In Rossbach's apparatus, the chest was compressed backward against the back of the chair, while in this there is a more even compression of the thorax in all its parts, and this jacket can be used, not only in the sitting posture, but either lying down, standing, or even during exercise by walking. Of course, the great aim is to aid expiration. However, the movement backward of the arms during inspiration undoubtedly aids the act of breathing, not only by freeing the chest from the previous compression but by the more natural position assumed for inspiration. The kinds of breathing it would seem best to practice with this devise are slow measured inspirations with as complete emptying of the chest as can be comfortably borne, say twelve or fifteen breaths per minute, for as many minutes at a time, three times a day. I believe that a return of the normal resiliency of the emphysematous lung, and the clearing out of the muco-purulent contents of bronchial dilatations, can be favored by the systematic use of this apparatus. The opportunities I have had of trying it decidedly warrant this statement, and I trust any of you who try the Portable Lung Compressor will have the same experience.

BURNS OF THE EYES.

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Burns of the eyes are entitled to especial consideration when they affect the conjunctiva or cornea. They should be classified according to cause, and extent. The ophthalmic surgeon seldom sees the patient whose eyes have been burned by caustic alkalis or acids in time to employ chemical antidotes, yet these are too often neglected by those who have the opportunity of seeing such cases at the moment of occurrence.

In order to draw practical conclusions, it will be necessary to enter somewhat into the details of this part of the subject, and, if I inadvertently indulge in some adverse criticism of my peers, who have written authoritatively upon this subject, I beg that my clinical observations be taken as sufficient warrant for the personal conclusions to which I may invite your attention. Professor Noyes (p. 266) directs attention to the especially destructive agency of the fulminate of mercury, used in percussion caps, cartridges, torpedoes, etc., and which boys are prone to use somewhat recklessly. The great extent to which burns from this source usually penetrate the tissues, may be accounted for, both by the intense explosive force with which the heated particles are driven into the eyes, and the very fine amorphous division of these particles. A deep slough almost invariably follows burns of this kind, and the treatment of the eyes so injured must be conducted with reference to this fact; because, a slough, of any extent, leaves a raw surface, which, by contact with the opposed mucous membrane, will, in time, become adherent. The particles of the fulminate may be accompanied by insoluble matter, and thus produce permanent stains in the cornea.

Quicklime frequently flies into the eyes of plasterers and others engaged in handling it. Its destructive effect is very rapid, and may be partially coun-

teracted by the instantaneous use of vinegar, which converts a portion of the lime into the comparatively harmless acetate; the remaining portion should be removed by instrumental means.

Ammonium, in the form of the caustic liquor, or the carbonate, produces very painful caustic effects when spattered into the eyes, and may be quickly neutralized by a few drops of vinegar, or any mild acid, such as lemon juice.

Nitrate of silver is a dangerous caustic, yet it is almost in constant use by thoughtless surgeons, who imagine the destruction of the surface of the inflamed mucous membrane, in some mysterious way, arrests the inflammation. Knowing full well the destructive action of this potent agent, the surgeon who employs it usually provides himself with a saturated solution of chloride of sodium, and, on applying the silver, he washes off the excess from the surface of the membrane. The coagulum, characterized by the appearance of a white film, is quickly brushed over by a little of the solution of the chloride of sodium, which precipitates the insoluble chloride of silver, leaving a thin eschar to separate by the ordinary process of sloughing. This is no less a burn than that following any other agent producing destruction to the same degree and extent. This process being repeated, involves, of course, the development of a constantly increasing amount of cicatricial tissue, proportioned to the depth and extent of the cauterization.

Sulphate of copper, for nearly half a century in almost constant use, has, like the nitrate of silver, done incalculable damage to the human family, as a caustic. The depth and extent of its action is much less than that of the silver; but it does unmistakably provoke parenchymatous inflammation, when frequently applied to the conjunctiva. It produces likewise such destruction of the corneal epithelium as to create an opaque film which permanently impairs the acuity of vision.

Dr. O'Halloran, in the first chapter of his "Remarks on Acute and Chronic Ophthalmia, and on Remittent Fever," published in London, 1824, speaks of bluestone being used with great efficacy and safety in the treatment of inflammation of the conjunctiva, and states that he had treated hundreds of cases of chronic corneal and conjunctival diseases by the direct application of bluestone to the inflamed membrane. Although it had been used before, yet these remarks, from an eminent army surgeon, led the profession to an indiscriminate use of it as a caustic, which I regret to say has not even yet been abandoned.

Caustic potassium, in the form of concentrated lye, is frequently introduced into the eyes. It is instantaneously destructive, and should be treated at the instant of occurrence by free ablutions of vinegar, followed by a weak lotion of chloride of sodium, to be more particularly explained presently.

Mr. James Dixon, of London (p. 68), in the third edition of "A Treatise on Diseases of the Eye," 1866, and in the Section on Ophthalmic Surgery in Holmes' System of Surgery, 1881, strongly recommends the use of liquor potassium for the destruction of hypertrophied papillæ. He says: "The fluid is dabbed upon the everted lids, so as to be fully brought into contact with the whole surface, and it appears to act by saponifying and dissolving away the hypertrophied tissue." He says it should be used every few days for a period of about six weeks. This explana-

tion by Dr. Dixon, of what he supposes to be the therapeutic action of the caustic, shows exactly how all alkaline caustics act in destroying the conjunctival membrane and the cornea.

Fused metals are, perhaps, of all other causes of accidental burns, the most dangerous and frequently encountered. The momentary treatment should, of course, consist in the removal of the particles of the metal.

Burns by steam, and boiling fluids, have no chemical antidotes, and require, therefore, no chemical treatment at the instant of occurrence.

Now, in general terms, permit me to say, the results of all these and similar injuries are modified, more or less, by early treatment. Those which occur in the hands of the surgeon, as nitrate of silver and sulphate of copper, are happily becoming less frequent. Less than a month ago, however, I was consulted by a brother practitioner in this city in regard to an old gentleman 70 years of age, who had chronic blepharitis, and who had been subjected for a long time to the almost daily application of sulphate of copper, in the hands of a physician. The retrotarsal conjunctiva had become a swollen mass of callous tissue. The corneal epithelium had been destroyed, and with it the underlying anterior elastic layer, throughout the extent of the whole surface, in both eyes. Having become discouraged, he remained home for a few days, when the pain, becoming so intense, he was obliged to summon other medical counsel. The physician called sought my aid in consultation. The treatment suggested consisted in the use of 1 gr. of bichloride of mercury, and $\frac{1}{2}$ oz. of chloride of sodium, to a quart of distilled water, to be used every hour to keep the eyes cleansed from accumulating excretory matter. To relieve tension, 1 gr. of sulphate eserine, dissolved in 1 oz. of distilled water, was directed to be instilled into each eye every four hours. The patient being of the rheumatic diathesis, salicylate of sodium, 10 grs. in a goblet of water, every four hours, was employed. He has made slow but steady recovery; and whereas he was unable to count his fingers when I first saw him, he now goes about alone. The amount of corneal opacity, however, is such that he will not likely be able to see to read again. I will not burden you with a citation of cases of destructive cauterizations by sulphate of copper, and nitrate of silver; but they are, I assure you, sufficiently numerous to invite most earnest inquiry into this terrible and misguided method of treatment. Now, one of the main features I had in view concerns the treatment of every class of burns of the conjunctiva, and the cornea, which are sufficiently intense to cause abrasions of the surface. In no case should the eye be closed, where it is possible to keep it open. The use of oils, and especially of castor oil, so much in favor in the profession, produces, in all cases, an increase of irritation. Whenever any mucous membrane is wounded and it becomes necessary to make local applications to it, the chemical composition of the fluids covering that membrane, in its normal condition, should be considered, in devising the plan of local treatment. Now, as is well known, the conjunctiva in its normal state is constantly bathed in a fluid rich in the chloride of sodium, and so this salt should enter into nearly all local applications designed to remove offending matters. The reason no kind of bandage should be employed is obvious, as its use must neces-

sarily favor the occurrence of attachments between the lids and ball. A case in point is that of Mrs. M., of New Albany, who in some manner got a quantity of boiling water into the left eye. She was opening a can of concentrated lye at the time, and placing her finger in the lye, instantly put this finger into the eye in such a way as to leave large quantities of the crystals lodged between the lower lid and the surface of the ball. A druggist next door used ablutions of vinegar, washing away the excess of potassium, and thus limiting the extent of the burn. The family physician arriving, used castor oil as recommended in the books, and applied the cotton compress. The pain was most excruciating, and he gave hypodermic morphine. After twenty-four hours of this kind of treatment, I was called.

I removed the dressings, washed the eye with a solution, as follows:

R. Borate of sodium, 5ijss.
Chloride of sodium, 5ss.
Distilled water, 3xiij.
Camphor water, 3jv.

This application relieved the pain almost instantly, and by renewing it every hour, the patient was comparatively comfortable. The next day she was able to visit me at my office. The slough involved a large extent of the lower portion of the cornea, perforating at the inferior margin. Before the period of perforation I directed a solution of eserine, one grain to the ounce of water, dropped into the eye every four hours. Keeping the pupil contracted, prevented the iris flowing into the open wound of the cornea. When the perforation took place the eye was closed with a little cotton wool, and a piece of plaster, just enough cotton being used to keep the plaster from adhering to the eye-lash. In about forty-eight hours the dressing was removed, and the corneal wound found closed; adhesions had taken place between the lower lid and the surface of the ball. Passing a probe under the adhering portion, separation was produced, and a little ointment of yellow oxide of mercury placed between the lid and ball, smoked glasses being used, and the eye left open. In this manner the treatment was carried on until complete cicatrization resulted.

Where burns are so extensive as to make it impossible to prevent adhesions between the lid and ball, these may be greatly modified by leaving the eye open, and daily separating the opposed abraded structures with a probe anointed with a little yellow oxide of mercury ointment.

I will not tire your patience with a further recital of cases; but wish to remark, in conclusion, that no injury to the eye, in the nature of a burn, should be treated by a bandage and compress; yet this plan is recommended by Nettleship, Juler, Carter, Meyer, McNamara, and I believe nearly every writer on Ophthalmic Surgery.

SALICYLATE OF LITHIA.—Dr. Vulpian states that salicylate of lithia is more efficacious than salicylate of soda in cases of acute and progressive subacute articular rheumatism. It also has some effect in chronic cases when a certain number of the joints are still deformed, swollen and painful.

NITRATE OF SILVER FOR WEEPING ECZEMA.—Dr. Leven (*Therap. Gaz.*, Feb. 15, 1892, p. 114), recommends the use of a one per cent. solution of nitrate of silver in obstinate cases of weeping eczema. Several applications are to be made during the day, the part to be covered with a bismuth ointment in the intervals.