Custom has much to answer for in surgery. It is my conviction that the practice of fixing the arm to the chest, after operations for the removal of the breast, is a bad custom, and answerable for much of the impairment of utility and of oedema of the arm which frequently ensue.

1. Utility of the arm.—A few years ago I took certain measurements of the axillary region in a number of females, which led me to forsake the adducted position of the arm in favour of the abducted position after the operation, and the results have been uniformly gratifying. Formerly the patients had a limited use of an arm bound to the chest wall by a firm scar, with difficulty in doing the back hair, and impossibility of abducting the arm to a right angle without scapular movement. Now they raise and use the arm with freedom, and reply that they can “do anything with the arm.” One young lady, whose breast I recently removed together with all the thoracic portion of the pectoralis major, quite scorned the suggestion of possible difficulty in doing her back hair or scratching her “poll.” Let us see what are the theoretical considerations which bear upon this question.

When the arm is raised, the armpit is triangular in section, the sides of the triangle being humeral and costal, and the base corresponding to the axillary fascia. When the arm is applied to the chest, the sides of the triangle are apposed and the base is obliterated. The extent of the opening out of the axillary triangle is accordingly governed by the following factors:

In the first place the extent will be limited by the length of the axillary base, just as a pair of steps can be opened only to the extent permitted by the cord.

Another factor in the control of the axillary angle is the proximity of the base to the apex; the closer they are together, the wider the possible angle becomes. In the letter the basal connecting line is about the same as that in Fig. 1, but the angle at the apex is much greater in the latter (Fig. 1).

A third factor is the fixation of scar tissue to corresponding points. If the skin which should be apposed to an abducted arm...
be fixed to the chest by scar tissue, the movement of the arm will be much restricted.

It follows, therefore, that the best position for the arm, in order to give wide range of movement, will be that (a) which gives the longer base to the axillary triangle, (b) which approximates the base to the apex, and (c) which prevents the tissues being misapplied during the healing processes.

Now, it is at once obvious that the length of the axillary base will be much greater when the arm is kept at right angles than when applied to the chest after operation. In the adducted position the axillary base becomes limited or obliterated; and the extent to which this is so will be seen from the following table:

**Axillary Measurements of Twenty Females.**

| Observations                                      | Average (Inches) | Maximum (Inches)         |
|--------------------------------------------------|------------------|--------------------------|
| 1. ON ABDUCTION OF THE ARM—                      |                  |                          |
| Skin of thoracic axilla becomes raised and apposed to the arm opposite the head of the humerus | 1½ fully.        | 2 (in four individuals). |
| Skin of apex of axilla becomes raised             | 1½ "            | 3½ (in two "            |
| Axillary border over pectoralis major rises       | 1 "             | 2 (in one "     |
| Scapular border over subscapularis rises          | ½ – 1           | 1½ (in one "     |
| Nipple rises                                      | ½              | 3½ (in six "      |
| 2. ON ADDUCTION OF THE ARM—                       |                  |                          |
| The axillary skin is drawn up into the axilla. (This also results as a reflex when the axilla is tickled) | 1              | 1½ (in two "      |

Taking several points in the axillary base, we find that when the arm is raised the axillary base is increased by fully 1½ in. in the centre, by fully 1 in. over the outer border of the pectoralis major, and by rather less than 1 in. over the subscapularis. The nipple at the same time rises ½ in. The abducted position of the arm, therefore, gives the longer axillary base by fully 1½ in. at its central part.
Then, as to the approximation of the base to the apex—another of the factors in the range of movement—this requires careful consideration. If a normal arm be passively moved from the abducted to the adducted position, it will be observed that, by a provision of Nature, the skin of the armpit is simultaneously drawn up into the hollow, to the extent of 1 in., by the deep connections (see Table). The important point is, that these deep connections are divided in the process of clearing out the axilla, so that the skin is no longer drawn up naturally on adduction of the arm, but drops away from the axilla, baggy and puckered, being unsupported by dressings. But when the arm is abducted after the operation, the dressings uniformly press into the axillary space, approximating the base to the apex artificially, so predisposing to greater range of excursion of the axillary angle.

Then, again, as to the misapplication of tissues. On raising a normal arm, it will be found that the mid-axillary skin not only rises, but that a portion of the skin which was thoracic becomes humeral, *i.e.*, a portion of the skin covering the ribs becomes applied over the head of the humerus. It belongs, indeed, to the arm in abduction. If the arm be kept applied to the chest after operation, this area will necessarily remain costal, and the scar, instead of being fixed over the head of the humerus, will be affixed to the chest, so restricting movement by misapplication of tissue.

All three points in the argument are therefore gained by the abducted position. If it be retorted that this is mere theory, I would reply that the argument will be found much more convincing if the theory be put into practice. The theory and the practice of the abducted position are both good, and I have no intention of employing the adducted position again.

2. *Subsequent oedema.*—This is a frequent source of distress to the patient, and of disappointment to the surgeon, after extensive operations involving the axilla. It is particularly prone to occur when the arm has been bound to the chest with a care worthy of a better cause, and is less likely when there has been early use of the arm. My experience of the abducted position is that oedema of the arm is then much less, is of shorter duration, and is often conspicuous by its absence. But I did not fully realise why this should be so until recently, when I was called upon to do an extensive removal for recurrence involving the pectoralis major, the arm having remained oedematous for the two years subsequent to the first operation, when the arm had been applied to the chest. During the dissection the condition in Fig. 2 was strikingly apparent. The axillary artery was in its normal position, but the axillary vein was bound to the chest wall by a very firm band of scar tissue, kinking the vein, and dragging upon it in a very marked manner. Here was a case in which the oedema of the arm appears to have been caused by the axillary vein being
misapplied to the chest-wall and fixed thereto by firm scar tissue.

Why surgical tradition has it that the arm should be adducted and fixed after operation, it is scarcely possible to say. It was perhaps from the fancy that movement caused suppuration. Though wiser in our day and generation, the fancy remains as a

Fig. 2.—A, Axillary artery; V, Axillary vein; S, Scar tissue binding the vein to the chest wall.

fetish; the arm is fixed, and all the attendant evils endure. It is a practice against which I would strongly protest, as being anatomically, physiologically, and pathologically wrong, and would urge the universal adoption of the abducted position of the arm after removal of the breast. The apparatus is simple—a pillow on which to rest the arm, and a binder to fix the forearm to the pillow being all that are necessary.