CHAPTER XV

SPECIAL RADIOGRAPHIC TECHNIQUES

15.1 Introduction

There are several radiographic methods which do not belong to the routine work of general X-ray departments, but more or less constitute exceptions. In so far as these involve specific projections and exposures which are not made as spot-films by the radiologist himself, the radiographer should refer to books on positioning to become acquainted with the technique adopted in these cases. These techniques will not be discussed here, nor will the use of special stands, e.g. for positioning the patient for skull exposures etc. In this chapter we will only discuss the other special methods, in general terms.

15.2 Stereoscopic radiographs

The first of the special radiographic techniques to be dealt with here is the stereoscopic technique, the principles of which were explained in detail in chapter IV.

In practice either two cassettes can be used or both exposures can be made on one film. In the latter case one half of the film must alternately be shielded. This can be done most simply by means of a cassette tunnel (fig. 15-1), in which one half of a film is exposed in the first position of the tube and the other half in the second position of the tube (after shifting the cassette along).

Fig. 15-1. Cassette tunnel. The sides (1) are lead-lined, the central position (half the width of a cassette) is left open. With a rod (3) the cassette is pushed through the opening (2) from position I to position II.
It is particularly important to ensure that the tube is shifted in exactly the same direction as the cassette, and not obliquely to it. If their directions of movement are not parallel, the images will not lie properly side by side but will be vertically displaced to some extent, making true stereoscopic perception impossible.

When it is not a question of measuring depths but merely of getting a stereoscopic impression, the tube displacement need not be exactly known; a displacement of about 1/10 of the focus-film distance gives excellent results.

After centring the tube as for an ordinary radiograph, the films are exposed from symmetrically opposite points, each being at equal distance from the central position. Another method that can be adopted, if we wish to keep the first radiograph as a standard projection, is to expose the first film in the central position and to move the tube for the second exposure over the whole distance to the left or to the right.

The application of stereoradiography on the bucky couch is greatly facilitated by the use of a flat lead-lined plank, the "stereoplank". This is made on exactly the same principle as the cassette tunnel, a space being left in the lead equal to half the width of the cassette (fig. 15-2). The stereoplank so simplifies the working procedure that with its aid stereography can easily be applied as a routine method for certain examinations, e.g. for obtaining stereoscopic v-d views of the spine on one 30×40 cm film.

Fig. 15-2. Stereoplank. The sides of the stereoplank (1) are lead-lined while the central portion (half the width of a cassette) is transparent to X-rays. First exposure: focus in position $F_1$, film in position $f_1$. Second exposure: focus shifted to $F_2$, film to $f_2$. N.B. Tube and film are moved in the same direction. 2. Table-top, 3. scatter grid, O. object.

On the right is a stereoscopic pair of exposures showing the lumbar vertebrae. The films should be marked to show which is left and which is right, and which film is intended for viewing by which eye. For this purpose it is sufficient to place the letter $R$ in the top left-hand corner, which indicates that this is the right side of the patient and that this portion should be viewed with the right eye. This double use of a single letter is only possible when both stereoscopic exposures are made on one film.