

PHOTOGRAPHING THE LARYNX.

An endeavor has many times been made to photographically reproduce the image of the larynx that is given by the laryngoscope. It was in 1862 that I, for the first time, occupied myself with experiments of this nature, in company with my regretted colleague, Prof. Czermack, who was so prematurely torn away from his scientific researches. For obtaining photographs of the larynx, we at that epoch employed reflected solar light, and, as Prof. Czermack placed the camera at a distance of from three to six feet from the subject to be photographed, we obtained photographs of the larynx 0.08 of an inch in diameter.

A long time afterward (in 1874), upon taking up the same subject again, I had recourse to the same light, but with a camera that had been especially constructed for the purpose (Fig. 1). The apparatus that I employed at that time are described in my treatise entitled "La Lumiere au Service de la Recherche Scientifique." Since then, various laryngologists have occupied themselves with the photographic reproduction of the larynx, and in the front rank of these must be mentioned Dr. T. R. French, of Brooklyn, N. Y., who, in *Laryngology* (October, 1883), has described a photographic laryngoscope that permitted him to come nearer to a solution of the problem, but one in which he still had recourse to reflected solar light. The principal improvements introduced by Dr. French consisted in connecting with the laryngoscope a small camera, but one which was still too large, and which he held in the hand, while he introduced into the patient's throat a large wire soldered to the objective and carrying the laryngoscope. A condenser threw the solar light upon a second concave reflector fixed in front of the operator, and from this mirror the luminous rays entered the throat.

In recent times the arc electric light also has been employed for illuminating and photographing the larynx. The light, by means of powerful reflectors and condensers, is thrown into the throat of the subject, and, with an arrangement like that shown in Fig. 1, we succeed in getting photographic reproductions.

There appeared last year in England a publication entitled "Voice, Song, and Speech," by L. Brown and E. Behuke, which contains some very remarkable photographs of the larynx taken from nature. The apparatus used by the authors consisted of (1) a 10,000 candle electric lamp; (2) a glass trough with parallel faces, through which were passed the concentrated rays of the electric light, and which was continuously traversed by a current of cold water designed to absorb

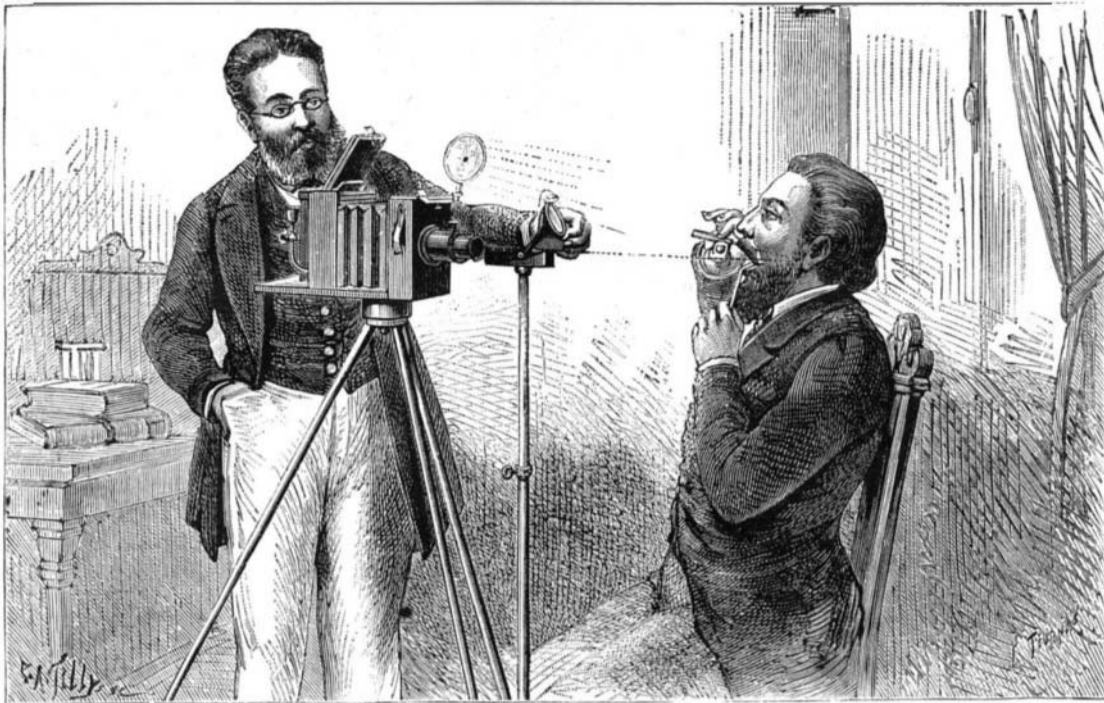


Fig. 1.—PHOTOGRAPHY OF THE LARYNX.

the heat rays; (3) of a large condenser formed of plano-convex lenses; and (4) of a plane mirror that reflected the rays into the buccal cavity of the subject. For

as soon as the armature, *r*, of the electro-magnet, *c*, is attracted. At this moment the finger, *i*, becomes free, and the disk revolves with great speed around its axis until *i* again engages with the armature, *r*, this taking place when the aperture has returned to its starting point. At the moment the aperture, *t*, is passing before the aperture, *s*, there occurs a short instant of exposure. If the light be too weak and the exposure must last longer, it is only necessary to press the button, *n*, for a longer time. This button sends the current not only into the lamp, but also into the electro, *c*, placed in a derived circuit (Figs. 4 and 5).

As long as the button, *n*, is pressed, *t* will remain opposite *s*, seeing that the finger, *m*, is always engaged with the projecting part of the armature at *n*.

As soon as the button, *a*, is pressed (Fig. 3), the electric circuit is closed, the lamp, *m*, is lighted, and, at the same instant, the electro-magnet (Fig. 4) opens the objective, so that a photograph of the larynx is taken automatically. If the light be intense enough, it will suffice to press the button, *a*, but an instant. If the gelatino-bromide plates are not sensitive enough, it will be necessary to press the button for a longer time. As, moreover, the electric light is produced only at the moment at which the circuit is closed, it is absolutely useless, when the work is being done in a dark room, to have recourse to a device for

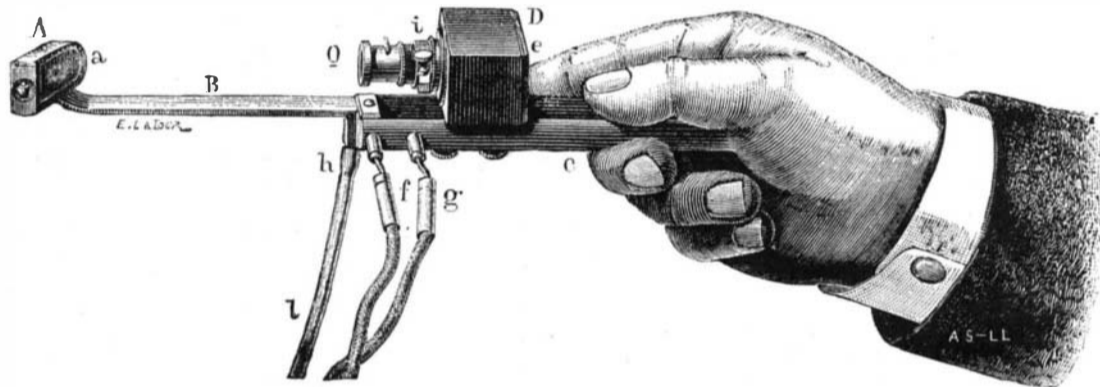


Fig. 2.—APPARATUS FOR PHOTOGRAPHING THE LARYNX.

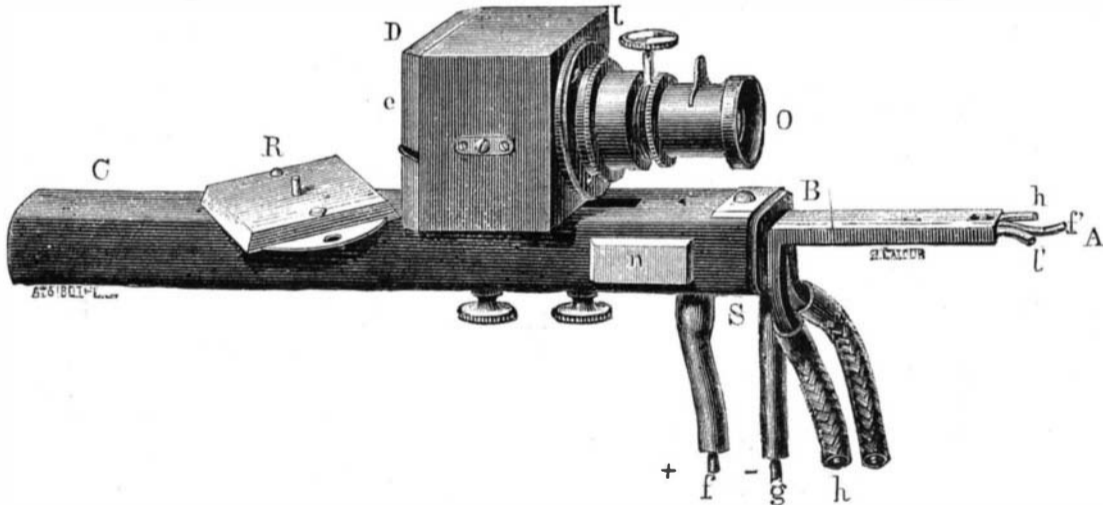


Fig. 3.—THE CAMERA—ACTUAL SIZE.

these reproductions it always took two physicians, two photographers, and one electrician. The results obtained were remarkable. But all such manipulation, which is tiresome to the highest degree, as well as costly, could be applied only in very rare cases. We meet here again another inconvenience: The source of light is not connected in an invariable manner with the laryngoscope, and so the rays that it emits are neither regular nor always intense in the same plane; and, on another hand, on account of the too great distance of the focus of the objective, the image of the larynx is always produced upon a relatively small scale, say about 0.06 inch in diameter.

The problem that I proposed to myself was, therefore, the following: To connect the camera, laryngoscope, and source of light, and give them as small dimensions as possible. In the apparatus shown in Fig. 2 I think that I have solved the problem. Here A, B, C is a laryngoscope constructed according to the principle of Nitze and provided with an electric lamp, *m*, and a circulation of water, *h l*, and the handle of which is connected with a camera, D. This latter is provided with a small objective, ●, of 0.2 inch aperture and 1.6 inches focal distance. Exceedingly slight movements of the objective permit of fixing, once for all (for the same person), upon the ground glass, *e*, of the camera the image, *a*, of the larynx that is produced upon the mirror, A, of the laryngoscope. The small incandescent lamp projects its intense light upon the larynx. The light of this lamp (of from two to five candle power) exerts, according to the law of the square of the distance, a

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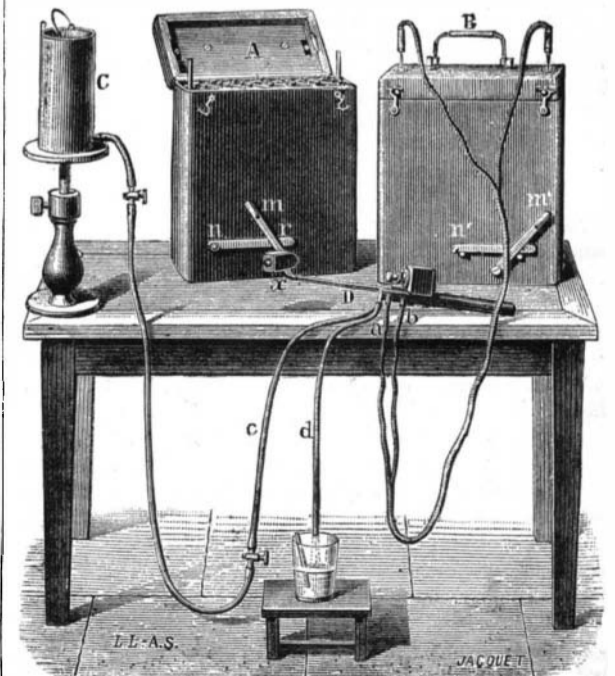
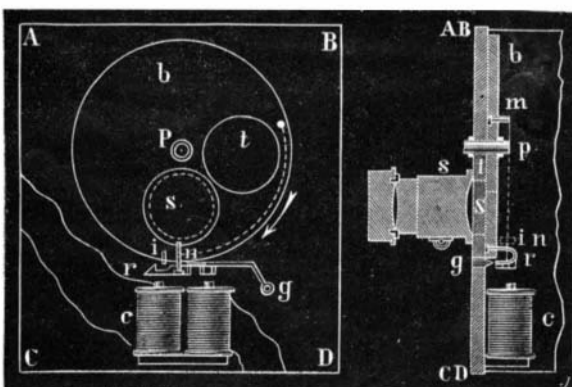


Fig. 6.—GENERAL VIEW OF THE APPARATUS.



Figs. 4 and 5.

closing the objective. In fact, as soon as the pressure at *n* ceases, the electric light is extinguished at *m*, and consequently the operation is interrupted.

Fig. 6 shows the general arrangement of the apparatus. A represents the small battery open; B, the same closed; and D, the laryngoscope; *a* and *b* are the conductors, and *c* and *d* the tubes through which the cold water circulates. This latter is derived from a small reservoir, C, placed a little above the apparatus, and circulates through the tubes during the whole time the operation is being performed. The small camera, which is shown of actual size in Fig. 3, is not represented in Fig. 6.

In the construction of this apparatus I am convinced that I have, in the simplest manner, and by electric processes, solved the problem of photographing the larynx, and that I have rendered a service to pathologic science. Many affections of the larynx, in fact, become modified from day to day, and it is of interest to have an apparatus that permits of following and controlling these pathologic modification, step by step.—*Theo. Stein, M.D., in La Lumiere Electrique.*

Construction of Observatories.

In the construction of buildings devoted to the purpose of astronomical observations, the most important requisite is to provide against the effects of vibration on the apparatus. Any contact with the floor or other portion of the building would not fail to produce, upon the slightest movement, concussions which, multiplied by the magnifying power, would render the telescopes useless. The mode of adapting the building for its peculiar use is by rendering it independent in all its parts of the piers upon which the instruments are fixed. The foundations of the latter are also laid as deep as possible, in order to obviate the effects of vibration from external causes, against which, however, it is not always practicable to guard, the mere tread of a foot passenger being often sensible to an observer using a powerful telescope at a considerable distance.

AN IMPROVED CUFF FASTENER.

This invention relates to a device essentially different from cuff fasteners heretofore introduced, for it is not intended to fasten the cuff to the shirt sleeve or band, but to the lining of the coat sleeve, so that when the coat is removed the cuffs remain attached to it, and they may always be adjusted to give the desired show beyond the end of the coat sleeves, regardless of the length of the shirt sleeves. The construction and application of the fastening will be readily understood by reference to the accompanying illustration, Fig. 1 showing it attached to the cuff, with the fastening pins ready to adjust on the coat sleeve, Fig. 2 showing the hold of the pins on the sleeve lining, and Fig. 3 the simple device itself, made of folded flat spring metal. This device, as will be seen, can easily be made to form a positive lock with the two rear button holes of the cuff, and the back or free end of the lower spring leaf is made to form a stop to prevent the cuff from slipping unduly backward after the fastener has been adjusted.

The above invention has been patented by Mr. James J. Fay, 42 North Sixth St., New Bedford, Mass.

The Armored War Ship Useless.

A French marine officer argues in the *Nouvelle Revue* that the armor-clad ship is as completely obsolete as the old three-decker, and in any future war no iron-clad should venture to put to sea till all her opponent's torpedo boats had been destroyed. For this reason no more money should be spent on the construction or keeping up of armor-clad vessels, and even those in progress should be abandoned. The best type of boat is one almost invisible, and quicker than the largest sea-going vessels. France possesses several that have proved themselves very successful, but should have at least 400.

Those existing are registered at 46 tons, and carry coal for 1,000 miles at medium speed. In case of need they could steam 22 knots per hour, are armed with

four torpedoes, and cost \$35,000 each. Ten vessels somewhat larger are now being constructed. The best type of sea-going torpedo boat should be about 131 ft. long or less, and about 12 ft. wide; she should be manned by 15 to 18 men, should carry provisions for 12 to 15 days, and coal for 1,500 to 2,000 miles. She should be able to steam 22 to 25 miles an hour, and be



RIBBLE & SAMMIS' BABY CARRIAGE.

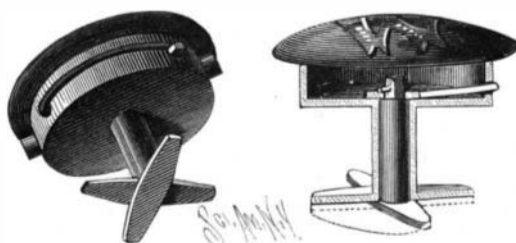
armed with six or eight torpedoes and one machine gun. The cost would be from \$60,000 to \$75,000. As a great nation's fleet should not consist entirely of torpedo boats, however, a concession is made in favor of vessels auxiliary to them, but it will be the part of the torpedo boat in case of war to sweep all vessels of the enemy whatever from the surface of the ocean, both iron-clads, cruisers, transports, and merchant vessels, and this mission it will perform without let or hindrance. The fleets of transports, packed with troops, will fall an especially easy prey.

Modern Miracles.

People who suffer will fly to anything for remedy—even to patent pills, spiritualism, and pilgrimages. Referring to the methods resorted to for curing the crippled and sick, *The Graphic* (London) says that at Fecamp 150,000 quart bottles from a so-called holy spring are sold yearly; at Lourdes the retail business in water is twice as large, and the grotto is hung with the crutches of hundreds of people who are said to have come lame and to have gone away jumping. In some cases these cures have been quite genuine, for a strong nervous excitement will unquestionably do wonders. Not long ago, a man who was suddenly seized with delirium in one of the London hospitals leaped up, and began slashing at the patients in the beds all around him with a knife. One patient, who had been lying helpless for days under a stroke of paralysis, as it was believed, got so frightened that he recovered the use of his legs, and bounded down stairs with most gratifying agility. A man endowed with strong will power may exercise ascendancy over weak willed folk, and cause them very rapidly to shake off a nervous disorder.

IMPROVED SLEEVE OR COLLAR BUTTON.

The illustration herewith shows a novel device for sleeve or collar button, which has been patented by Mr. Joseph Wall, of Greenville, Miss. (Lock Box 109.) From the cap is a tubular downwardly-projecting stem, with a cross-piece at its lower end; within this tubular stem is an inner stem, having also a cross-piece at its lower end, and at its upper end a spring arm that engages with a notched lower edge of the cap. The working of the spring arm in the side of the cap, with the notches where it rests at either end of the slots in which it works, may be readily seen by the engraving, the dotted lines in one view also showing the arrangement of



WALL'S SLEEVE OR COLLAR BUTTON.

the cross-pieces before and after insertion, the device making a button which can be inserted easily and rapidly, and will be held securely in place.

A WRITER from Fiji remarks that when flocks of terns and other sea fowl rest upon the sea in great numbers the water becomes smooth, and there is "not a ripple to disturb them." This is ascribed to oil emitted by the birds.

IMPROVEMENT IN RUNNING-PART OF BABY CARRIAGE.

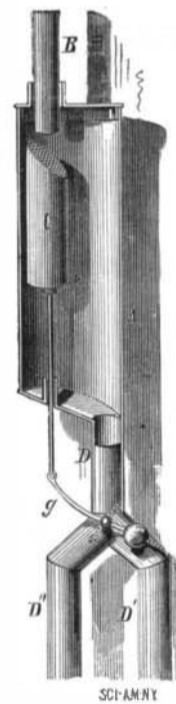
The great variety in which coaches for the little ones are now furnished shows that the makers have kept pace with that progress which has given us railway sleepers and palace cars. The illustration herewith shows a recently patented invention in this line, whereby the running gear is so arranged that the front wheels of the carriage may be turned to either the right or left, as desired, by the person who is guiding it from the rear. The device to effect this consists of a lever pivoted on the back handle, and extending by a right angle to a pivot in a loop hung from the rear axle, so that by slightly moving the hand on the handle the lever will cause the front axle to turn on its axis, to change the direction of the carriage, as represented in the illustration. This invention renders much easier the running of baby carriages, especially in the larger sizes, adapted for two children. The patent therefor has been issued to Messrs. H. M. Ribble and J. W. Sammis, and those who wish further information in relation thereto should communicate with Mr. Harry M. Ribble, P. O. Box 276, Dover, N. J.

The Biggest Gun Yet.

Preparations are making at Woolwich Arsenal for the proof trials of an enormous gun that is now in process of construction at Elswick, and will be delivered a few months hence. It will weigh 110 tons, and have a carriage of 90 tons, the total weight of 200 tons, being considerably in excess of previous undertakings. The gun will be a breech loader, and have a bore of 16 inches. Its length will be 43 feet 8 inches; but its extreme diameter at the breech will be only 5 feet 6 inches, and it will have a very elongated chase or barrel tapering down to 28 inches, with a slight swelling at the muzzle.

AUTOMATIC CUT-OFF FOR CISTERNS.

In the device herewith illustrated, which has been patented by Mr. John S. Heaton, of Shelbyville, Ky.,



provision is made for first using falling rainwater to wash off the roof and carry away dirt and impurities, after which the current is automatically turned to the cistern, the water not needing straining after the roof has been washed by the rain first coming down. In our engraving, A represents a sort of diminutive reservoir receptacle, considerably larger than the inlet pipe, B, from the roof; C is an upright cup, with slanting wire covered top, immediately under the inlet pipe. D is the outlet pipe, connecting with the waste pipe, D', and the cistern pipe, D". The water, striking the inclined top of the cup, C, on first entering, is largely diverted to pass through D', taking with it the leaves and other foreign matter which may be carried along from the first washing of the roof; but when a certain quantity of water has entered the cup, the additional weight causes it to fall, reversing the valve connected by the arm, *g*, with the rod of the cup, and turning the stream into the cistern pipe D". The weight on this valve should be always more than that of the cup empty, but it can be so adjusted as to pass off more or less water as desired through the waste pipe before turning the pure or clean water into the cistern. When the water ceases to enter the apparatus, the cup will gradually be drained of its contents, and raised by the action of the weight, when the automatic valve will again adjust itself to shut off the first coming water from the cistern, as at starting.

Division of Power.

The old time notion of one immense central engine to furnish power for an entire large establishment is getting out of date. The change is to independent engines for each department, so that one may be stopped for repairs, or from slackness of work, while another may be run without carrying the load of the connecting shafting and pulleys. This is true economy, for sometimes the requirements of a really large establishment may be met by the power of a small engine—perhaps twenty horse power—serving for an establishment that requires in its entirety not less than one hundred and fifty horse power. It is best, also, that the steam should be furnished by independent boilers, and not from one battery of central boilers. In short, the change demands, for convenience and economy, the existence of separate engine and boiler plant for each department, the whole to be connected if required.