reaction is " This should never have happened ". I would like to ask that we all do our best to reduce these tragic accidents.

We could virtually eliminate all these big burns if only we set about it determinedly.

REFERENCE

Jackson, D. MacG., Topley, E., Cason, J. S. and Lowbury, E. J. L. Ann. Surg. (1960) **152**, 167.

DISCUSSION

J. W. Hannay, M.A., F.R.C.S., D.Obst., R.C.O.G. (*Wimborne, Dorset*): When I was asked if I would open the discussion on burns from the general practitioner's point of view I said that there was not very much to say because nearly all burns should be treated in hospital, and I was told to get up and say that. So here I am saying it. If one is called to see a burn the first problem to decide is whether it is a case for hospital. I put down some categories for admission to hospital and I am glad to find that they correspond with Dr Bull's. Let me just recapitulate without saying exactly what he said. Patients with large areas of superficial or deep burns need admission to hospital because shock is bound to develop. Those with smaller areas of deep burns need admission to hospital because whole-tissue damage can be repaired only by scar tissue or by grafting, and it does make a certain amount of difference where the burn is. Any burn over joint surfaces is a functional disfigurement as opposed to an aesthetic one and burns of hands ought always to be sent into hospital. The area involved makes a difference. One ought to remember that the axillae in most people sweat quite a lot, and the occasional heavy-breasted woman with intertrigo and chest burns is another person likely to have to go to hospital. Some other concomitant injury may mean that a burn which might be treated at home needs hospital treatment after all. That does not leave much for the general practitioner to attempt to treat at home, but let us consider the first aid.

There are one or two factors which must influence a little the decision to send into hospital. We may be able to do the tactile test which I heard of for the first time, I regret to say, a few minutes ago, to determine whether or not the burn is of full-thickness. But it is not a very practical proposition, and most burns tend to be rather deeper than you think in the first place. At least that is my unhappy experience. Nearly all electrical burns are very much deeper than they look at first sight. Nearly all chemical burns are also very much deeper than they seem at first sight. Children's burns present a very difficult problem indeed. Obviously, if a

child has a large area involved it must go into hospital for shock treatment, but in my opinion the worst place for any child is in hospital unless it is absolutely essential. Most children are frightened about going to hospital and provided the home conditions are reasonable and the mother is intelligent, I would opt slightly on the side of the child being kept at home, if you think that there is a good chance of getting away with it.

What is the first-aid treatment? I think the most important thing to do is to cover up the area burned at once; it does not matter very much what you cover it up with as long as it is reasonably clean. A burn is painful, and pain will produce shock, and so you cover it up. Whatever else you do, you do not put any greasy dressing of any sort on as a first-aid measure. I would throw out all those clever burn ointments of one sort and another, because I don't think there is anything to beat bicarbonate of soda. Put a towel on first to keep the air away from the burn and then flood the towel with the bicarbonate solution afterwards. Putting on a greasy dressing does not give the hospital staff a hope of deciding what to do. I have no experience of milk being used as a first-aid dressing but if anybody has I would be very interested and I am sure other people would want to know about it. Having covered the burn, give analgesics of some sort to minimize shock; this may be anything from aspirin to morphine depending on how far the patient has got to go and how long you estimate his trip to hospital will take. After all, secondary shock is likely to develop in burns in anything from an hour and a half to two hours, which doesn't give a great deal of time, though it may do in Birmingham. I come from Dorset, and much of my area is 15 miles away from the nearest hospital. By the time somebody has gone to the telephone and rung up my surgery, and I have been located, got out there, and rung the ambulance to come out, and it has collected the patient and taken him to hospital, most of that hour and a half has been used up even with things going quite well. The shock that can develop in that time may mean the difference between life and death. Speed in transit to hospital is very important. For the small areas treated by the general practitioner, the application is very largely a matter of choice. I would have said from my very limited personal experience that antibiotic creams are of little value. In that I do not confirm Dr Bull's more scientific findings. In fact in our practice we never put on an antibiotic cream—it seems not to control infection. If there is infection we give antibiotics systemically but not on the surface. The easiest dressing is a tulle gras or a cetavlon cream if one prefers that; towards the end of the stage of healing when things are going a bit slow, the steroids in cream form seem to stimulate the last bit of healing.

J. S. Cason, F.R.C.S. (*Consultant Surgeon, Burns Unit, Birmingham Accident Hospital*): As both the previous speakers have mentioned, we obviously prefer patients with extensive burns to be admitted to hospital as soon as possible so that the transfusion can be started immediately. As regards first-aid, we much prefer just an easily removable clean or sterile cloth or dressing to be put on. Nothing is more exasperating than to have to remove a very carefully applied dressing with a lot of trouble to the patient, and then find that the burn is smeared with gentian violet and one cannot estimate how big it is. One may say as a general rule that we like to get burns with whole-skin loss straight away if possible; if it is not possible to diagnose whole-skin loss, then we would like all burns that are not healed in three weeks, because if they are not healed in three weeks they will require skin grafting.

A word or two about morphine. Most of the patients with extensive burns which you send into hospital usually have very deep burns and suffer from very little pain. It is surprising how little pain such patients suffer, and it is surprising how frequently morphine has been given in spite of the absence of pain. Obviously, if the patient were crying out with pain from a superficial burn a sedative is needed; on the whole for the extensive deep burn morphine is unnecessary, and it masks some of the clinical findings and causes vomiting. The latter is frequent when morphine has been given and it is very intractable vomiting and may endanger the patient's life. It seems to go on for several days and obviously complicates treatment.

Cases requiring immediate operation such as those with molten metal burns of the feet should have no fluids by mouth because that means we are unable to operate as soon as possible, and may delay us several hours.

Problems of discharge from hospital have not been mentioned much. There is, of course, the problem of who is going to treat the patient with hypertension or epilepsy who has been burned, and so on; one person says it's the other person's job, and in the end nothing gets done.

Finally, I would just like to quote a few words from an American expert on burns in a book which he wrote in 1957.

In general, there is no injury that is treated less expertly by the medical profession at large than a burn. This is tragic in view of the extraordinary degree of suffering, financial loss and loss of social usefulness caused by the injudicious treatment of burns. Many patients with third degree burns who could be healed within three or four weeks occupy hospital beds for months or years. Some patients who could be quickly rehabilitated by energetic therapy develop avoidable deformities that prevent them from working. Others are unnecessarily disfigured and some actually die from neglect. It is clear that the teaching of

burn therapy is not adequate at any level of medical education. Although a senior medical student or an intern may not be expected to be expert in the art of skin grafting, he should be well grounded in the fundamental principles of therapy and capable of giving adequate emergency care. General practitioners, internists, paediatricians, etc. must learn that the limitations of their particular interests demand the skill of the general or plastic surgeon for the management of a third degree burn. Non-surgical specialists may well treat second degree burns, but it is as essential for them to recognize the characteristic features of the deeper injury. The sooner the surgeon can treat the patient with third degree burns the better for all concerned. Transfer of responsibility to the surgeon several months after the injury results in waste of time, money, and energy, and in needless suffering. Unfortunately, many well-trained surgeons may be incapable of properly managing a deep burn, too often surgeons shy away from taking responsibility for the care of burned patients during the period of residency training. This is understandable, for the surgical resident is notoriously busy and the treatment of only a single severely burned patient is an extremely time consuming task. Other factors that steer the resident away from burns are the burned patient's reputation for ingratitude, most surgeons' preference for clean surgery, and lack of encouragement from senior attending surgeons. Some hospitals actually refuse to admit seriously burned patients. Hospital administrators apparently recognize that few patients can afford the expense of prolonged therapy, and therefore that the hospital bill may never be paid. There is an urgent need for improving the teaching of the therapy of burns. The responsibility for effecting an improvement lies principally in the hands of the professors of surgery who exert a dominant influence in medical schools, as well as in postgraduate education. Chiefs of surgical departments in hospitals not affiliated with universities must also share in this responsibility. Awareness of a problem is commonly the first step towards its solution—the medical profession has demonstrated in the past that it is capable of prompt and effective action when it is cognizant of its deficiencies in certain respects.

I don't say that these conditions occur in England in 1960 but I think that the conditions here could be somewhat improved.

Question: We have had two versions of first-aid treatment, one is to use a dry cloth and the other is to use bicarbonate solution. Which do we do, please?

Dr Bull: The treatment which is appropriate for the general practitioner treating his own cases is different from that which he should use for sending the case to hospital or that the hospital might prefer to use within its walls. My recommendation for use of local antibiotics within hospitals is very firmly based on a lot of trials which we have made; we know exactly what to expect with almost every sort of application. But this is not to say that this this is the appropriate thing for use in general practice, where the risks of infection are quite different and the severity of burns is quite different. I would say that the general practitioner should use the treatment in which he has personally most confidence. I don't think that there is a great deal to choose between half a dozen different methods which I could list, from dry dressings upwards.

Question: How would you like us to give first aid for the burns

you are going to have to treat for us?

Dr Bull: A clean cloth to cover, please. That is what we very much prefer. If you have a sterile dressing, fine; use a clean laundered sheet if it is a very big burn, wrap the whole patient up, and send him along.

Question: Could we hear some thing of non-inflammable materials?

Dr Bull: There has been a lot of difficulty in getting these satisfactory versions on the market. I have been concerned with this personally over a number of years. We've made a number of tests, and repeatedly samples have come up which are excellent and then once the material gets on the market the sample which is actually put on the counter is not acceptable for various reasons, chiefly that the proof materials tend to be rather rough and hard. But there is now a brand on the market, which can be bought in Birmingham at Lewis's at 7/11 per yard. I bought some the other day and this is entirely acceptable, it's good proofed flannelette, with the proban style of finish. Proban is one of the alternatives of proofing which depends upon a phosphate resin. Another type of proofing which is reasonably acceptable depends upon antimony and titanium; it is sold under a different trade name and can either be held in with titanium oxide or with the resin; there are three processes altogether really, two based on titanium and one based on this THBC which is the proban method. Several of these are available now. Also the raised nylons and raised terylenes are on a competitive basis for price and have similar advantages. The difficulty has been to get sufficient proofing on to give a sufficient degree of safety, and yet to leave an acceptable material. Cellulose is essentially a good fuel and to convert it into a non-combustible material requires considerable chemical adjustment.

The Chairman: I would like to take the symposium as a whole in summing up. Some things are quite clear. For example, we agree that the treatment of accidents is the work of all those concerned in clinical practice. The other thing that I think is quite clear is that we must organize the 24 hour a day, seven day a week service so that it is available to all those in clinical practice. I don't think there is any doubt about that. I was interested in Dr Logan's remark that " We have no communications ". I think he meant by that that the communications between general practice, hospital, and research were not close enough: that I believe is our task. The symposium has impressed me more I think than any other meeting that I can remember attending. If accident services are to work the way that they must work in meeting this epidemic, both from the prevention side and the treatment side, then this sort of symposium

must happen at least once a year and it must keep on happening for the next five or ten years before we really are together.

You see, quite a number of us did not understand some of the problems that you put up. I had certainly forgotten all about Dr Fergusson in the north-west corner of Scotland and his problems. But those are things we must know about. You for your part sometimes forget about the problems that we have in hospitals. I am certain that if we as medical men do not organize ourselves and put up a service that meets the patients' needs, then we are going to be organized by other people, much to our disadvantage, and I think much to the final disadvantage of the patients for whom we are responsible in health, in disease, and in accidents. It is one of the most interesting symposiums that I have attended from that particular angle.

These symposiums don't just happen, they require organizing and they require a lot of back-room boys working hard, and those back-room boys incidentally are pretty busy people. I would like on your behalf to thank Dr Green and his wife, who have done a great deal of organizing to make this meeting possible. I'd like to thank Mr Peter London for the organizing work that he has done too to make this meeting run as easily and as smoothly as it has run. The Medical School should be thanked for the use of their most recent hall, the Sir Arthur Thomson Hall. I should mention the sub-dean of the Faculty, who in fact was the man to whom we are thankful for the use of this room. Mr Barnett, the head porter and his staff, we thank you too, and we thank Mr Humber the catering officer, for looking after us so well. Finally, I believe the Geigy Pharmaceutical Company Ltd have supported this meeting, and I would like to thank them for their help. I would also like the representatives of the Company who are present to report to their Company how very much worth while this meeting has been and we hope that Geigy may support further meetings of a similar nature.