the face and lips becomes grayish, the pulse imperceptible, and the pupils widely dilated.

The group of symptoms in which the heart first shows the effects of an overdose of the poison—secondary syncope—differs but slightly from the above, and the anesthetist who closely watches the respiration, color of face, pupil and pulse of the patient from the time the anesthetic is begun will note even slight danger signals quite early. It has been the habit of the writer, in his own cases and when instructing others, especially when chloroform is to be administered, to call attention to the following points: Remove all foreign bodies from the mouth, also all constricting neck or waist bands. Talk reassuringly to the patients, or divert their minds by having them count slowly up to fifty. Do not permit any loud talking or noise of preparations to be heard by the patient. Do not begin to remove dressings or prepare the field of operation before the stage of relaxation. Examine the heart, lungs and the urine before every anesthetic. (This will be referred to later.) Note the size of the pupils, the character of the pulse in regard to pressure and frequency, and watch both pulse and respiration, and the color of the face during the entire operation, keeping the hand on either radial, temporal or facial arteries, as the engineer does his hand upon the throttle. The writer has been able a number of times to guard against a syncope by noting the manner in which the pulse decreased in frequency and force. The pupil is at first dilated moderately, then somewhat contracted, responding, however, to light; but when it dilates again, or, in other words, the secondary dilatation occurs, with failure to respond to light, that is one of the earliest symptoms of syncope. The anesthetist should pay absolutely no attention to the operation, and should not be changed during it.

TREATMENT.

The curative treatment of the immediate difficulties and dangers in the milder forms, such as spasm of the glottis, is to remove the anesthetic—usually it is ether which causes this. Forceps of the kind used by the laryngologists, with pieces of cotton, will easily remove any mucus which has accumulated above the larynx and causes cyanosis. This is best done by placing the patient's head—if it has not previously been so—on its side directly upon the table. At times it is necessary to force the jaws apart with a special (Heister) gag. It is seldom necessary, if care is taken, to hold the jaw up and forward to use a tongue forceps. For the more severe forms of danger, such as sudden heart or respiratory failure, we should have some system or order in which the various methods or remedies shall be applied. The writer usually employs the following mechanical means first, for there can be but little object in giving cardiac stimulants before there is a circulation to carry them to the heart.

1. The method of König, or massage of the heart, I have employed eight times with startling results. This consists virtually, by a number of pushing movements with one or both hands over the heart in exciting a ventricular contraction, and thus preventing the paralytic dilatation of the heart from taking place. This method was first suggested by Professor König, and is but little known in this country. As soon as the heart or breathing has ceased, the operator, by rapid "punchings" with the flexor surface of the half-closed hand, without lifting the latter from the chest wall, seeks to start up a contraction of the ventricles. I have saved three patients by this method alone during the past six months. It is really a shaking-up or massage of the heart. In a dog on which I performed a thoracotomy, the heart's

action ceased as soon as the thorax was opened. The König method was employed, while one hand was kept over the heart—from the interior of the chest. The effect of this shaking-up of the heart through the external jolting was remarkable. The organ began to pulsate and continued to do so for several minutes.

2. The next method, and one which can be carried out simultaneously by another assistant, consists in mechanically exciting respiration by the so-called pharyngeal reflex, by making rhythmical tractions upon the tongue. (Laborde method.) Insert a tongue forceps and pull the organ, by its tip, out of the mouth as far as possible, about sixteen times a minute.

3. As soon as possible, raise the foot of the table, say $1\frac{1}{2}$ to 2 feet, or bring the patient's head over the edge of the table, permitting it to hang down. At the same time, begin with artificial respiration. (After No. 1 has been employed.) Have two assistants—one on each side—bring a semiflexed arm down upon the lower portion of the chest, compressing this, then raising the arms above the head by extending them, and bringing them to the chest wall again.

4. By this time respiratory or circulatory paralysis will have either become permanent or temporary. If the latter, a few feeble pulsations can be felt and an occasional shallow breath be noticed. Now, an amyl nitrite pearl can be broken and its contents inhaled. Strychnin, 1/30 gr., and digitalin in 1/50 gr. doses can be given hypodermically; later whisky, atropin or ammonia.

5. Bleeding from a large vein, if the patient is plethoric, or the subcutaneous injection of a quart of normal—0.6 per cent.—salt solution, if there is any suspicion of a combination of syncope, with hemorrhage, is extremely valuable and rational.

6. Acupuncture of the heart has been tried as a last resort in two cases, by McArthur, with an encouraging result. Tracheotomy, stretching of the sphincter, irritation of the nostril, and electricity are of doubtful value.

To sum up: 1. Massage of the heart (König). 2. Rhythmical tractions of the tongue (Laborde). 3. Artificial respiration. 4. Cardiac stimulants. We should persist in our efforts, even in the most discouraging case, at least half an hour.

AFTER-EFFECTS.

In regard to some of the after-effects or dangers of anesthetics, many can be avoided by proper regard to their prevention. Before every anesthesia is begun the urine should be carefully examined for sugar, albumin and casts. This will only require a few moments, especially if a centrifugal apparatus is at hand, and may spare the operator a great deal of chagrin if a patient whose relatives he had assured that there was practically no danger should die within forty-eight hours of uremia. It has been shown conclusively by a number of investigators, both through experiments on animals and clinical observations, that both ether and chloroform have an injurious effect upon the renal parenchyma. My own observations on 110 cases about equally divided between chloroform and ether have been confirmed by a number of others. They were as follows: Ether and chloroform will cause albumin and casts in small amounts and number to appear after they have been administered to patients whose urine during repeated examinations was previously shown to be normal. This will occur more frequently after ether. Upon the diseased kidney it (ether) has a decidedly more harmful

action, causing in some cases acute suppression of urine, uremia and death. Chloroform, if administered during an operation or obstetrical case, as shown by Fraenkel, for a period of three hours or longer, may cause fatty degeneration of the renal cells and uremia. On the diseased kidney chloroform has a far milder action than ether, although occasionally a case of nephritis will be anesthetized with it and uremia follow, as in a case I observed a few weeks ago. Both, in cases of diabetes, will frequently increase enormously the sugar.

Another dangerous after-effect which can be avoided is pneumonia following ether anesthesia. A careful examination of the lungs will quickly aid us to diagnose a bronchitis or emphysema. Such persons bear ether poorly and should, if the heart permits, be anesthetized with chloroform. In regard to the latter organ, patients with heart trouble should be anesthetized either with ether or the A. C. E. mixture. In many hospitals abroad and in the East, the anesthetist is either a paid assistant, who remains for years, or is assigned to this task as an interne for many months. Slips are filled out for each anesthesia, stating the condition of the heart, lungs and kidneys before operation, etc. This is not impracticable even in small hospitals, and saves many a life.

CONCLUSIONS.

I have tried in the above to give a brief outline of the causes of syncope during anesthesia, their treatment, and some of the after-dangers or effects. Ether, with the exception of its bad effects upon the kidney, is by far the safest anesthetic. Chloroform kills quickly, ether slowly. The dangerous symptoms of the former are far less amenable to treatment than those of the latter. Children respond more quickly than adults to efforts at resuscitation.

A careful examination of patients is absolutely essential. In serious cases the urine should be collected for several days, and twenty-four hour specimens examined, especially in renal operations or laparotomies. Do not give one anesthetic, be it chloroform or ether, indiscriminately to every patient. We should consider age, condition and the nature of the operation. I append an excellent list, compiled by J. Frederick Silk, an English authority on anesthetics, which I have found very useful to remember: 1. *Age*.—Under 3 years, chloroform all through; between 3 and 12 years, A. C. E. mixture (alcohol 1 part; chloroform, 2 parts; ether, 3 parts); between 12 and 60 years, ether; over 60, induce with A. C. E. mixture, increasing the proportion of ether in long operations. 2. *Condition of patient*.—In the fat and plethoric, induce with A. C. E., and gradually increase the proportion of ether in long operations; in acute or very recent lung troubles, give chloroform all through; in chronic lung troubles—bronchitis or emphysema—give A. C. E. all through; in organic heart disease, if there is not sufficient compensation, e. g., pulmonary edema, use A. C. E. or chloroform, if compensated, ether; in marked atheroma, induce with A. C. E., and increase the ether proportion in long operations. 3. *Nature of operation*.—For an intracranial, give chloroform or A. C. E.; for those on the tongue and mouth, induce with A. C. E. and change for chloroform when the operation begins; in operations on the head and neck, begin with A. C. E., increasing the proportion of ether in long operations; in those on larger joints, always use ether, if possible; in abdominal, we do well with ether, but many prefer chloroform; in rectal and genito-urinary, use ether.

The writer can agree most heartily with most of the above, and would add, under No. 2, in kidney disease, use preferably chloroform, or A. C. E.

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THE VESICULAR MURMUR AND ITS RELATION TO PULMONARY HEALTH AND DISEASE.*

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My purpose in this writing is to individualize this one and only auscultatory sign as the criterion of pulmonary health, its absence as the positive proof of either functional or organic disease, also suggestions as to the most successful method of restoration and its application to the treatment of pulmonary tuberculosis.

In the auscultation of the normally acting healthy chest, two sounds are heard on inspiration, totally different in production, location and character. The first is the bronchial sound, caused by the friction of the inrushing tidal air, through the convective system of tubes, and is, in varying quality and pitch, always present in health and disease. It is first in regard to the time of its production in the inspiratory act, and, during the first eight to twelve years of life, is the only sound heard in health, the pulmonary system being as yet incomplete. The tidal air does not pass as such further than the third or fourth division of the bronchial tubes, consequently the murmur which follows the bronchial is entirely distinct from the bronchial in location and character, although wholly dependent on it for its production.

Where tidal air ceases, residual air commences, and fills the entire pulmonary system, the volume of which is increased about one-tenth by each normal inspiratory effort. It is this increment of tidal air imposed upon the residual air, which renders the air-sacs tense, and produces the vesicular murmur by the contraction and relaxation of their walls upon the residual air. Here the interchange of gases takes place, in accordance with the well-known law of diffusion, and the circle of the inspiratory act is complete.

The vesicular murmur begins as soon as the residual air is increased to the extent of rendering the air-sacs tense. In full breathing, it is heard before the tidal friction sound of the bronchi ceases, producing the bronchovesicular murmur, and is continuous after the bronchial sound ceases.

The production of the vesicular murmur may be prevented, or interfered with in part, by various influences and conditions of disease, some of which are not incompatible with a considerable degree of comfort and usefulness, for a limited period.

The conditions of this period, we are to take particular notice of, as it is the true pretubercular period.

We very commonly meet with cases in which the vesicular murmur is entirely absent, except in forced inspiration.

In women, this is very often the case, as a result of tight clothing, with the outward and upward movements of the chest, and the murmur can not be produced in the lower lobes of the lungs until the constriction is removed.

We often hear the expression "weak lungs," as ap-

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