"NOSE-OPENING" RAYS

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(With one Figure in the Text)

Dufton and Bedford (1933) have denied the claim made by me (1932) that bright sources antagonise the "nose-closing" rays given off by dull red and dark sources of heat. They are supported by Winslow, Greenburg and Herrington (1934). These five authors have used the same method, viz. the insertion of a well-fitting tube in one nostril of the subject, the connection of this tube with a recording instrument, and the leaving open the other nostril for breathing, the mouth being kept shut.

Now if a glass tube (1 in. long) is selected, which just fits comfortably into a nostril, the opening of the lower end of this tube can be reduced even to one-sixth of the area of the upper end, without making any significant alteration in the breathing of the subject at rest, whose other nostril is connected to the recording instrument and whose mouth is kept closed, so small is the area of the nasal opening required for quiet breathing. The method employed by these authors is then one which is too insensitive to yield results, except in the case of individuals who have the nasal airway considerably obstructed by catarrhal conditions or a deflected septum.

To test all others the use of a screw nose-clip is required, such as is supplied by Messrs Siebe Gorman, Ltd., with their oxygen breathing apparatus. I have stated this clearly, but my critics have not followed my experimental methods. It must also be borne in mind that there is a balance between the powers of "nose-closing" and "nose-opening" rays; the latter cannot be demonstrated if the former are too strong. My critics do not appear to have paid attention to this matter. By the following procedure "nose-opening" rays can easily be shown in the case of many subjects; there are some who appear to be quite insensitive to the action of the rays. A small electric heating coil measuring about 4 by $1\frac{1}{2}$ in. is set up in a stand and by its side is placed a small solid-tungsten-rod arc. The heater is raised to a dull red heat; its energy output is about four to fourteen times that of the varying arc. The sources are screened while a screw nose-clip is fixed on the subject's nose and tightened until the respiration becomes slightly difficult, the airway being left just sufficient for the subject to live on with the mouth shut. The right degree of constriction is important. Round the subject's body is placed a length of flexible corrugated rubber tubing, such as is used in breathing apparatus. This is closed at one end and at the other connected with a recording tambour which is set to write on a slow-moving drum.

A record of the respiration is now taken while the subject keeps the eyes shut or is blindfolded. The screen is then removed and both sources allowed to irradiate the face, while the record of respiration proceeds; no significant change occurs. The arc is now screened. The respiration then, in most subjects, becomes affected. There may be deepened respiration, or frequent shallow respirations, or the breathing may be so far stopped that the mouth has to be

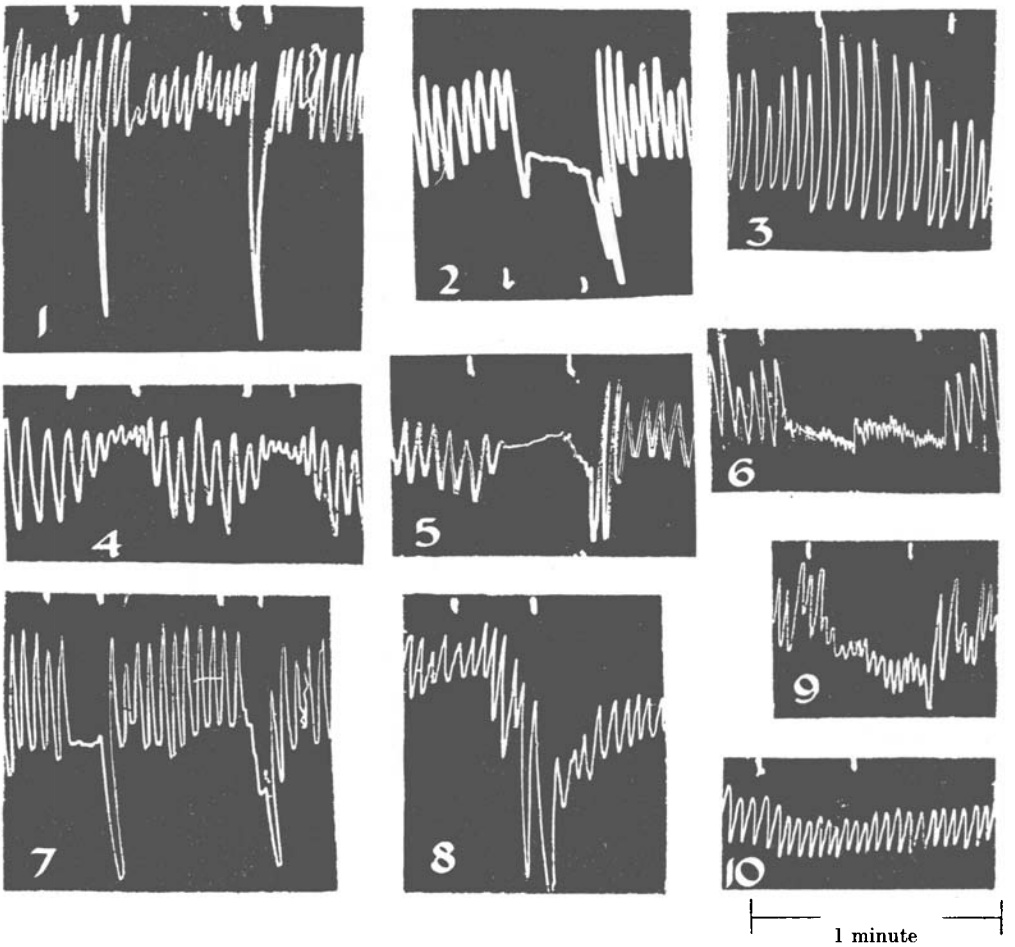

Fig. 1.

opened and deep breaths taken through it. On unscreening the arc the respiration continues as before. The records appended show the effect on different individuals, all members of the staff of the St John Clinic and Institute of Physical Medicine.

The arc was screened between the marks on each record (see illustration).

1. A ward sister, ignorant of the object of the experiment. Mouth breathing had to be resorted to.

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2. A blindfold research worker; breathing obstructed.

3. A porter with partial nasal obstruction, the nose-clip not needed; breathing became laboured.

4. A blindfold research worker; shallow quick breathing.

5. A medical officer with partial obstruction of the nose, nose-clip not needed; breathing obstructed.

6. Hall boy ignorant of the object of the experiment; breathing became rapid and shallow.

7 and 8. Nurses similarly ignorant; mouth had to be opened.

9. Nurse similarly ignorant; breathing quick and shallow.

10. Nurse similarly ignorant; breathing slightly quick, and more shallow.

A convincing way of showing "nose-opening" rays is to expose the subject, with the nose-clip properly adjusted, to the arc only, or to the open sun, and then screen the source with glass. In the case of many of the sensitive subjects the glass screen converts either source into a "nose closer." On the other hand, the glass screen protects the subject from the nose-closing rays of the heating coil.

CONCLUSION

By means of a nose-clip, a small electric heating unit, a tungsten arc, and a record of the breathing, "nose-closing" and "nose-opening" rays can be demonstrated in many subjects.

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