

THE SALVING OF SURGICAL DRESSINGS

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WE can eliminate from our annual budgets four-fifths or more of our dressings' costs by dedicating a small corner of our laundry to the service of cotton-wool and gauze. At the P.U.M.C. the saving is estimated at something over \$630 a month.

There is practically nothing that we use for dressings which we cannot renovate in the laundry—the cotton-wool as completely as the gauze. Yet of the two the gauze is the easier to handle, and will probably replace cotton almost entirely for dressings in hospitals where economy is a consideration. Its extra 50 per cent in first cost becomes quite negligible after the first dozen washings, while, on the other hand, it is appreciably more economical to handle, and the laundry (*vide infra*) can turn over the stock of gauze four or five times for once of the cotton. This means that the hospital needs by so much to hold less of it.

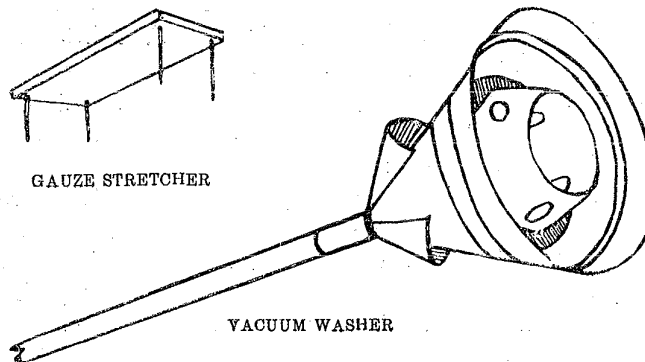
For practical purposes, the gauze is indestructible. This is particularly true when it is folded with its raw edges in the middle, envelope-fashion (either the fashion of the common envelope, or the foolscap, or the Chinese variety), and then folded again on itself to make a four-layer pad, which is stitched along its margins. To be sure, it discolours with time and use, but that is a trouble which diminishes to vanishing point as the laundry technique improves. Even when it does become ragged, the gauze may be put through a 'breaker' and complete its life as cotton-wool.

The laundry can renovate the dressings, whatever their condition. The most unpromising pus-saturated things will wash clean with the simplest of laundry materials—to wit, cold water, followed by a very little soda and soap. Cold water dissolves all albuminous soilures that have not been 'fixed' by boiling or by one of the albumen-coagulating antiseptics, while the soda dissolves any accidental greasiness, and the detergent action of the soap will assist in loosening any entrenched dirt that may remain. Ointment dressings should be washed apart. Otherwise the non-saponifying paraffin base of the ointment will impregnate the whole mass—particularly during the boiling—and will ruin its absorbability.

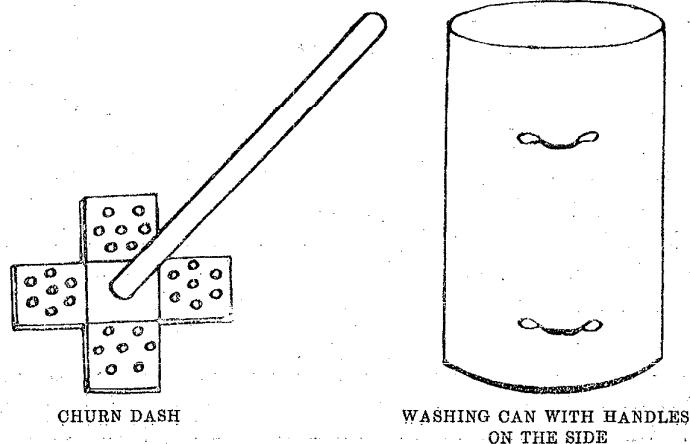
The actual laundry technique is ridiculously simple. The coolie collects in a bucket everything that he finds in the soiled-dressings' receptacles in the O.P.D., the dressing rooms, or the wards, and takes them to the laundry, where he pours off the fluids into a drain, and, with a pair of long Chinese fire-tongs, picks out the dressings into a couple of receptacles. These may be oil-tins (which really are not big enough for permanent use), small kangas, or, best of all, galvanised cans about 18 in. by 12 in. One is reserved for the ointment dressings; the other receives

all the rest. What remains in the bucket—blood-clots, match-ends, applicators, strips of adhesive plaster, fragments of old Chinese dressings, and other debris—goes to the incinerator.

The coolie then half-fills both his cans with cold water, and gently churns their contents with an old-fashioned churn-dash, or, much better, with one of those so-called 'vacuum washers' (illustration), which are



purchasable, I believe, at almost any of the Shanghai stores. As the water becomes dirty he empties and renews it again and again, until it remains clear. Then he replaces it once or twice with a hot solution of soda and soap, and churns for ten or fifteen minutes before emptying the whole thing into a boiler to boil for half an hour. Thence, through a couple of ten-minute rinsing—one hot, the second cold—and by all means using a fresh non-septic washing can, he transfers the dressings to the sorting table, where for the first time he touches the stuff with his hands. There he disentangles the bandages, breaks up the cotton into small pieces for drying, and stretches the gauze by impaling it on stretching blocks—small slabs of wood cut to the sizes of the various pads, and trans-fixed at the four corners with long wire nails. That done, he spreads the cotton out to dry, and hangs the bandages and gauze on the lines.



In due time he returns the gauze and bandages to the surgical department, where it is made up, re-sterilised, and sent back into use. The cotton, which dries dense and matted, he sends to the storeroom, to accumulate until there is enough to make a day's work for the man with the bowstring, who fluffs it back to its pristine lightness. He makes no distinction between 'local' and 'absorbent' cotton. After all they have been through together, there is little to choose between them. So the cotton, too, goes back into use.

The ointment dressings are washed as the others, and come surprisingly clean, though never fully white again, and never fully absorbent. But if it is dyed—as, for instance, by adding to the last rinse a few drops to the pint of a strong solution of methylene blue—the hospital need use it for nothing else but ointments, and for its ointments need use only the blue gauze.

In the P.U.M.C. technique, the dressings are steeped overnight in a five per cent lysol solution, 'to make things safe for the laundrymen, who have to handle the stuff somewhat in packing it into muslin and net bags for the washing machines.' The lysol bath (Soochow Hospital uses izal) may not be needed with our more simple methods, for without it I have never seen a skin infection in the laundry since my early experiments, more than fifteen years ago. Our only precaution has been to fit the washing cans (illustration) with two handles in line along one side. That side then is always uppermost, and safe from contamination during manipulations. Yet the idea of the antiseptic bath is attractive, and a thrifty hospital will reserve used lysol solutions for this service, just as it reserves the dressings themselves. Whether or not these antiseptics increase the difficulties of the subsequent washings I do not know. Corrosive sublimate would make it impossible. During the hot weather, unless the dressings are washed every day, some kind of antiseptic is necessary to preserve them.

The gentle art of bleaching is a last refinement, and an essential one; for, be the reason what it may, dressings tend always towards a slow but permanent discolouration. For the bleach we use Labarraque's solution, or Javelle Water—the alkaline solution of sodium hypochlorite, which formed the basis of Dakin's experiments. It is thus prepared, as described in L. Ray Balderston's excellent little manual on *Laundernig*:

1 lb. Washing soda	$\frac{1}{2}$ lb. Clax chlorinata
1 qt. Boiling water	2 qts. Cold water

Dissolve the soda in the boiling water; mix the lime with the cold water. Let the mixture settle, and pour the clear liquid into the dissolved soda. Bottle, and keep in a dark place.

This Javelle Water should be used as a perfectly clear fluid, and always diluted with at least an equal volume of water. Heat intensifies its action, so that when hot it is rapidly destructive to cotton and linen fibres,

A good medium bleaching temperature is 100° F.; but hypochlorite will attack the fibre of any fabric at any temperature if given time.

In the P.U.M.C. technique, a bleaching solution is added together with the hot soda and soap solution, so that all the dressings are bleached as they are washed, whether they appear to need it or not. This seems just a little hard on the dressings. In our own smaller technique, the coolie picks out at the sorting table, and puts on one side, all stained or discoloured dressings. These he steeps in a basin of warm, half-strength Javelle Water, stirring the while, and watching closely. As each piece whitens he removes it with chopsticks, and drops it into a can of rinsing water, sousing it well to dissipate the bleach. Eventually he thoroughly churns the lot through two changes of rinsing water, and, if they still smell of chlorine, through a final bath of weak ammonia—one dram to the pint—until the last trace of chlorine has disappeared. Perhaps with a good laundry technique, a combination of both methods might serve us best—a week bleach—just enough to deal with the general tendency to discolouration—applied to all the dressings in the wash, and supplemented by a more vigorous detailed bleach where needed. The danger of a routine bleach in a laundry is the ease with which it can be made to take the place of hard work in getting things 'clean.' In any case, fabrics should never be subjected to the action of bleaching solutions at boiling temperatures.

These renovated dressings are used for all purposes. In one large hospital known to me, a lingering tradition still demands new dressings in the actual operating room for clean major cases. But the wastage in all departments is unable to keep pace with even so modest a trickle of new dressings into circulation, and we are privileged to see the solemn sight of perfectly good dressings going to the incinerator in a sheer embarrassment of riches! As the laundry improves in technique, and produces ever whiter and more attractive dressings, even this out-of-date tradition is crumbling. In the near future new material will be put into circulation only as it is required to replace the slow wastage in the O.P.D. from patients who do not return. After all, it cannot be otherwise. There are no degrees in the adjective 'sterile,' and, as Prof. Adrian Taylor wrote last month in reply to B.F.'s inquiry, 'there are no valid objections, either practically or theoretically, to this practice.'

If this be so, we have somewhere in the region of \$50,000 worth of dressings to save per year to Mission funds in China. What would not \$50,000 do, divided up amongst the hospitals of the Association, for equipment? If every one of our hospitals that saves its share will spend its first three years' savings on completing its equipment—particularly in its laboratory—and in sending one or two members of its staff for I.H.T. six-month courses, we shall have such a series of monuments of remembrance throughout the land as will change the very standards of our work before we adapt ourselves to the new conditions, and forget that things were ever otherwise!