by these garments has made it possible to discharge from hospital several elderly patients with "established" incontinence. Those who regularly have automatic emptying of the bladder producing a large quantity of urine at a time—say, 600 ml—do not find the garment very satisfactory because the capacity of the pad is at present too small for their needs.

Many elderly patients are on diuretics, and often they have little warning before micturition occurs; in such cases this device may be helpful, though it is clear that there is a need for a superior pad of greater capacity but with no increase in bulk.

Fear of wetting and open criticism by other patients, residents, or nursing staff may result in the perpetuation of incontinence in this age group.[3 4] In children, Woodmansey,[5] discussing the enuretic, pointed out the consequences of the well known reaction by parents and school authorities to incontinence. Emphasis has also been laid on the unfortunate effects of anxiety on learning.[1 6 7]

Conclusion

This, then, is a simple, aesthetically satisfactory, and relatively cheap garment designed to produce greater independence in those afflicted with transitory or permanent urinary incontinence. It appears to have greater efficiency than many conductive devices and has the additional advantage of excellent patient acceptability and comfort.

I should like to pay tribute to the foresight and singlemindedness of the clothing division of the Welsh Hospital Board which resulted in the successful development of the garment; in particular, Mr. A. W. C. Campbell, chief supplies officer, Welsh Hospital Board, Mr. A. M. Thomas, assistant area supplies officer, and Mr. A. Sellars, area supplies officer, West Glamorgan area.

I should also like to thank Messrs. Courtaulds for their help on the technical side and in providing the materials and adequate supplies of Kanga pants to enable the project to be finally realized, and Mrs. J. Brown, department of photography and medical illustration at the University Hospital of Wales, Llandough, Cardiff, for her help with the illustrations.

References

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Child Psychiatry: A Nursing Aid

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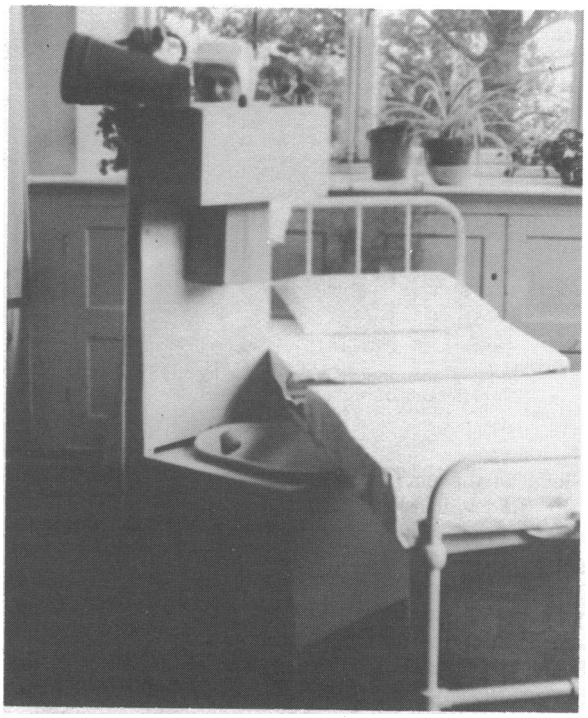
Incontinence in patients aware of their condition is a soul-destroying experience. It is a psychological and humanly distasteful problem to the patient and to the nurse, for whom extra work is created and who can expect to change bedclothes and clean the patient up to six times in 24 hours. Laundry costs alone in a ward of mentally or physically handicapped children, paraplegics, or geriatric patients can be astoundingly high.

Comfort matters greatly, even to those in extremis. "Besides the security of knowing that he will not be broken down by intolerable suffering," says Hutton,[1] "the dying person needs assurance that he can be adequately tended if he becomes quite weak or helpless.... A nurse can restore order, calm and comfort where there was incipient panic and discomfort. If attention to personal cleanliness has become impossible, the nurse's restoration of habitual cleanliness and neatness allows self-esteem to return."

Design of Apparatus

Present methods of nursing incontinent patients aim at keeping them as clean and comfortable as possible, but even with the best nursing care in fully staffed hospitals the handicapped will spend some time lying miserably in their own excreta. In an effort to find some way of alleviating this discomfort and embarrassment, as well as helping to take the load off nursing colleagues, a device which can be wheeled under a bed and left in constant operation was designed (see illustration).



Two prototypes (British Patents 7043-68 and 41433-68) have been used for 18 months in a ward for the severely mentally handicapped at St. Joseph's Hospital, Sheffield.

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For the prototypes a 7-in (17·8-cm) gap was cut through the springs of an ordinary hospital bed. For a mattress, two foam-rubber biscuits reaching to the edge of the 7-in aperture were used. The mattress biscuits used for the prototypes consisted of three 1-in (2·5 cm) thick pieces of foam rubber in order that the angle at the edges could be changed. After experiments the ideal edge was found to slope from the patient, so that the gap was widest nearest the bedsprings to prevent fouling of the mattress edges.

The device was designed to include a manually filled water container above the bed, connected to a sluice pan. The sluice pan then passed below the mattress and springs, and lifting a lever caused water from the container to flush the sluice pan, carrying contents into the lower, removable receptacle. The receptacle was designed to have a much greater volume on all occasions than the water container, and thus overflow was impossible (British Patent 7043-68).

While the apparatus formed a complete unit separate from the bed, it was possible to remove the receptacle after use for replacement with a clean one. Castors were fitted to the base of the unit for easy removal from the bed in order that access to the patient could be complete for examination and bedmaking.

The patients were dressed in short bed-jackets, with warm, thigh-length stockings, and were naked from waist to thigh, so that they lay with buttocks over the space. The two prototypes proved of greater use to physically handicapped patients of higher intelligence in a paediatric ward than to mentally handicapped children in a psychiatric hospital.

Results

The two prototypes were used over a period of 18 months in six patients in a ward of the 92-bed hospital for the mentally handicapped, and the following conclusions were drawn. Patients required less changing of bedclothes; owing to the less frequent changes, sleep rhythm was improved in all six patients. Associated with the improved sleep rhythm the ward of mentally retarded children was less noisy and described by nursing staff as pleasanter to work in.

Less sedation was prescribed at night for agitated patients. Three of the six mentally handicapped children in the hospital moved around the bed in a purposeless manner and on occasion fell out of bed, in keeping with their mental state. For these it was concluded that the device was of impaired benefit regarding sleep rhythm and noise, and it may possibly be of more use to patients of better intellect with a greater ability to co-operate.

In all six children tested the skin over pressure areas remained intact because excreta were not pressed against the skin and fell away freely by gravity.

As the sluice pan fitted exactly under the bedspring and the receptacle fitted tightly in place below the sluice pan the apparatus was odourless during use, and laundry costs dropped by half.

Reference

[1] Hutton, J., *Dying, Studies in Social Pathology*. Harmondsworth, Penguin, 1968.

Any Questions?

We publish below a selection of questions and answers of general interest

Dangers of Atmospheric Sulphuric Acid

Is any guidance available as to concentrations of atmospheric sulphuric acid which might be expected to cause damage, temporary or permanent, to the skin and eyes, particulary those of babies?

In addition to the emission of sulphuric acid droplets as such, the emission of sulphur dioxide and a sulphur trioxide can also give rise to sulphuric acid droplets in the atmosphere, the former after oxidation to the trioxide, which then combines with water. Acid droplets are found in urban atmospheres in all weather conditions, but these are larger and more numerous in misty and foggy weather. Showers of acid droplets amounting to acid rain have been observed at different times in cities. These droplets can be irritant to the skin and cause a stinging sensation if they fall upon the conjunctival surface of the eye. However, conjunctivitis or more serious ill effects on the eye under these conditions have not been reported. One study showed that the droplets in urban acid rain were between 12 μ and 500 μ in diameter with a maximum count of 2/cm^2/min. In conditions other than those producing acid rain, most often the particles are less than 1 μ in diameter.

Levels of particulate acid in Central London have been shown to vary from an average of 7μg/m^3 in summer to 18 μg/m^3 in winter, but levels as high as 678 μg/m^3 have been recorded under foggy conditions.[2] Sulphuric acid concentrations of 1 mg/m^3 are usually not detected by normal adults following inhalation, but concentration of 5 mg/m^3 are objectionable and usually produce coughing. For industrial exposures, the threshold limit value for sulphuric acid is 1 mg of particulate/m^3. This is a level at which most workers, it is believed, may be repeatedly exposed without suffering adverse effects. Levels higher than this should certainly not be tolerated in a domestic environment, and even levels approaching the threshold limit value would give rise to concern where babies may be exposed.

[1] Waller, R. E., *Air and Water Pollution*, 1963, 7, 773.
[2] Commins, B. T., *Analyst*, 1963, 88, 364.

Treatment for Dermatographia

What is the treatment for dermatographia?

Dermatographia is caused by histamine released by trauma. It is not caused by an undue response to histamine and indeed excessive liberation of histamine has been demonstrated after stroking the skin.[1] The excessive release of histamine is not due to an increase in the number of histamine producing mast cells as in urticaria pigmentosa and it seems likely that the defect is an undue response to trauma—an exaggeration of the normal response. The treatment is to give an antihistamine. However, all the currently available antihistamines are sedatives, though the sedative and antihistamine effects vary from individual to individual and so it is always worth trying different antihistamines and in adequate doses. Blockers of second histamine receptors[2] are still undergoing clinical trial and they could be a useful addition to the antihistamines which are at present available.

[1] Greaves, M. W., and Sondergaard, J., *British Journal of Dermatology*, 1970, Suppl. 6, p. 82.
[2] Black, J. W., Duncan, W. A. M., Durant, C. J., Ganellin, G. R., and Parsons, E. M., *Nature*, 1972, 236, 385.