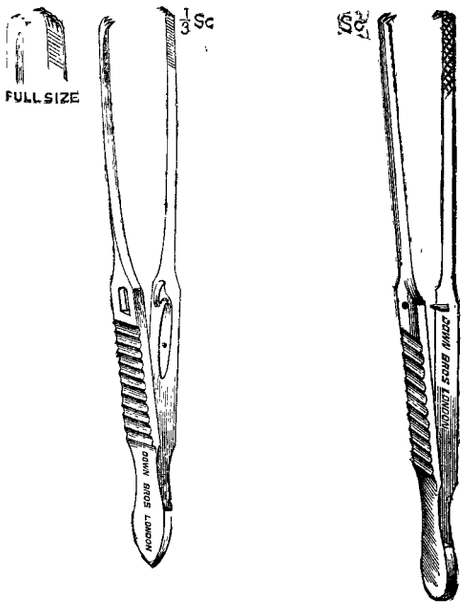
only. Then by vocal exercises phonation must be made as perfect as it can be.

3. *Harelip.*—Many children with cleft palates are also afflicted with harelip Contrary to universal custom I leave the latter untouched till the fissure in the palate has been closed, since it affords a larger aperture and renders the cleft very much more get-at-able and the operation correspondingly easier to perform perfectly and with a minimum of damage to the soft parts than it would be if the harelip was treated in the first instance. I do not pretend to obtain the same results in the treatment of harelip as are apparently got by some surgeons,

FIG. 33. FIG. 33 A.



Forceps with terminal teeth for manipulating the flaps while the incisions are being made.

if one can place any reliance whatever upon the diagrams which they use to illustrate their methods of procedure. These, I fancy, are purely imaginary, since they appear to be able to restore the imperfectly developed lip to its normal form and to its relationship to the lower lip. My experience is that, excepting in slight cases, the upper lip always remains smaller than normal and disproportionate in size to the lower. In some few cases I have obviated the relative loss by filling in this gap by a flap obtained from the lower lip, with which it remains continuous till it has united firmly to the upper. I would point out also the advantage of passing all the sutures through the lip from within outwards, since by so doing the margins of the cleft can be brought into firm and accurate apposition, and are enabled to control the hæmorrhage without scarring the skin surface, as is frequently done when the sutures pass through the skin in the usual manner.

FIG. 34.

Represents a case of double harelip with considerable forward displacement of the premaxilla.

Besides, they can be left in much longer, as their presence causes no discomfort and retains the raw surfaces in accurate apposition. The scarring of the lip was a more marked feature when the old-fashioned harelip pins were employed.

There is a form of cleft palate combined with double harelip in which the premaxilla is attached to the under surface of the septum of the nose immediately behind its tip (Fig. 34). In such cases I have found that the most satisfactory procedure is to close one of the fissures in the lip in order to supply the premaxilla with blood-vessels from a source other than the septum. When this has been effected the premaxilla can be cut away from the septum, the mucous membrane covering it and the corresponding surfaces of the jaw can be removed, and the bone being trimmed and replaced can be wired securely in position. The remaining fissure in the lip can then be closed, but by leaving it open till this period more room to work in is obtained and the details of the operation on the septum, &c., can be carried out with greater facility and accuracy.

Cavendish-square, W.

BURNS FROM CELLULOID.

BY ALEXANDER OGSTON, LL.D. GLASG., M.D. ABERD.,
CONSULTING SURGEON TO THE ABERDEEN ROYAL INFIRMARY; REGIUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF ABERDEEN.

BURNS from celluloid seem to be by no means uncommon. The *Weekly Scotsman* of Jan. 19th, 1901, page 3, mentions an accident of this nature in which a woman, "kneeling in front of, but by no means very near to, a clear red fire, and having an imitation tortoise-shell comb in her hair on the top of her head, became conscious of a smell of burning and a very disagreeable vapour around her, and on putting up her hand found that her head was on fire. She poured water over it and got it out, but not before a great deal of her hair was burnt. There was no other light but the fire, and it was not a case of sparks. The comb must have ignited of itself." The same paper mentions the case of a "girl at Peckham whose imitation combs caught fire exactly in the same way and who died in a London hospital 24 hours later from the injuries received"; and also of a "married woman at Newport who only last week lost the sight of both her eyes from a similar accident." It concludes a short article on the subject thus: "I may mention another fruitful source of danger—the celluloid collars which many children wear, and some adults too ..... they are fearfully inflammable. The hot ash from a cigarette, cigar, or pipe falling on them sets them in a blaze at once, and as they are tightly fastened round the throat it is almost impossible to remove them before serious injury has been inflicted. A leading medical journal some time ago cited several accidents which had arisen from this cause."

Dr. Irvine Fortescue, assistant professor of surgery, has collected for me the following references to celluloid burns which have appeared in the leading English medical journals during the past 10 years:—

1. THE LANCET, March 26th, 1892, p. 708. Experiments with articles made of celluloid. Portions placed 18 inches in front of a fire swelled and gave off dense fumes at 110° C. (230° F.). Artificial ivory acted similarly at 145° C. (261° F.). The writer (anonymous) suggests that celluloid should be made non-inflammable by the addition of some chemical.

2. THE LANCET, May 15th, 1897, p. 1386. A boy wearing a collar made of celluloid, tied with a string, having no knife to cut the string, attempted to remove the collar by burning the string. The collar ignited and lighted drops of the composition fell on his clothing. His throat and face were badly burned.

3. THE LANCET, May 22nd, 1897, p. 1426. Artificial ivory, horn, &c., are nitro-compounds and are almost explosive. Accidents from this cause are increasing.

4. THE LANCET, May 29th, 1897, p. 1481. Fires in Paris due to kinematograph films igniting.

I have myself been made acquainted with several cases of what appeared to be the almost spontaneous ignition of celluloid hair-combs, the one which impressed me most, as having been attended with the severest results, being that of a patient of Dr. L. B. Beddie of Fraserburgh, who, when seated in a drawing-room before a fire which, though burning well, was not unusually strong, found her head enveloped in smoke and flame from the ignition of a comb amongst her hair, and before the flames could be extinguished had a portion of her scalp destroyed over an area of, perhaps, four by one and a half inches. The burn was of the third degree, took many months to heal, and resulted in the total destruction of the hair over the injured area.

Having received information about the same time of several similar accidents, of which I need not give details, where women's and children's hair was set on fire by celluloid combs while they were seated, perhaps drying their hair, in front of ordinary fires, none of which cases fortunately proved so severe as that just reported, I requested the assistance of Professor Japp, professor of chemistry in the University of Aberdeen, as to the ignition point of articles sold as celluloid and generally as to what was known on the subject. This he most kindly gave me and to the following effect. His experiments were mostly made with pieces of combs worn by Dr. Beddie's patient and identical with that by which she had been injured. Professor Japp wrote as follows:—

I have ascertained, as nearly as it can be done, the ignition temperatures of the two specimens of celluloid—light coloured and dark coloured—which you submitted to me for examination. I cannot detect any difference in their behaviour on heating, but they are both unduly sensitive to heat. On dropping small pieces into a test tube heated to a perfectly constant temperature of 270° F. they began to swell up and froth, and within one and a half minutes from the beginning of the experiment they suddenly decomposed with a puff of smoke, leaving a charred residue. On one occasion I succeeded, by gradually raising the temperature, in inducing this sudden decomposition as low as 264° F., but this difference is very slight; moreover, in this way of performing the experiment much depends on the rate at which the temperature is raised; if this is done very slowly one may effect a slow decomposition, and the residue is not charred.

The following data with regard to the action of heat on celluloid are taken from the "Journal of the Society of Chemical Industry," vol. x., p. 564. They will show you that this substance is expected to exhibit greater stability than the foregoing specimens: "At 194° F. it becomes very plastic, further heat softens it, and at a temperature of 285° F. it decomposes into pyroxyline and camphor aldehyde. At 383° F. the decomposition is instantaneous, the nitro-cellulose inflames, and the camphor is vaporised." Your specimens therefore exhibit this sudden decomposition more than 100 degrees lower than properly manufactured celluloid.

I thought I would examine at the same time a celluloid hair-pin which I obtained from a member of my family. In appearance the celluloid was indistinguishable from your dark-coloured specimen, but it stood a constant temperature of 270° F. for 15 minutes without showing any change beyond slight swelling up and giving off a little camphor with a mere trace of nitrous fumes. There was no trace of the sudden decomposition which your specimens showed almost immediately under the same conditions.

Of course, even the lowest of the ignition temperatures which I observed with your specimens is far above what would prevail at a distance of six feet from an ordinary fire. But it is a matter of common observation with unstable and explosive substances that they occasionally explode, or ignite—as it were, by mere chance and when they are not wanted to—under conditions that, when one is experimenting with the substances, would appear to ensure perfect safety. In the case of substances like celluloid this is readily explicable, as they are mixtures of variable composition, and they give way at the weakest point. A badly manufactured piece communicates its instability to the whole.

Professor Japp was further good enough to write to Professor C. V. Boys on the subject of ignition of celluloid. The only additional point in Professor Boys's reply is contained in the following remark: "The curious thing about the celluloid button smoulder (it is under the usual circumstances smoulder rather than burn) is that with all the smoke and fluster and stink there is nothing that cannot be put out by blowing sharply upon the place so as to cool it. The instinct, on the other hand, to squelch it by squeezing it all up in the surrounding material, is just the one thing to make it go all the more, as it is then made warmer, and what is more important the hot gases have no free egress, so they envelop the button and a kind of unstable state is engendered which results in a kind of deflagration or slow explosion, burning possibly severely the enveloping hand."

As Professor Japp's scientifically exact laboratory experiments left it open to be supposed that the conditions under which what is sold as celluloid would ignite, might, under ordinary circumstances, when it is exposed to radiant heat and surrounded by substances of varying conductivity, harmonise with both his results and the accidents reported, I performed, with the help of Dr. Fortescue, the following experiments in the rooms of the surgery department.

Experiment 1. Heat in front of a bright fire.—A thermometer surrounded on all sides with air and placed two feet in front of a well-burning fire showing both flames above and red incandescence below, reached a maximum temperature of 120° F. By stirring the fire or otherwise increasing the blaze the temperature could be raised a good deal higher.

Experiment 2. Heat increases in the presence of an absorbing substance.—If placed in the same position as in Experiment 1, with a backing of brown American cloth in contact with it behind, the thermometer registered 152° F.

Experiment 3. Horse-hair further increases heat and affects celluloid.—If similarly placed and backed with black horse-hair cloth the thermometer marked 171° F. A piece of the celluloid comb which burnt Dr. Beddie's patient, placed in contact with the horse-hair, swelled and became white and spongy at this temperature.

Experiment 4. A steel pin further increases heat and ignites celluloid.—A portion of the same comb, placed under conditions similar to Experiment 1 against the steel of a hat-pin which Dr. Beddie's patient was wearing when her accident occurred, the steel likewise touching the thermometer, ignited and left a black ash at the moment the thermometer registered 200° F.

Experiment 5. Effect of wrapping celluloid in black hair.—The thermometer and a third portion of the comb were enveloped in a small lock of the hair (black) of Dr. Beddie's patient and exposed as in Experiment 1. The celluloid burnt when the thermometer marked 180° F.

Experiment 6. Variability of igniting point of celluloid.—On repeating Experiment 5 a fourth piece of the same celluloid comb ignited only at 220° F.

Experiment 7. Effect of wrapping celluloid in fair hair.—The thermometer and a fifth portion of the comb were enveloped in a lock of a child's (fair) hair. The celluloid burnt at 167° F.

Experiment 8. Control experiment to Experiment 7, with celluloid alone.—A control experiment under exactly the same conditions as Experiment 7 gave 170° F. as the burning point of a sixth fragment of the comb taken from the spot adjoining that used in Experiment 7, when exposed naked, without being enveloped in the hair.

Experiment 9. Control experiment with good celluloid.—A piece of properly manufactured celluloid, exposed under identical conditions with Experiment 8 in order to control it, only became softened at 170° F.

The thermometrical temperatures in these experiments have only a relative, not an absolute, value.

CONCLUSIONS.

1. It is evident that celluloid articles of uncertain composition and dangerously explosive quality are everywhere sold and are in constant use, and that the conditions under which they may ignite in varying circumstances cannot be fully inferred from experiments regarding their ignition point made in a physical laboratory.

2. Badly manufactured celluloid ignites at variable temperatures, too low for it to be safely used.

3. It also follows, I consider, that restrictions should be imposed upon the sale of all such articles which do not sustain, without ignition, a temperature equal to that sustained by well-manufactured celluloid.

4. It is worthy of consideration whether all celluloid articles of personal wear and such others as might give rise to fires ought not to be compelled to have the word "ignitible" conspicuously imprinted upon them.

5. If the suggestion of the writer in THE LANCET[1] to render celluloid incombustible by the addition of some chemical should be practicable it would be the best solution of the difficulty, and such an addition ought to be made compulsory by legislative enactment.

I owe my sincere thanks to Professor Japp for his advice and criticisms concerning his and my own experiments and to Professor Boys for permission to quote the sentences from his informal letter.

Aberdeen.

A CASE OF HYDATID DISEASE OF THE GALL-BLADDER.

BY LAWRIE HUGH McGAVIN, F.R.C.S. ENG.,

ASSISTANT SURGEON TO THE HOSPITAL FOR WOMEN, SOHO-SQUARE, AND TO THE NORTH-WEST LONDON HOSPITAL; LATE SURGICAL REGISTRAR OF GUY'S HOSPITAL.

THE following case of hydatid disease of the gall-bladder having recently come under my notice I have been tempted to record it as an example of what is, I think, generally acknowledged to be a distinctly rare condition.

The patient was a married woman, 32 years of age, who was transferred to my care in the Hospital for Women, Soho-square, by my colleague, Dr. James Oliver, with the following history. Until 14 years of age she had been perfectly healthy, but at the age of 16 years she suffered somewhat from anæmia (she stated that she had "inflammation of

[1] THE LANCET, March 26th, 1892, p. 708.