4

PHARMACEUTICAL SOCIETY OF GHANA
P. O. BOX 2133
ACCRA - GHANA

THE GHANA PHARMACEUTICAL JOURNAL

Restricted

PHARMACEUTICAL SOCIETY OF GHANA
P. O BOX 2133
ACCRA - GHANA

Do not remove

OFFICIAL ORGAN OF THE PHARMACEUTICAL SOCIETY OF GHANA

Volume 2 No. 2 March, 1974

The Ghana Pharmaceutical Journal

THE GHANA PHARMACEUTICAL JOURNAL

Published by the
Pharmaceutical Society of Ghana

Editor
Ago Simmonds

Departments:
Editorial
Features
Science and Technology
News: Domestic & Foreign
Economics Business & Industry
Letters
Miscellaneous

Information:
The Ghana Pharmaceutical Journal is published quarterly by the Pharmaceutical Society of Ghana at Brun Building, C353/1 Nsawam Road, Accra, Ghana.

Editorial and Advertising Offices:
Brun Building, C353/1 Nsawam Road, P.O. Box 2133, Accra, Ghana.

INFORMATION TO CONTRIBUTORS

Original Scientific papers and articles are accepted for publication in The Ghana Pharmaceutical Journal. Contributors agree not to republish any of their papers first published in the Ghana Pharmaceutical Journal without written permission from the Publishers. All manuscripts intended for publication should be submitted in duplicate and in double space typing. The title of the article, the author's name, qualifications and address; and summary of not more than 100 words should be given on the first page.

References: Within the text of short articles, authors' names may be used, e.g., Boakye-Yiadom and Buadu (1973); and in these cases, the list of references should be in alphabetical order. In the case of long articles, the system of numbered references should be used and the list of references should be in the order in which they appear in the text. Each reference should give the names and initials of authors, followed by year of publication in brackets, name of publication (abbreviated as in the World List of Scientific Periodicals) volume (underlined) and number in brackets, first and last pages in that order, e.g., Konning, G.H. (1973) Ghana Pharm. J. 1 (3) 136-142; and for books: Lewis, J. J. (1962) An Introduction to Pharmacology, 2nd Edition, Page 94. Edinburgh & London: E. and S Livingstone Limited.

Tables & Figures: Authors should indicate in the manuscript where tables and figures should be inserted.

The publishers reserve the right not to publish any paper submitted for publication.

THE PUBLISHERS do not accept any responsibility for views, opinions, editorial comments and advertising claims expressed by contributors. All manuscripts should be addressed to the Editor.

Members of the Pharmaceutical Society of Ghana are entitled to receive copies of the Journal free.

Change of address: Any notice of change of address should reach the editorial offices two weeks before the next publication of the Journal.

VOL. 2 No. 2 MARCH, 1974

CONTENTS

THE PHARMACEUTICAL SOCIETY OF GHANA

NATIONAL HEADQUARTERS BUILDING FUND

The SOCIETY solicits your kind
assistance towards the cost of
erecting its

PHARMACEUTICAL SOCIETY HOUSE

TARGET:

¢100,000.00 (May be revised upwards)

The Fund was launched by the late
Lt. General E. K. Kotoka, G. S. O.
the then Commissioner Responsible for Health

All donations should be sent to
The Hon. Treasurer, Pharmaceutical Society of Ghana,
P. O. Box 2133, Accra, Ghana.

THE NATIONAL COUNCIL
1973/75

Mr V. K. Aidoo (President)*

Dr K. Sarpong (Vice President)*

Mr J. Y. Binka (Hon. General Secretary)*

Mr D. Anim-Addo (Asst. Hon. General Secretary)*

Mr E. Osei-Tutu (Hon. Treasurer)*

Mr Ago Simmonds (Editor)*

Dr K. Boakye-Yiadom (Member)*

Prof. E.A. Gyang (Dean, Faculty of Pharmacy, University of Science & Technology, Kumasi)

Mr T. E. C. Sagoe (Chief Pharmacist, Ministry of Health)

Mr R. Q. Lamptey (Greater Accra Regional Branch)

Mr G. K. Acheampong (Greater Accra Regional Branch)

Dr J. Ocran (Ashanti/Brong Ahafo Regional Branch)

Mr R. B. Fynn (Western Regional Branch)

Mr T. C. Corquaye (Central Regional Branch)

Mr D. A. Obuobie (Volta Regional Branch)

Mr J. P. Brown-Pobee (Northern / Upper Regional Branch)

Mr F. K. Bruce (Eastern Regional Branch) and
Two Nominees of Commissioner for Health)

* Standing Executive Committee Members.

National Headquarters,
BRUN BUILDING,
C353/1 Nsawam Road,
P.O. Box 2133,
Accra, Ghana.

Hon. General Secretary
Tel: (021) 28341

EDITORIAL

WORLD ENERGY CRISIS—SHORTAGE OF CHEMICALS AND DRUG SUPPLY

WORLD energy crisis and shortage of basic chemicals for manufacturing are affecting the availability and prices of most household goods. Pharmaceuticals are equally affected. In fact, it is now very difficult to forecast the supply of drugs to a developing country like Ghana as drug prices are rising almost from month to month. Computers as well as their human masters are equally confused about the possible effect of the current increases in oil prices on drug supply and other essential commodities. The finances of most industrial countries are in bad shape. The trade surplus of Japan has been wiped out just in the matter of two months with the onset of oil crisis. Those of us in the industrially developing countries are obviously in the worse position than the developed nations.

We would require realistic hard planning. We need to draw up carefully our priorities with respect to our essential needs. Fuel is now indespensable commodity and fuel must be obtained at any cost by developing nations. We are to buy fuel at the same price as the developed countries would buy. Other commodities which should be on the top of the list of priorities in this crucial planning are food and drugs. With intensification of agricultural programmes, most underdeveloped countries can produce 95 per cent if not 100 per cent of their food requirements. This is not so with drugs. Most of the drug industries in the developing countries depend on the raw materials from the developed countries. Hence, increases in the prices of commodities like fuel and other chemical products are just passed on to the poor countries. But still we have to get drugs for the sick in our society. Any wrong planning in the supply of drugs could be catastrophic.

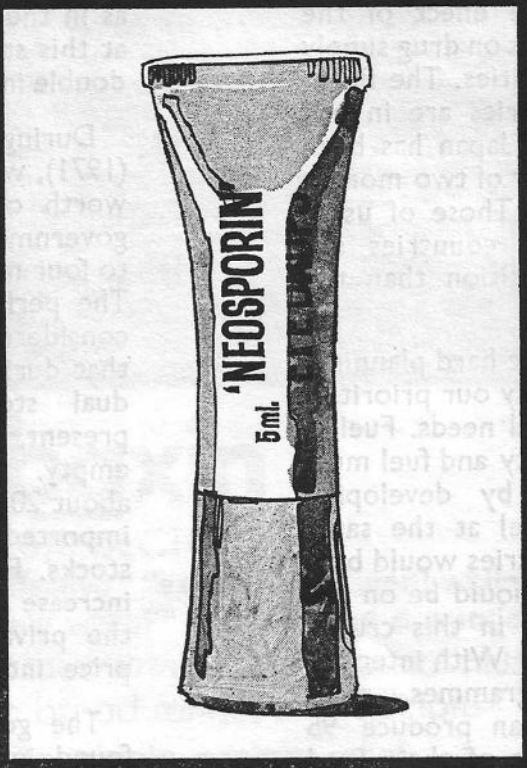
In Ghana, importation of drugs are restricted by import licence system. It means that the quantity of drugs imported is directly proportional to the amount of import licences issued to drug importers. Up to now, not sufficient import licences have been issued for drug importation. The stocks of drug wholesalers and retailers are already low. It may be necessary for us to make money available for the importation of essential drugs as soon as possible. The question of importing drugs in piece meal as in the previous years may not be helpful at this stage as prices of drugs are likely to double in the few months to come.

During the "open general licence" periods (1971), we imported about 13 million cedis worth of drugs into private sector. The government has been importing from two to four million cedis yearly for the hospitals. The performance of these sectors must be considered with the understanding that during the past years there were residual stocks in the wholesale stores. At present, almost all the wholesale stores are empty. We may therefore need to import about 20 per cent of the quantities of drugs imported in the past to cater for reserve stocks. Further allowance of 30 per cent increase in drugs imported may be made for the private sector to absorb world-wide price increases in pharmaceuticals.

The government sector has never been found in the past to have adequate drug supply; thus, figures in the past are not very helpful for the estimation of our drug requirement. However, a conservative estimate will be around ten million cedis for the government sector.

Up to now the import licence issued to the private sector is far below the above-mentioned estimates. We would like to call upon the government to review the allocation of import licences to drug firms. We cannot very much compromise on drug requirement; we have to attend to the sick and give him the drug his ailment dictates.

The big name dropper



Three bactericidal antibiotics: Polymyxin B Sulphate BP, Neomycin Sulphate BP and Gramicidin – and all three are in NEOSPORIN* Eye Drops. Their combined spectrum of activity covers virtually all bacterial pathogens present in eye infections.

NEOSPORIN contains no steroid component. The drops are supplied sterile, in a dropper tube specially designed to avoid the risk of contamination. *Trade Mark

NEOSPORIN EYE DROPS

Purely anti-infective treatment

Wellcome Full information on request. Burroughs Wellcome & Co. (The Wellcome Foundation Ltd.) Berkhamsted, Herts.

HOSPITAL PHARMACY AS I SEE IT

By Mrs Eniton R. Gavu, B. Pharm; MPSG
Ghana Cocoa Marketing Board Clinic,
Accra

Introduction:

Hospital Pharmacy could be defined as the Department or Service in a hospital which is under the direction of a professionally competent and legally qualified pharmacist and from which all medications are supplied to the nursing and other units. Special prescriptions may be filled for both out-patients and in-patients in a hospital pharmacy. Small to medium scale manufacturing may also be undertaken in such a pharmacy.

From this definition, one will see the importance of this branch of the Pharmacy profession, and, right from the ancient days, there existed "Apothecary Shops" accompanied with gardens for cultivation of medicinal herbs. It has been found necessary for modern hospitals, after surveying the tremendous purchases and money involved in the use of drugs, that only trained pharmaceutical personnel are capable of storing, handling and dispensing these products. As a result, hospitals and most clinics retain the services of a Pharmacist on a full-time basis and both patient and the hospital staff benefit a lot from him and his pharmaceutical personnel. The knowledge of the Hospital Pharmacist actually cuts down the cost of medications if adequate facilities are made available for the manufacture of the various products including parenteral solutions, mixtures, ointments, etc. It is therefore, very important to put a Pharmacist in each hospital and clinic since the role of the Hospital Pharmacist is the vital link between the demands of change brought about by the rapid progress in medical care, the Hospital Pharmacist must endeavour to keep pace by reading journals and other books regularly and exchange ideas through discussions and conversations, and, most important of all, to organise Refresher Courses and Seminars.

With every profession, there are minimum standards and it is time we in Hospital Pharmacy draw up some Code of Ethics to guide our conduct. The resources of Hospital Pharmacy must be utilized to assist in the development and improvement of the profession as a whole. Let us now examine critically some of our problems and try to analyse them and find solutions for them. I shall tackle them under the following headings which I believe characterise the duties and responsibilities of the Hospital Pharmacist:

1. Acquisition or Procurement of drugs, i.e. purchasing, stock control and record keeping. Adequate storage facilities.
2. Control of various classes of drugs, e.g. general drugs, volatile liquids, antibiotics, narcotics, etc.
3. Manufacturing; compounding of bulk and sterile products and their distribution.
4. Dispensing to out-patients and pre-packing.
5. Dispensing to in-patients
   i) Treatment Sheets.
   ii) Stock Baskets and Ward Stock Lists
   iii) Theatre Recovery Wards, Casualty Department
   iv) Treatment Rooms.
6. Reference Books and Library—the need for Drug Information Centre.
7. Promotions to senior grades. Management requirements:
   a) Organisation of department and personnel—Job description, procedural manual including duty rosters and other guiding policies e.g. handling of manuals accompanying equipment etc.
   b) Organisation of Practical Training programmes for Pharmacy Interns. Other programmes like training Dispensing Assistants, part-time teaching at the Medical or Nursing Schools.
   c) Hospital Formulary and Drugs Committee like the Pharmacy and Therapeutics Committee.
   d) Office Routine and annual reports.

I shall take the above headings one after the other and discuss them in some detail as I see them in the next issue. A lot, however, depends on the individual Hospital Pharmacist for achievement of good results. We have to be competent, of good moral character, confident, responsible and act as mentally fit, professionally trained people and perform our duties efficiently.

TO BE CONTINUED

THE ROLE OF THE PHARMACIST IN HEALTH EDUCATION

By John Ferguson, MPS

At the first professional session of the British Pharmaceutical Conference in Cardiff in 1965, Mr Allen Aldington presented a paper entitled "The Pharmacy as a centre of health education". Today's title is slightly different but the theme is the same; that is that the pharmacy is eminently suitable as a centre of health education because it is in the pharmacy that the pharmacist practises his profession. I do not want to cover in detail the ground which Mr Aldington so ably covered in 1965. I have no doubt that one of the questions uppermost in the minds of those who have pondered the subject is "Can I as a pharmacist in general practice afford to be involved in health education?" Before giving too hasty an answer to this question, it is worth thinking just for a moment of the work that the pharmacist in general practice already does in the broad plain of health education.

ADVICE ABOUT MEDICINES

The main role of the pharmacist in health education at present is the giving of advice to members of the public about the safe and sensible use of medicines, those prescribed for them by their doctors and those which they purchase without a prescription. This is work which is very largely unrecognised outside pharmacy. Indeed, I believe that many pharmacists in general practice do not realise how much time they spend in giving advice about medicines.

Advice may be given when customers specifically ask for information about a medicine. The pharmacist's recommendation of a medicine to treat a specific ailment is very often sought and in these cases the pharmacist is often able, by asking questions to decide whether the customer should be advised to consult a medical practitioner without delay, or whether a preparation can safely be supplied and the customer be advised to use it for several days and to visit the medical practitioner only if the symptoms are not relieved. Experience has shown that the customer is much more likely to consult a doctor if advised to do so by a pharmacist than by anybody else. Thus, the intervention of the pharmacist can often ensure that early medical advice is sought.

The measure of the pharmacist's involvement as an adviser on medicines may be estimated from a survey conducted by Dr Michael Whitfield in 1968. During a two-day survey of 20 pharmacies in eight towns in England, something over 21,000 customers were served at the medicine counters. Of these, over 600 specifically asked for advice on the treatment of various complaints. The advice given and the medicines suggested were found by Dr Whitfield in all cases to be appropriate to the symptoms and he concluded that the pharmacist was giving a valuable service and one which saved the general practitioner a considerable amount of work. During this two-day survey, 35 patients were referred to a doctor without any medicine being recommended by the pharmacist. On this basis no fewer than 11,000 people are being refused medicines in Britain's pharmacies every day. In these cases the pharmacist has reason to believe that medical advice must be sought without delay. This is a counselling service which is little publicised but which must contribute substantially to the early detection of serious illness.

May I emphasise that it is not the pharmacists' function to diagnose and treat disease and that he neither claims nor wishes to be a diagnostician. What he does, in effect, is to act as a safety barrier between the patient and his own self-diagnosis, and give sound, informed advice.

I have no doubt that if Dr Whitfield's survey had included a count of the cases where pharmacists, without specifically being asked for advice, had taken the initiative, it would have shown that several thousands of customers during those days were given valuable help. Examples would be the volunteering of information when a customer asked for a quantity of medicine which seemed to be excessive, or a "regular" customer asked for a particular preparation too

frequently or over too long a period, or when a customer who was known to be under medical treatment asked for a medicine for the condition being medically treated or for some other preparation which was inconsistent with the treatment prescribed by the medical practitioner. All pharmacists in general practice could cite numerous cases where customers have demanded two medicines which have similar formulae and where clearly the customer was unaware of the composition of either preparation and was therefore intending inadvertenly to duplicate dosage. How often, too, has advice to be given because of a wrong impression being left in the mind of a customer who has read or seen an advertisement for a particular medicine.

Finally, in the supply of medicines one of the most important present-day functions of the pharmacist is to ensure that a patient for whom a medicine has been prescribed fully understands the dosage instructions and is given any information or warnings that relate to the specific medicine prescribed. Again, those of you in general practice will be able to quote many examples of patients who, having been given verbal instructions by the doctor, have no recollection of them by the time they have completed the short journey to the pharmacy. The reason is not difficult to find, and it is a reason which, as I hope to show later, illustrates one of the reasons why the pharmacy can play a prominent role in health education. The patient who visits a doctor is very often worried and tense and is therefore not receptive in the consulting room to detailed instructions about dosage. Thus, although they may assure the prescriber that they fully understand his instructions, these are often forgotten by the time the medicine is received in the pharmacy.

All of what I have said so far illustrates the role of the pharmacist in giving advice on medicines. Although this is a very important function, it is not the kind of health education that I would invite the session today to discuss in detail. In all the cases I have described so far, the patient customer has a real or imagined condition when he reaches the pharmacy. Our main purpose today is to discuss the role of the pharmacist in advising the public on how to promote good health and how to avoid serious illness—what I would describe as health education in a positive sense, the kind of health education that Dr Jones has dealt with in his paper today. But my brief review of the educational work about medicines that the general practice pharmacist is already doing every day, without payment and with little recognition, will, I hope, help us to propose an answer to the question that I posed earlier, "Can I afford to be involved in health education?"

I have decided not to deal, in today's paper, with the ways in which pharmacists are involved in health education programmes in other countries. My reason is that I consider it might be misleading to do so because the way in which pharmacists can participate depends so much on the types of pharmacies in those countries and the other roles they play; they do not necessarily reflect conditions in Britain. Let us examine our own situation and postulate the proper role of the pharmacist in the environment which exists here. Later we can learn from other countries and incorporate the best of what happens there into our own practice.

Why is the pharmacy so obviously suitable to be one of the centres of health education in a community? First, in the public's mind it is directly associated with questions of health. Secondly, a call at a pharmacy is not looked upon by the public as being similar to a visit to the surgery of a doctor or dentist, a clinic or the outpatients' department of a hospital, in all of which places personal anxieties often flourish. The atmosphere in the pharmacy is completely informal and a call there is part of normal shopping and may not be connected in any way with illness. Thirdly, in a pharmacy, members of the public have, for over 40 hours every week, direct and free access, without the need to make an appointment, to a professional man or woman who has completed a broadly based scientific education with a strong emphasis on the biological sciences; a person who has a very high level of education but who can nevertheless be approached informally as an ordinary, everyday contact.

Thus the environment is right, the expertise is there, and there are ample opportunities for what the Americans would describe as "one to one communication" or we might call "an informal chat." And about seven million people visit pharmacies in Britain every working day.

WHY HAS PHARMACY BEEN IGNORED TO DATE?

The outside observer might well consider the pharmacy to be the ideal location for health education activity. And yet for over 20 years of the National Health Service the part that the pharmacy could play in this important field has largely been ignored. Why has this been so?

I should like to suggest two reasons, one of which is a general comment on the health service as we have known it and the other a factor relating to the way the general practice of pharmacy, within the service, has been limited.

Most people would, I think, nowadays agree that since the inception of the National Health Service almost all the financial resources allocated to health, as opposed to social security, have been devoted to the treatment of disease. The starting point has tended to be looked upon as the visit of a patient to his general medical practitioner. In the 1970s and thereafter the emphasis must be on encouraging people to *keep* healthy and on informing them how to recognise significant changes in their normal pattern of health. To some extent, of course, this means walking a tightrope since great care must be taken not to create millions of hypochondriacs. But that, in itself, is part of health education.

The second important reason why pharmacists have not been able to play their full role in health education is, in my view, the limitations imposed by the present tripartite structure of the National Health Service. Pharmacists in general practice have been designated as "chemist contractors", in the section of the service administered by executive councils under Part IV of the National Health Service Acts. Their remuneration has therefore been based exclusively on the work they undertake in dispensing NHS prescriptions, including, of course, time taken in giving advice with a specific prescription. Work in health education has not been administered by the executive councils but by local health authorities under Part III of the Acts and they, in general, have had few regular links with pharmacies. The exceptional cases, where medical

officers of health have recognised the benefits of pharmacist involvement on a continuing basis, merely serve to illustrate what could have been applied nationally. And, of course, formal and properly administered links between local health authorities and pharmacies would also have meant that valuable information about an unusually high incidence of a particular disease in an area could quickly have been made known to the MOH. The pharmacist at the average pharmacy, dispensing prescriptions from the surgery of several general medical practitioners, fully appreciates the implications of a higher than normal level of demand for medicines of certain kinds.

To be fair to local health authorities, it must be said that they have to work on strictly limited budgets, and health education activity has had to compete for its share of the available cash with all the other projects in the list of priorities each year. My overall impression is that, so far as education of the general public is concerned, the work of local health authorities can best be described as patchy. It may well be that the bulk of the money available has been spent on health education in schools and I would certainly not wish to argue against that as a priority, since it is easier to establish good habits early than to change established and undesirable patterns of behaviour later on.

The Pharmaceutical Society welcomed the establishment of the Health Education Council by the Government in 1968, for it seemed to fulfil our hope that new emphasis was to be given to this important work and that money was to be made available centrally through the Department of Health and Social Security. The bodies which promoted and co-ordinated activity prior to the establishment of the Health Education Council were the Central Council of Health Education and the equivalent Scottish Council, which has now been replaced by the Scottish Health Education Unit. The Central and Scottish councils were financed by local health authorities. I must add that our welcome for the Health Education Council would have been even warmer if a pharmacist had been included in its composition. Failure to include one indicated once again a total lack of awareness of the contribution that pharmacy could make to the Councils' work. We shall, of course, continue our pressure to secure representation.

WHAT OF THE FUTURE?

The Green Papers on the proposed reorganisation of the administrative structure of the National Health Service provided real hope for an expansion of health education activity, and adequate involvement in this activity of pharmacists in general practice. The area health authorities which were to administer the unified health service were to have full responsibility for health education, except in schools where it would be provided by the new local authorities. With the change of government, the whole question of Health Service reorganisation is again in the realm of conjecture but the very full debates on the two English Green Papers, and those for Wales and Scotland, seemed to indicate that the two main political parties recognised and accepted the need for reorganisation and, obviously, any change must be towards unification of the existing tripartite structure. It may be that the new government's plans will be made known later this year, and, certainly in the context of today's discussions, one would hope that they will provide for an administrative structure that would ensure the involvement in health education of all those in the general practitioner health services.

How would the pharmacist work as a health educator? It would, I think, be useful to quote the following paragraphs from the booklet, issued in 1969, to explain the scope of the Health Education Council's work:

> 1. The council does not accept the widely held assumption that if people are informed by pamphlets, posters, Press articles, broadcast programmes, etc, of the dangers to their health of doing this or of not doing that, they will automatically respond and take the necessary remedial action. It therefore intends to base its health education activities on knowledge derived from research into:
>
> (i) specific types of behaviours which affect health;
>
> (ii) influences (social, environmental, physical) which affect behaviour;
>
> (iii) factors relating to effective communication.
>
> Such research must be the starting point and its aims must be not only to find out how attitudes and behaviour patterns are formed and moulded but also how far they are affected by information imparted by whatever means. It is, therefore, undertaking research in the epidemiological and communication field.
>
> 2. Except perhaps in the field of immunisation and infant care, there is little evidence that health education has so far had any real impact on public health. The task is the difficult one of persuading people to do things which are either troublesome (eg, take care of their teeth) or distasteful (eg, seek vaccination), and of persuading them *not* to do the things they want to do (eg, smoke cigarettes, or eat too much sweets and starchy foods).

These paragraphs express in clear terms the challenge of any health education programme. They illustrate, too, the concern of those experienced in health education work about the probable shortcomings of any campaign which is based solely on posters, leaflets and booklets. Although one cannot be dogmatic about the means of securing effective communication until the first results of the council's research into this question are published, all of us know from experience that advertising, when it creates demand for a product, also raises many questions in the minds of potential purchasers about that product. Where are these questions voiced? Naturally at the distribution outlet where the product is offered for sale. When the "product" is, for example, dental health or the need to avoid obesity, what place is more appropriate than the pharmacy in the minds of the public as a source of information on the questions raised by the campaign? My impression— and it can only be an impression—is that in health education campaigns in the past, the demand for more information has been created, but those whose interest has been aroused have, too often, been given no indication of where "follow up" advice can be obtained. A poster can stimulate interest, a booklet can present facts but to secure effective communications these facts must be made relevant to the individual and this, in some cases, may require individual counselling. Of course, the right foundations can be laid at school where it is axiomatic that in-

formation is expected and absorbed. But where, in adult life, except perhaps in ante- and post-natal clinics, where advice is eagerly sought, is there any real opportunity for effective group teaching? And yet, regular reinforcement of the advice given at school age must be an integral part of any health education plan which is to be effective in the long term.

I am therefore suggesting to Dr Jones and his colleagues that, as part of their comparative research, different ways of involving pharmacies and pharmacists should be tried in "test marketing" operations in various parts of the country. The overall results would, I am convinced, show that pharmacist participation improved the effect of any campaign, and the comparative results of various methods of involvement would indicate how maximum benefit could be achieved.

Of course careful planning would be necessary both centrally and at local level and pharmacists would have to be involved in that planning from the outset. We would certainly want to see: (i) That only one campaign was running in an area at a time; (ii) that any posters, intended for use in pharmacies, were designed with the problems of display in pharmacies in mind; (iii) that adequate advance information was sent to pharmacists in the area, briefing them on the purpose of the campaign, presenting up-to-date facts on the subject to be promoted, and forecasting some of the questions likely to be asked; and (iv) that, in appropriate cases, an indication of the source of more detailed advice is available.

The distribution of millions of free leaflets to make extra litter inside and outside pharmacies would certainly not constitute a successful campaign. I would not wish, however, to give the impression that I feel that leaflets and booklets have no place in health education campaigns. The right formula might be a poster to arrest attention and create interest, informed personal advice from a member of the health team when questions were raised, a leaflet to be given on demand to remind the customer of the basic facts, and in suitable cases, the availability of a booklet for sale to customers who wished to have detailed information. Certainly the distribution, through pharmacies, of booklets in the "Family doctor" series— I understand that about 400,000 have been distributed in the past two years—has shown that a demand for detailed information on such subjects exists. The devoting of valuable display space by pharmacists to this series of booklets has also given an indication of their willingness to take part in health education work even though it has left almost untapped the real benefits that would result from their full involvement.

Before leaving the mechanics of a campaign, may I make a plea that the Health Education Council in discussions on the design of publicity material should consider emphasising the benefits of maintaining good health through sensible precautions rather than painting gloomy pictures of the chronic conditions that might follow from ignoring such precautions. People have a great ability to ignore what they don't want to see or hear; to push it to the back of their minds and decide to "think about it tomorrow." Again, this is a plea for health education in the positive sense.

HOW WOULD THE PHARMACIST BE REMUNERATED?

How is the pharmacist to be remunerated for his work in health education? Again, I must return to the need for recognition of the pharmacist's role in the Health Service in its widest sense, not merely in the dispensing of National Health Service prescriptions. If the administrative structure of the service is to be unified on the lines envisaged in the Green Papers, there can surely be no reason for failing to recognise the benefits that will flow from the integration of pharmacists in the plans to emphasise the value of avoiding rather than treating ill health. And when the benefits of involving pharmacists have been established by the results of the comparative research projects under the aegis of the Health Education Council, there can surely be no grounds for failing to remunerate pharmacists, perhaps by an annual fee, for discharging this part of their commitments within the service.

A great deal has been said in the recent past about the need to utilise to the maximum effect all the available scarce professional skills in the Health Service. The full potential of the experience, education and training of pharmacists has not been utilised in the past. Health education is one area where a start can be made to correct the situation.

One subject which I have not yet touched upon is the involvement of pharmacists in health education outside the pharmacy. Here the main need I see is for closer co-operation between pharmacists and the education authorities at local level so that speakers can be provided to address teachers and possibly meetings of parent-teacher associations, and similar lay adult audiences, on the subject about which pharmacists have an expert knowledge, the responsible use of medicines. Except for special subjects such as the recognition of poisonous plants and shrubs, when the pharmacist might talk direct to the children, the passing on of information should be left to the teachers —who will do this in easy stages as part of a planned course—and to the parents.

Finally, a word about the education of the pharmacist for his role in health education. Most of the requirements are, in my view, already in the degree courses which lead to registration as a pharmacist. The biological sciences are certainly dealt with to a depth which is more than adequate to equip the pharmacist to be able to deal with the kind of questions that might be raised by members of the public during campaigns, provided the up-to-date information on specific topics, as I have mentioned previously, is made available prior to the opening of a campaign. And pharmacists should receive all the booklets, newsletters and leaflets emanating from the Health Education Council and the authority responsible for health education in their area. To assist pharmacists in answering questions, the area authority should also provide a booklet giving details of where members of the public can gain access to all the facilities connected with health in the area.

The need for postgraduate education and refresher courses will, of course, always exist as the state of knowledge improves, but the Pharmaceutical Society's regions are well able to cope with the demands made on them for such courses. I would suggest, however, that within the liberal studies section of the undergraduate courses, and in postgraduate courses, provision should be made for instruction on communication techniques, from advertising theory to the conduct of personal interviews. It would be an interesting addition

with usefulness extending well beyond the field of health education.

SUMMARY

If I may attempt to summarise my views:

I believe that the pharmacy, with its informal atmosphere and its obvious associations with health, is a natural centre for health education.

I believe that the education and training of the pharmacist, coupled with his unique position in the community and his accessibility, adequately fit him, as a member of the health team, to undertake an important role in health education.

I consider that the details of the ways in which pharmacists would participate in health education projects must depend on the topics to be covered in specific campaigns but in any event must be carefully planned with pharmaceutical involvement from the outset.

I feel that the reorganisation of the administrative structure of the Health Service towards unification of the existing tripartite structure will present the opportunity both to involve pharmacists and to remunerate them for their work in health education.

The second Green Paper on the proposed reorganisation of the Health Service in England stated: "The reorganised National Health Service should also provide an administrative structure in which ill-health prevention and health promotion can be given a fresh and stronger emphasis." The discussion period today will give some indication of whether pharmacists are ready to plan ahead and play their full part within the new Health Service as professional participants in health education.

EVALUATION OF THE MICROBIAL CONTAMINATION OF PHARMACEUTICALS IN GOVERNMENT HOSPITAL DISPENSARIES IN GHANA

I. Bacterial Contamination of Hospital Mixtures. K. Boakye-Yiadom, B. Pharm. PhD. C. Yaw Buadu, B. Pharm. PhD.* Department of Pharmaceutics, Faculty of Pharmacy, U.S.T. Kumasi.

SUMMARY

The authors have examined 50 samples collected randomly from some Government dispensaries to access the degree of bacterial contamination. In addition to estimating the viable count per sample, the authors sought also to establish the presence of the following pathogens; *Staphylococcus aureus, Pseudomonas eruginosa, Escherichia coli, Salmonellae* and anaerobic bacteria.

INTRODUCTION

The possibility of preparations for oral and topical use being subject to microbial contamination has long been recognised and this problem seems to have been with us since medicines began to be used.

The literature on microbial contamination of pharmaceuticals is extensive; notable among them are the reports on contamination of steroid creams (Noble and Savin 1966), saline eye drops (Ayliffe et all 1965), pharmaceutical solutions (Beveridge 1971) and pharmaceutical raw materials (Westwood 1971).

The presence of pathogens in pharmaceuticals is obviously undesirable and may prove fatal. The dangers associated with this problem has led to the creation of working parties in some countries to look into the question of microbial contamination of pharmaceuticals in those countries. Prominent among such working parties are those of tne Royal Swedish Medical Board (Kalhings, Ernerfeldt and Silverstolpe, 1965), the British Public Health Laboratory Service (Taylor et al 1971) and the Pharmaceutical Society of Great Britain (Sykes et al 1971). Such investigations have never been conducted in Ghana. In the present work the authors have examined the bacterial content of some mixtures dispensed in four Government Hospital dispensaries.

MATERIAL AND METHODS

Twenty millilitre-samples were taken from the stock solutions of the various dispensaries and poured directly into previously sterilised 50 millilitre bottles.

Total viable bacterial counts were performed by plating one millilitre amounts of the mixtures and 10—1, 10—2 and 10—3 dilutions in quarter strength Ringer's solution in nutrient agar (Oxoid). The plates were incubated at 37°C for 48 hours after which counts were performed.

For the detection of the specific pathogens enrichment and/or selective media were used. The methods and media used were the same as those used by the British Pharmaceutical Society's working party in its investigation of microbial contamination in pharmaceuticals for oral and topical use. (Skyes et al 1971). Oxoid media were used.

RESULTS AND DISCUSSION

Of the fifty (50) samples of mixtures examined Twenty-Two (22) showed a total viable bacterial count of less than 10,000 organisms per millilitre of mixture, thirteen (13) had a total viable bacterial count of between 10,000 and 100,000 organisms, per millilitre of mixture, and fifteen (15) more than 100,000 organisms per millilitre of mixture. These figures are summarised in Table I.

Results for the presence of the specific pathogens showed that nine (9) samples contained presumptive coagulase positive staphylococci and sixteen (16) coagulase negative staphylococci. Five (5) samples showed the presence of *E coli*. Seventeen (17) samples the presence of *Pseudomonas aeruginosa*, Eight (8) samples the presence of salmonellae and fourteen (14) samples the presence of anaerobic bacteria. These results are summarised in Table II.

Opinion on the imposition of limits for total microbial counts in preparations for oral use vary considerably. Kallings and his co-workers (1966) stipulated an acceptable limit of 100 organisms per gram, where as Dony

*Present Address : Ghana Standards Board, Accra

and Gerard (1968) proposed 10,000 organisms per gram and the Czechoslovakian Pharmacopoeia specifies 50,000 bacteria per gram for tablets and similar preparations. The working party of the British Pharmaceutical Society (Sykes et al 1971) maintain that numerical limits for total microbial counts are unrealistic and should be avoided. However it is generally agreed that limits must be placed on at least the presence of *E coli*, *Ps. aeruginosa*, *Salmonellae* etc. (Sykes et al 1971, Taylor et al 1971, Buhlman et al 1973) and in their report Taylor et al (1971) mentioned the dangers associated with the presence of *Pseudomonas aeruginosa* in oral preparation. Notwithstanding the differences in opinion on the limit for total microbial counts the present authors believe the results of the present work to be alarming. Considering that 56 per cent of the total number of mixtures examined showed a total bacterial count of over 10,000 organisms per millilitre and as high as 30 per cent showed a count of over 100,000 organisms per millilitre. Moreover the presence of such pathogens as *Pseudomonas aeruginosa*, *Salmonellae*, *E. coli*, presumptive pathogenic staphylococci in such significant proportions to the number of mixtures examined indicate a very poor level of hygiene in the dispensaries and pose a threat to public health. The authors gave attention mainly to bacterial contamination because it was surmised that this will give a good index to general microbial contamination of the dispensaries.

TABLE I — TOTAL VIABLE BACTERIAL COUNT

Viable Bacterial Cont/ml	% No. of Mixtures
L 10,000	44
Between 10,000 - 100,000	26
>100,000	30

TABLE II — PATHOGENS COUNT

Type of Bacteria	% No. of Mixtures
Presumptive coagulase positive S. aureus	18
Coagulase negative S. aureus	32
E. Coli	10
Ps. aeruginosa	34
Salmonellae	16
Anaerobes	28

Ayliffe, G. A. J., Barry, D. R. Lowbury, E. J. L., Roper Hall, M. J., and Martin Walker, W. Lancet, 1966, I, 1113.

Beveridge, E. G. Pharm. J., 1971, **207**, 102

Dony, J., and Gerard, P., Journal Mondial de Pharmacie, 1968, I, 19.

Kallings, L. O. Ernerfeldt, F. and Silverstolpe, L., The 1964 inquiry by the Royal Swedish Medical Board into microbial contamination of medical preparations. Final Report 1965.

Kallings, L. O. Ringertz, O., and Silverstolpe L., Acta Pharmaceutica Suecica, 1966, 3, 219.

Noble, W. C. and Savin, J. A., Lancet, 1966, I, 347.

Microbial contamination in pharmaceuticals for oral and topical use.

British Pharmaceutical Society's working party. Chairman Sykes, G., Pharm., J., 1971, **207**, 400 - 402.

Report by the Public Health Laboratory Service working party on microbial contamination of medicines administered to hospital patients. Chairman Dr Joan Taylor, Pharm. J., 1971, **207**, 96 - 99.

Sykes, G., Symposium of the American Society for Microbiology, Detroit, May 1968. Personal Communication.

Sykes, G., Indian Journal of Pharmacy, 1969, 31, 33.

Westwood, N., Pharm. J. 1971, **207**, 99.

Do you know the advantages of Flex-Flac?

Soon available on the Ghana market

Transparent
- Constant control of the solution

Flexible
- **Easy mixing of additional drugs**
- **Simple fast infusion**
- **Air-inlet unnccessary**

Unbreakable
- **Easier handling**

Disposable
- **Absolute safety**

Sterilized in the outaclave

Pyrogen-free

Vial stopper
- **Convenient switching to next Flex-Flac**
- **Easy addition of drugs with the syringe**

Intravenous Infusions Ltd.

P.O. Box 2274 Accra,

UNDER LICENCE OF

VIFOR SA GENÈVE / SUISSE

RAW MATERIALS AND DEVELOPMENT

By Y. Binka, B. Pharm., M.Sc. MPSG
Address : Chemical Laboratory
Box 525, Accra

The United Nations General Assembly recently had a special session on raw materials and the problems posed by the recent increases in oil prices. This is a pointer to the present grave situation in the supply and demand of raw materials. Before the Arabs increased their oil prices, the world was already in serious trouble with respect to chemical raw materials for the production of many varied essential commodities.

RECENT DISASTERS IN CHEMICAL INDUSTRIES

It must be mentioned here that in the late 1960s most of the world's chemical industries were producing over capacity because of high rise in demand for chemicals. This high demand for chemicals caused many old chemicals plants which ought to have been scrapped off made to plodder along. This over-demand on the chemical plants led to the breakdown of some of them. In United States some manufacturers had to close down their plants or had them operated under capacity; some of these major firms were Northern Petrochemical, Jefferson Chemical, Shell and PPG Industries Inc. The bad omen on chemical industries did not end there. Big production plants started in Puetro Rico by Union Carbide and PPG had to close down within some weeks after commissioning because of power supply problems. In February last year, BP's new 340,000 ton a year Ethylene plant in United Kingdom broke into flames. In June, 1973 BP's 260,000 tons a year vinyl chloride plant had to close down because of troubles with "heat exchanger system." (1)

This has been the scene in the chemical industries in United States of America and in United Kingdom If we turn to Europe and Japan, similar situation exists. Wacker Chemie's 30,000 ton a year PVC plant in Cologne exploded into flames during commissioning; Ethylene plant of Idemitsa Petrochemical in Japan also exploded into flames last year. These incidents in the major chemical industries have greatly contributed to the present shortage of basic chemical raw materials like Olefins, benzene, toluene polystyrene and synthetic rubber. Hence, many pharmaceuticals industries are thrown out of gear.

PROCESSING OF RAW MATERIALS:

The above stated account depicts the grim situation we find ourselves today, especially those of us in the developing countries. We need to reconsider our development projects. Conservative approach has been that we produce for export agricultural commodities like cocoa, coffee, and other natural products like minerals without their being processed into finished products. The current prices for most of such raw materials are dictated by the industrialised importing countries. The fact is that industrialised world has suffcient stocks of most agricultural commodities like cocoa, coffee and tea. Thus, the developing countries producing these commodities stand very little chance in getting the industriallsed countries to grant them reasonable minimum prices. One other hard fact is that imports from Asia, Africa and Latin America form only 3½ per cent of the national incomes of the industrial countries. (2)

What those of us in the developing countries have to do in the present circumstances is to develop trade among ourselves. Such approach would naturally generate industrial processing of raw materials available in these countries. It is necessary to have regional industrial planning, for example those of us in West Africa can plan together. Togo's lime-stone can be fully developed to feed her neighbours. Nigeria with her oil could go into petrochemical industry (plans are on the way for such venture) and Ghana could develop her bauxite deposits at Kibi, Nyinahin and Awaso into alumina and aluminium products. Countries like Ghana, Ivory Coast and Nigeria with oil refineries could attach "cracking" accessories to their outfits. Ethylene based industrial complex cited in any of these countries could produce important products like ethanol, polyethylene, ethyleneglycol and acetic acid. Bitumen producing plants could also be set up in any of the countries with oil refineries and that country could supply the needs of her neighbours.

Heavy chemical complex based on sea-water and electricity could also be set up on regional basis. Through electrolysis of brine, caustic soda and chlorine could be produced. Caustic soda can be used in the oil, soap, textile, petroleum and alumina

industries. The hydrogen as a by-product from chloroalkali plant might be used to produce ammonia from the nitrogen in the air. This could lead to the establishment of fertilizer industries.

Production in oils and fats could be stepped up to feed a chemical complex to produce margarine, soap, glycerol, Nitrogylcerine and detergents. If we turn to starch as obtained from cassava, we could have products like sorbitol, Ascorbic acid and Gluconic acid through hydrolysis and oxidative-reduction processes.

Fermentation plants from starch would provide ethanol, citric acid, acetone and Butanol. With the abundance of sunshine and rain in the tropics, wood industry could be intensified. Exporting wood in the form of logs will have to be minimised. We could have wood processing industries for the manufacture of furniture and chemically based wood products. For example, destructive distillation of wood could provide products like methanol, acetone, acetic acid, cresote, tar oil and turpentine. The availability of these basic raw materials will naturally lead to the establishment of many related secondary industries.

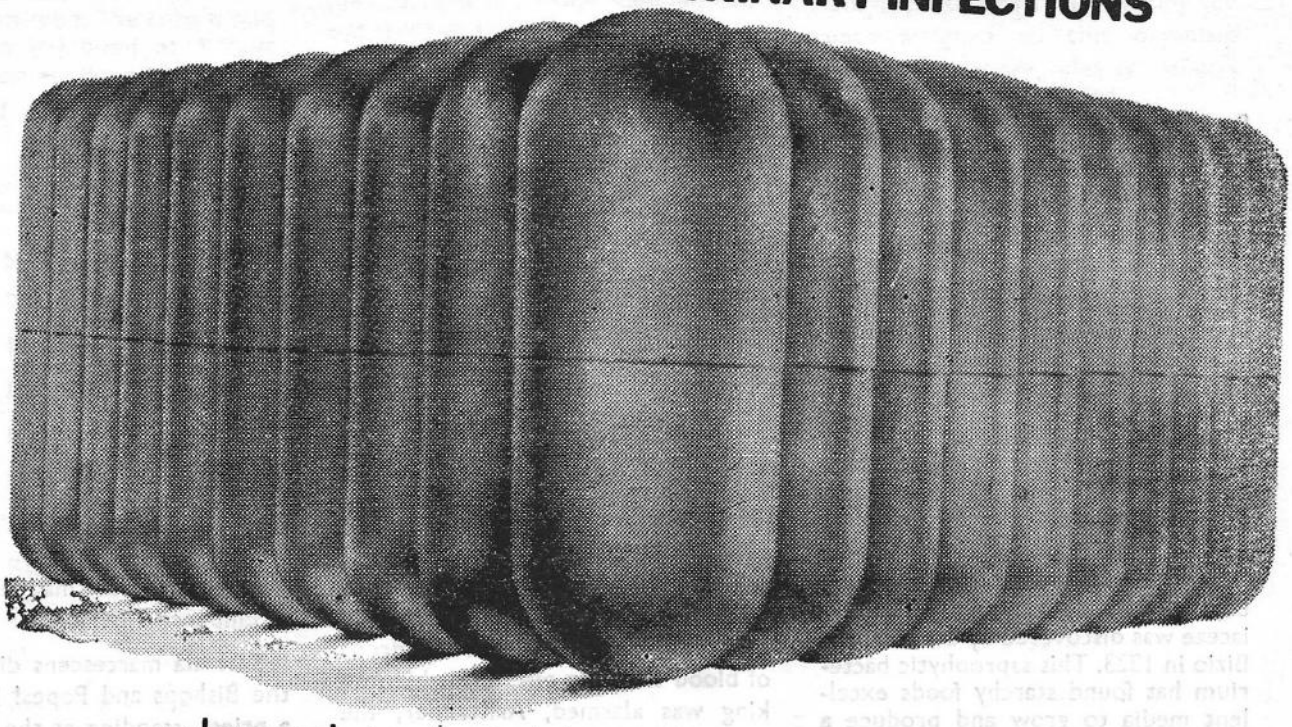
The above cited examples of the various products we can produce from our raw materials are products we can get from chemical based industries. Other areas like steel and textile industries will require similar joint planning. Natural development in establishing these industries to process our raw materials will be the springing up of many secondary industries. Marketing of the products from such secondary industries will not very much be a problem if we can develop intense trade partnership amongst ourselves. When we are able to process our basic raw materials, we shall then be in the position to control our supply of raw materials like cocoa, coffee, groundnuts, etc., to the world and hence, we shall be able to negotiate for favourable minimum price levels.

1. Colin Ronan et al (1973), New Scientist 59, 389.
2. Lewis A. W. (1969) Some Aspects of Economic Development, page 16, University of Ghana, Legon.

Furadantin-mc*

(nitrofurantoin macrocrystals)

A MORE LOGICAL FIRST CHOICE TO TREAT ACUTE AND CHRONIC URINARY INFECTIONS



- ☐ broad and stable bactericidal spectrum —does not encourage bacterial resistance
- ☐ proven biological availability in urine and kidney tissue
- ☐ improved gastrointestinal tolerance
- ☐ remarkably safe for long- as well as short-term therapy
- ☐ demonstrated reliability through two decades of continual world-wide use

*Trademark 248-93

* EATON LABORATORIES
Norwich International
410 Park Avenue
New York N Y 10022 U.S.A

SOLE DISTRIBUTOR IN GHANA :

GHANA DRUG HOUSE LTD., P.O. BOX 469, ACCRA & P.O. BOX 1040, KUMASI

THE FICTION AND FACT OF SERRATIA MARCESCENS

By Charles Yaw Buadu, Ghana Standards Board, Accra

Serratia marcescens, a bacterium, belonging to the family Enterobacteriaceae was discovered by Batholomeo Bizio in 1823. This saprophytic bacterium has found starchy foods excellent media to grow and produce a blood-red pigment. Man has mistaken such growth for fresh blood and this manifestation struck fear in superstitious and credulous people. A significant departure from the prejudices of the past occurred in the early 19th century when the phenomenon was examined in a scientific manner.

The appearance of blood in food was first recorded during the siege of Tyre in 332 B.C. Tyre was a high-walled city. When Alexander tne Great was denied entry to Tyre, he decided to besiege the city. The Macedonians under Alexander laboured for seven months building a 200-foot-wide mole to the island so that their catapults could breach the wall. The weary Macedonians, labouring to finish the mole under a constant rain of arrows and stone balls, were said to have been given courage by a number of portents. Two of these portents are reported as follows:

1. "At the distribution of the rations on the Macedonian side, the broken pieces of bread had a bloody look." (Diodorus, 1963)

2. "Among the Macedonians also, when some of the soldiers happened to break bread, they noticed drops of blood trickling out, and when the king was alarmed, Aristander, the most skilled of the seers, declared that if the blood had flowed from without, it would be an unfavourable omen for Macedonians; but on the contrary, since it had flowed from an inner part, it foretold destruction for the city which they had determined to besiege." (Curtius, 1962)

The Macedonians using the mole and captured Phoenician ships, stormed Tyre, killed 8,000 Tyrians, sold another 30,000 into slavery and left Tyre in ruins. Serratia marcescens has done the trick!

The appearance of bloody coloration of food may be traced back to Pythagoras who lived in the sixth century B.C. It is postulated that the teacher, mathematician and cosmologist prohibited beans as food because he felt the souls of his parents were in them.

There are more than fifty references to miraculous red colouration of food and only a few will be mentioned here.

Blood running out of bread in Tours, France, in 581 A.D. was interpreted to mean the defeat of the Lombards and the madness and death of Emperor Tiberius.

Serratia marcescens did not spare the Bishops and Popes! In Denmark a priest, standing at the altar, when he had lifted up tne chalice and was about to take up the Host, found it was changed to flesh and blood. He showed it to the Bishop and Clergy. The Bishop predicted grievous trouble for the church and that the blood of christian people would be spilled. Scarcely fourteen days later the Slavonians invaded the country, took all places, overthrew churches and brought all the people into bondage. The doctrine of the sacrament had recently been approved by the Council of Rome and the change of the Host to flesh and blood gave support to the miraculous view of the sacrament. The starchy sacramental bread provided an excellent substrate in the damp environment of medieval churches for the rapid proliferation of Serratia marcescens.

The "Miracle of Bolsena" which played a very important role in Corpus Christi must be mentioned here. Although the sacrament of the Eucharist was approved by the Council of Rome in 1079, its institution was still a matter of debate in the 13th century. The first diocese to celebrate the Feast of Corpus Christi

was that of Liege in Belgium. Deacon Jacob, who later became Pope Urban IV in 1261 hesitated to extend this feast to the entire church until he was influenced by a miracle. During a service in the church of the Holy Christina in Civitavecchia, as the priest was blessing the elements of Holy Communion, drops of blood fell on his linen robe. The robe is said to have been exhibited as a relic until recent times. Pope Urban was prompted by this occurrence to issue a Papal Bull in 1264 ordering Corpus Christi a feast for the entire church.

The monks followed the footsteps of their masters for in Cologne, Germany one saw the bleeding wounds of the Crucified Lord Jesus in the hand of the priest preparing the sacrament. Holy Communion was stopped immediately.

This unfounded belief of blood in bread generated fear in the people. It did not take them long to find that the Jews were stabbing the bread! And thousands had to die for this cruelty!! Scheurlen (1896) postulated that Serratia Marcescens caused the death of more men than many pathogenic bacteria.

An inspection of Table I, listing the names assigned to this organism since its discovery, clearly reflects the confusion it has caused.

TABLE I — LIST OF NAMES ASSIGNED TO SERRATIA MARCESCENS

Name	Author	Date
Serratia marcescens	Bizio	1823
Zaogalactina imetrofa	Sette	1824
Mucor sanguineus	Decol	1824
Protococcus imetrophus	Meneghini	1838
Monas prodigiosa	Ehrenberg	1849
Palmella prodigiosa	Montagne	1853
Micraloa prodigiosa	Zanardini	1863
Bacterium prodigiosum	Schroeter	1872
Micrococcus prodigiosus	Cohn	1872
Micrococcus imetrophus	Trevinas	1879
Bicillus prodigiosus	Fliigge	1886
Bacillus imetrophus	Trevisan	1887
Bacillus marcescens	De Toni & Trevisan	1889
Bacterium prodigiosum	Lehmann & Neumann	1896
Coccobacterium sp.	Schmidt & Weis	1902
Ligridobacterium prodigiosum	Orla-Jensen	1909
Dicrobactrum prodigiosum	Enderlein	1917
Erythrobacillus prodigiosus	Winslow et al	1920
Salmonella marcescens	Pribram	1929
Salmonella prodigiosa	Pribram	1929
Chromobacterium prodigiogum	Topley & Wilson	1929

The International code of Nomenclature of Bacteria and Viruses (1958) refers to the organism as Serratia marcerscens and this is the official name today.

The superstitious have attached miraculous significance to this blood-in-bread phenomenon well into the 20th century. Breed and Breed (1924) cited an incident in Naples in 1910 when a bleeding Host was found in one of the churches. This led many of the peasants to seek the protection of the priests.

Even today some of the reports of red colouration look quite miraculous. A typical example involving a child born in University of Wisconsin Hospital was reported by Waisman & Stone (1958) as the "red diaper syndrome." The first diaper laundry, after the child had been discharged from the hospital showed that some of the diapers were stained with what appeared to be blood. The child's stool and urine were normal. Various explanations were put forward, including excretion of urates and contamination of the diaper receptacle. Urates were not responsible and none of the eight hundred other infants serviced by the laundry showed the "red diaper syndrome." So new diaper receptacles and diapers from other sources were tried. The child continued in excellent health, but the soiled diapers continued to turn red.

The child's stool was finally cultured and an overwhelming growth of a red pigment organism was found. The bacterium was identified as

Serratia marcescens. It was found that a nearby biochemistry laboratory was using S. marcescens in a study of aerosol techniques and in an adjoining building the geneticists were studying this organism. The organism apparently established itself in the child's intestine, and replaced the normal flora without affecting the health of the baby. The organism did not produce pigment when growing in the intestine, but produced abundant pigment in the environment of the diaper receptacle.

Before 1960, S. Marcescens was considered an innocuous saprophytic organism. Since 1960, however, infections due to this organism have been reported and these include urinary tract infections, pneumonia and lung abscess (Dodson, 1968). This emphasizes the hazard of using S. marcescens as an indicator organism in experimental study of aerosols and for testing the efficiency of bacteria filters.

Such is the long and romantic story of Serratia marcescens. After serving as a favourite object of classroom demonstration and popular tool of the biochemist and geneticist, it has emerged today as a pathogen commanding the respect of the clinician.

References :-

Breed, R. S. and Breed, M. E. (1924). The type species of the Gems Serratia, commonly known as Bacillus prodigiousus. J. Bacteriol. 9, 545.

Curtius, Q. (1962): History of Alexander, Harvard University Press Cambridge, Mass.

Dodson, W. H. (1968): Serratia marcescens septicemia. Arch. Intern. Med. 121, 145.

Diodorus of Sicily Vol. VIII Harvard University Press, Cambridge, Mass.

International Code of Nomenclature of Bacteria and Viruses. Biological Code 1958 Ed. by Editorial Board of the International Committee Bacteriological Nomenclature. Iowa State College Press, Ames, Iowa.

Schrevlen E. (1896): Achives of Hygiene. 31, 1.

Waisman, H. A. and Stone, W. H. (1958): The presence of Serratia marcescens as the predominating organism in the intestinal tract of the newborn.

The occurrence of the "Red Diaper Syndrome."

DRUG INFORMATION FROM THE SOCIETY'S DRUG COMMITTEE

I. ADVERSE REPORTS

A MINTEZOL: (*THIABENDAZOLE*)

The committee has received an adverse report on the use of Mintezol tablets after normal oral administration of three tablets daily for two days from Korle-Bu Teaching Hospital.

The patient was reported to have developed swollen face and skin eruptions after taking the drug. Clinicians Pharmacists and Nurses who come across any such adverse reactions may inform the Drug Committee through the Society address.

B. Adverse reactions to drugs including oral contraceptives, May 1, 1968—May 1, 1973 (Denmark)

The Danish National Health Services Board on Adverse Reactions to Drugs has published a report on adverse reactions to drugs reported during the period from 1st May to 1st May 1973. The Board received a total of 3,117 reporting specifying 3,983 adverse reactions. From these reports oestrogen preparations counted for 32 per cent of all the pill reports (oral contraceptives-the-pill-contributed 96.5 per cent (987) of the cestrogen-progestagen group). 400 of these reports were on effects on the vascular system; 216 of the cases were of arterial occlusion and infarction (including 21 cases for which the outcome was fatal), 153 cases of thrombophlebitis and venous occlusion and 31 cases were transitory cerebral ischaemia.

The "Anti-infectives" followed the cestrogen-progestagen" drugs on the list of drugs causing adverse reactions. Skin reactions formed the greatest percentage (69 per cent) of all reports on the "anti-infectives and, in this case penicillin group of drugs was top on the list (48 per cent). The Board reports that among 14 fatal cases with the anti-infectives, eight of these cases were due to bone narrow depression. It should be noted here that in Denmark annual sale of the "pill" approaches 3 million pieces and the annual consumption of anti-infectives are in the following order:—

Benzyl penicillin + oral penicillin—about 4 million 24 hour-doses; Ampicillin—$\frac{1}{2}$ million 24-doses; and Sulphonamides—3.5 million 24 hour-doses.

As indicated in Table (III), incidence of skin reactions to the use of drugs was found to be the highest. A total of 896 cases were reported and of these anti-infective drugs contributed 455 cases, psychotropic drugs totalled 135 cases and 55 cases were due to anti-rheumatic drugs.

Next to skin reactions were **anaphylactic and allergic reaction:**

A total of 116 cases were reported during the period. Most of these reactions were contributed by the application of roentgen-diagnostic agents (64 reported cases). Of the 64 reported cases the use of UROGRAPHINE was responsible for 27 of the cases reported. **150 Paque and Biligraphine** contributed 14 and 12 cases respectively.

There were 38 cases reported of **Congenital Malformations** and it was assumed that they were contributed by the mother taking drugs during pregnancy. Eleven of the children affected died. Psychotropic drugs were held responsible in 11 cases (IMIPRAMINE—3 cases, and AMITRIPTYLINE 2 cases). ANTIHISTAMINIC OR ANTIEMETIC drugs were suspected in six cases. MECLOZINE in two cases, PROMETHAZINE in two cases, while CAFFEINE+ DIPHENYDRAMINE and THIETHYLPERAZINE were responsible for a case each). **Bone Marrow Depression** is considered one of the most serious adverse reactions caused by drugs during the five-year period. The Danish Board received 162 reports of bone marrow depression and 40 of these were fatal (see Table IV).

As already indicated above, anti-effective drugs ranked highest in the list of drugs contributing most of this type of adverse reaction. CHLORAMPHENICOL was noted to contribute in seven cases and ANTIRHEUMATIC drug also ranked high in causing bone marrow depression. 39 cases were reported and 19 of these were attributed to PHENYLBUTAZONE. 197 cases involving liver damage were reported. Cases of lesions of the liver reported were mainly in the form of transitory toxic HEPATOPATHY. There were, however, 10 death cases reported. Of the reported cases involving the liver, 41 cases were suspected to have been caused by the oral contraceptives; further 41 cases by PSYCHOTROPIC drugs, and anti-infective drugs contributed 25 cases. Under the PSYCHTROPIC drugs CHLORPROMAZINE alone was held responsible for 30 cases, ANAESTHETICS (halothane being applied in all cases) contributed 38 cases.

During the five-year period for this adverse reaction reporting, the Danish Board received 129 death cases associated with consumption of drugs. It is reported that in all cases the drugs were given in therapeutic doses except two cases. Out of the 129 cases 'cause relation' was rated as probable or definite in 106 of the cases.

Notes: The Danish report is a pointer to the problems facing the present sophisticated world which is exposed to more potent drugs than

ever before. Very few countries have established such systematic collection of data on Drug adverse reactions.

The society, about two years ago, set up Drug Committee whose terms or reference were to collect data on drugs especially adverse side effects. The Committee distributed formats for reporting to the major hospitals through the principal pharmacists but not a single report has been received from any of these hospitals. The Korle-Bu Report was through a personal contact by a member of the committee. We can only know the drug problem in our own community if we collect such important data on the use of drugs.

The committee wishes to appeal to all pharmacists especially those in hospital to report to the Society's Secretariat (*Tel.* 28341) any adverse reactions from drugs or you can contact J. Y. Binka (*Tel.* 76191).

UNITED NATIONS INFORMATION LETTER ABSTACTS (NO. 4, APRIL, 1974)

MEDICO-SOCIAL SURVEY OF 662 DRUG USERS (APRIL 1971. MAY 1972)

By Dr Mrs F. Davidson, M. Etienne and J. Piesset

This article contains the results of a survey on 662 cases. It was carried out in France between April 1971 and May 1972. The overall survey will cover more than 1,000 cases.

The results show that certain important factors, such as present and past family relations — particulary maternal —, and the degree of integration of this individual in his social environment, will have to be studied in greater detail. It also indicates the need to consider more thoroughly points on which hitherto no light has been shed, such as the conditions of "initiation," the passage to drug dependence, the presence or absence of psychiatric problems and their duration.

Among the major conclusions drawn from the study one may cite: (a) In France, at present, no socio-economic group is free from drug dependence; (b) the majority of drug abuse cases cannot be linked, either, to any particular cultural group (such as intellectuals and students), or to any immediate social situation (e.g. unemployed); (c) fashion, curiosity, group pressure, and the search for new philosophies which act as incitements to new experiences and encourage the dissemination of drugs are still not sufficient in themselves to swing young people into the habitual use of drugs or drug dependence. There are also, according to the authors, long standing and deep-rooted personal factors that are echoed and amplified in the problems of society with which each individual is confronted.

CANNABIS IDEOLOGY: A STUDY OF OPINIONS AND BELIEFS CENTERING AROUND CANNABIS CONSUMPTION

By M. I. Soueif

Part of a bigger project undertaken by the National Centre for Social and Criminological Research in Cairo, since 1957, this article is an analysis of the data gathered concerning "The cannabis ideology." By this concept, the author means a "set of beliefs thought to guide and justify takers' and non-takers' conduct toward drug related issues." The author considers that defining beliefs and attitudes of a man toward his social world is of interest if we want to make reliable predictions in this respect. For this reason the data gathered in this article, from the author's point of view, could be relevant to policy makers in their decisions concerning drug behaviour.

TOLERANCE TO AND DEPENDENCE ON CANNABIS,

By S. Kaymakcalan

The author reviews some studies conducted recently on cannabis or THC in relation to tolerance and dependence and discusses the findings obtained.

Research carried out on animals in different laboratories indicates that tolerance to THC develops. The animals on which experimentations was conducted included fish, birds, rats, dogs and monkeys. These results correspond to those gathered in India and Greece concerning heavy cannabis smokers.

Physical dependence on THC has been demonstrated on monkeys. The author cites an experiment carried out on six rhesus monkeys. A review of the literature indicates that withdrawal symptoms may also occur in heavy cannabis smokers, the author says.

LAW AND DRUGS

The law Association for Asia and the Western Pacific (LAWASIA)* held a conference in Jakarta (Indonesia) in 1973. A Commission was set up to consider "Law and Drugs." Under this theme the following topics were discussed:

1. The Legal Control of Drugs.
2. The Drug Addict: Punishment or Treatment ●
3. Drugs and Crime ●
4. The Internal Control of the Traffic of Drugs ●

The Commission adopted the following recommendations:

1. "The Commission on Law and Drugs concluded that the guidelines and provisions set by the Single Convention and its amendments of 1961, and also the Convention on psychotropic substances, should be carried out without disregarding the domestic condition of each Law in a country.

2. Furthermore, the Commission pointed out that measures taken towards the addict should be in accordance with each individual case.

3. The Commission agreed upon the fact that a further study of the relationship between drug and crime is urgently needed. And that this topic should be discussed further in the forthcoming Lawasia conference.

4. A suggestion made by the Commission is that a regional co-ordinative and co-operative body be set up, besides those already in existence. Specifically in handling the traffic of both natural and synthetic drugs."

TABLE I Reports on suspected adverse reactions submitted during the period May 1968 — May 1973. Distribution according to drug groups.

Drug Groups	No of Reports	No of Deaths
Anti-infective	657	14
Vaccines and sera	31	2
Respiratory system	37	15
Cardio-vascular drugs	62	5
Diuretics	42	1
Gastrointestinal drugs	99	2
Anthelmintics	0	0
Liver & gallbladder	1	0
Urinary tract disinfectants	46	0
Drugs action on the uterine motility	1	1
Blood & bloodforming organs	28	7
Drugs action on the coagulation	14	0
Hormones	76	7
Oral contraceptives	1022	24
Antirheumatics	226	20
Psychopharmaca	222	11
Central nervous system	134	4
Autonomic durgs	66	1
Antihistamines	19	2
Analgesics	72	3
Anaesthetics	55	9
Electrolyte and water balance	3	0
Disinfectants	1	0
Skin & mucous membranes	34	0
Intermediary metabolism	14	1
Diagnostics	155	1
TOTAL	3117	129

TABLE II Reports on adverse reactions during the use of oral contraceptives. Period: May 1968 — May 1973.

Adverse Reactions	No. of Reports	No of Deaths
Pulmonary infaraction	135	7
Myocardial infaraction	15	8
Cerebral infarction	48	3
Other arterial occlusions	18	3
Thrombophlebitis extr. inf. prof.	91	
Thrombophlebitis extr. inf. superfic.	47	
Other venous occlusions	15	
Transitory cerebral ischaemia	31	
Arterial hypertension	35	
Impaired hepatic function	31	
Menstrual disturbances	92	
Headache	39	
Mental disturbances	93	
Weight gain	55	
Impaired libido	26	
Miscellaneous	216	1
TOTAL NUMBER OF REPORTS	789	22

TABLE III: Reports on suspected adverse reactions submitted during the period May 1968 — May 1973. Distribution to adverse reactions groups.

Adverse Reactions	No. of Reports	No. of Deaths
Neoplasms	6	2
Anaphylactic	116	3
Endocrine, metabolic, nutritional	243	7
Haematologic, bone marrow	162	40
Mental	151	0
Central & peripheral nervous system	227	0
Sensory	44	0
Cardial	45	18
Vascular	469	24
Respiratory	26	0
Gastro-intestinal	171	3
Hepatic	197	10
Renal, urinary tract	28	3
Genital, abortion	161	0
Skin	896	2
Locomotory	68	0
Congenital malformations	38	11
Perinatal (asphyxia)	0	0
Excessive overdosage	13	3
Addiction	31	0
Unclassified	25	3
TOTAL	3117	129

TABLE IV: Deaths caused by bone marrow depression.

Drug Groups	No of. Deaths	Duration of treatment (weeks) of each case.
Anti-infectives	8	
Sulfonamides	2	1, 4
Ampicillin	1	1
Chloramphenicol	4	½, 1, 3, 25
Tetracycline	1	2
Anti-rheumatics	16	
Phenylbutazones	12	1, 1, 1, 1, 2, 2, 1, 4, 8 12, 100, 250.
Indometacin	1	2
Goldpreparations		3, 15, 20
Cytotoxics	6	2, 3, 3, 4, 8, 20
Neuroleptics	3	7, 10, ?
Anti-thyroids	2	4, 25.
Others	5	
TOTAL	40	

Tables taken from Danish National Health Services Board report on Adverse Reactions to Drug (1974) 19, 428 — 431.

SYMPOSIUM—THE HOSPITAL PHARMACY AND THE PATIENT

BETTER understanding, better remuneration, better pharmacy departments are curative measures to remedy patient delays in hospital dispensaries.

These were reported by a panel on Symposium, "The hospital pharmacy and the patient—cause of delays in the hospital dispensary and how to remedy it", organised by the Greater Accra branch of Pharmaceutical Society of Ghana at Accra Community Centre on the 8th of May, 1974. The Chairman, Mr J. Pearce-Biney, Pharmacy Merchandise Manager, Kingsway Stores of Ghana Limited and vice-president of the Accra branch of the Society was introduced by Mr G. K. Acheampong, Honorary Secretary of the branch.

Mindful of the ever increasing complaints by the public that patients are delayed unnecessary at dispensaries and more often than not are given wrong interpretation regarding dosage and mode of administration of drugs, the panel considered that the number of pharmacists in our hospitals are so few to cope with ever increasing jobs burdened on them.

Pharmacists:

It was considered, as an example, that while there are about 200 or more Doctors in Korle-Bu Hospital to cope with patients, only six pharmacists are available to render services to the same number of patients. The result is that, pharmacists apart from their daily routine of stocking the dispensary, issuing drugs to wards, attending in-patients, checking stocks and making preparations, have very little time to supervise other services to out-patients and patients in general. Hence, some of the work which under normal circumstances requires their scrutiny are left to their subordinates which invariably may result in a mistake and may consume time for correction. The panel wholly agreed that **the government needs to recruit more pharmacists into hospitals** but this will only be achieved when the pharmacist's condition of service is made more attractive to entice more pharmacists into the hospital field and prevent those already in from leaving the service. Same was agreed for Dispensing Assistants who are also leaving the service at rather a faster rate.

Inadequate Facilities:

It was considered that hospital pharmacies in the country are so badly equipped that, to-date, mortars and pestles are being used in our regional hospitals in preparation of mixtures and other products. These out-dated equipments consume much time and energy and, apart from that, frustrate the pharmacists who leave the hospital as soon as frustration sets in. The panel felt strongly that our dispensaries need modern and efficient equipments to increase the rate of out-put from dispensaries and, most important, to combat frustration on the part of the pharmacists. Once the dispensaries are well equipped, the panel is of the opinion that, the pharmacist knowledge could be utilized fully in preparation of medicines and drugs from raw materials or semi finished products. This, undoubtedly, will reduce the increased expense of importing a lot of drugs and other medicines from other countries.

Lack of dispensaries and space:

Few dispensaries are available in the country and even the few that are available are not well planned. The Panel could not understand whether this was an architectural shortsightedness. At first sight, most of the few dispensaries are not spacious. They are very congested and, as a result, the Pharmaceutical staff work within an area, surroundings of which are very uncomfortable to bear. Limited spaces and proper seating arrangements are lacking for patients, hence, quite a number of them do either stand or loiter around waiting for their medicines and the opinion is that present pharmaceutical departments should be given a modern face-lift to cope with services rendered and also future planners should ensure that hospitals incorporate better and modern pharmacies in their plans.

Understanding:

As a lot of patients are ignorant about the work of the pharmacists, it was the concern of the panel that patients should be educated to understand that dispensing of prescriptions is not an instantaneous affair. It is an art which requires carefulness and accuracy. Hence, when patients call at dispensaries, they should be prepared to spend some few minutes for their medicines to be prepared, given correct labels and issue to them with the right directions. At this point, it was observed that hand-writing of some of the Doctors are not distinct and that Doctors should be advised to write prescriptions more clearly thus avoiding time wasted by the pharmacists deciphering what is and what is not.

On containers, it was noted that if

patients will bring in right containers for their preparations, much time will be saved. Panel emphasized the dangers of patients calling at the dispensaries with dirty containers which are hygienically unsuitable for their drugs. Bearing in mind that a dirty container may even reduce the potency of the drug, contaminate the drug, thus, worsening the sickness of the patient. It was therefore recommended that due to lack of funds whereby the government cannot import sterilized containers into the hospitals, the best that could be done at the moment is to equip all dispensaries with sterilisation units whereby all containers presented by patients can be sterilized, kept and issued to others as they call at dispensaries. It was felt that nurses in consulting rooms will help a great deal if only they will always read prescriptions given to patients and advise them of the type of containers they require to send to the dispensaries. This would prevent patients from sending Coca Cola Bottles for ointments, etc., just to be turned back to bring the right type of container.

UNIT PACKS:

To reduce counting delays it was considered that manufacturers should use smaller packs for capsules, tablets, etc., for hospitals so that these could be issued to patients without much delay but it was observed that this will increase the cost of running pharmacies since smaller packs comparatively are dearer than bulk packs. Besides, dosage differ from one patient to the other.

Private retail pharmacist:—*Out-Patient dispensing.*

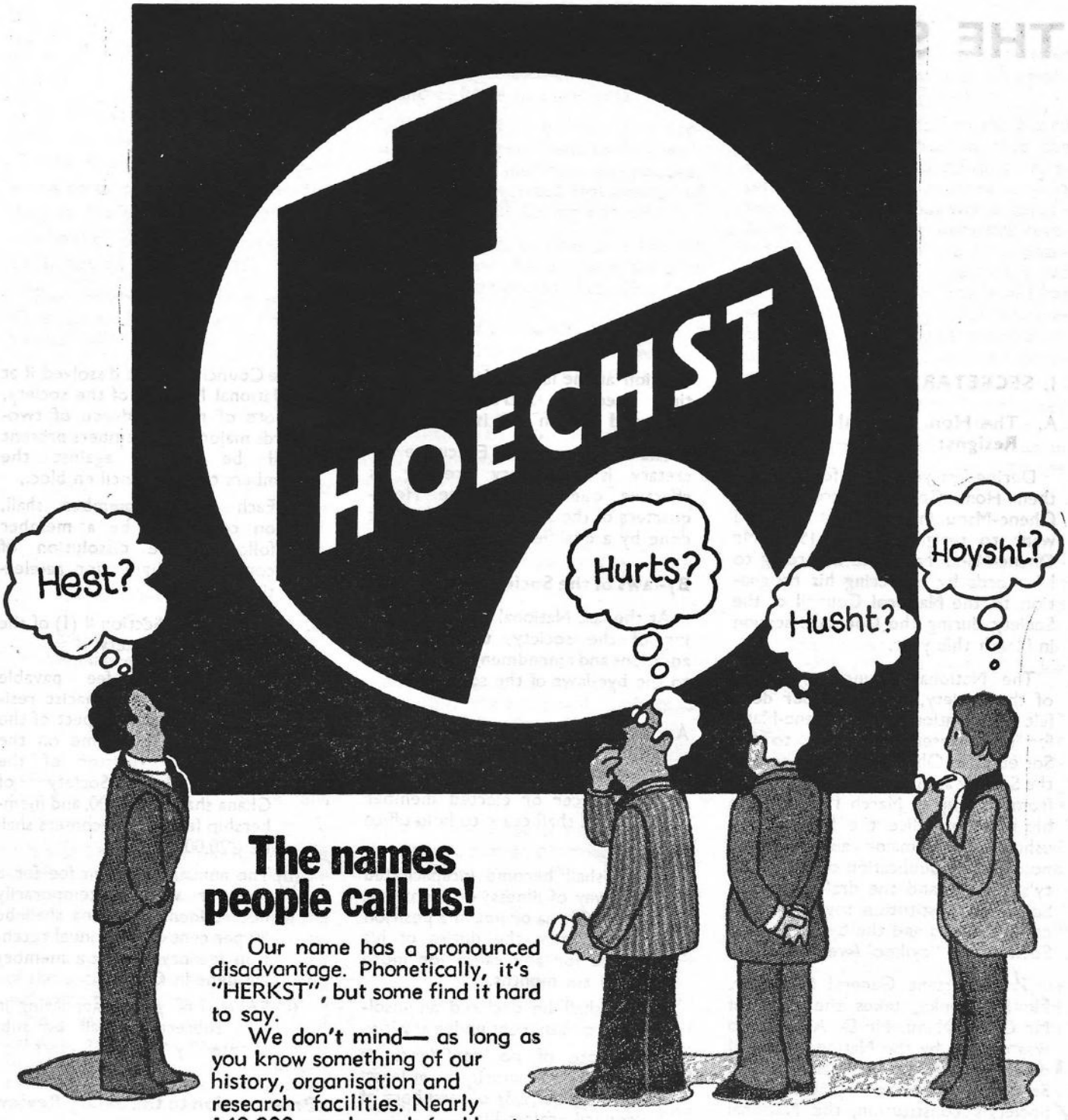
In view of the fact that hospitals are already overburdened with work, it was recommended that the Government should give serious encouragement to private retail pharmacies whereby patients could send in their prescriptions to be dispensed and the necessary fees borne by the government at the end of every month or periodically as may be agreed between retail pharmacies and the government.

Exhaustion:

Finally, it was observed that much of the complaints attributed to delays at dispensaries are rather inbuilt. For, the patient starts encountering delayed processes right from the start at the registry consulting room, the laboratory and, finally, at the dispensary. So that by the time the patient gets to the dispensary both the mind and temperaments are exhausted to the extent that the encountered would generate piles of complaints at the dispensary staff. However, it was felt that, from ethical point of view, pharmacists should be more courteous, respectful and co-operate very well with the patient. To combat language barrier which at times create problems regarding dispensary/patient relationship, languages spoken by dispensary personnel should be taken into account when postings are being made.

Members of the Panel were:

1. **Mr S. R. Boakye** — Principal pharmacist, Korle-Bu hospital.
2. **Mrs A. Brookman-Amissah**— Pharmacist i/c, K'Bu Polyclinic.
3. **Mr E.C.P. Buckle**—Pharmacist (Inter Associates Ghana Limited).
4. **Mr R.Q. Lamptey**— Inspection pharmacist, M.H.O.
5. **Miss Dorothy Richardson**— District Public Health Nurse, K'Bu.
6. **Mrs Sarah H. Amissah**—Headmistress—Mamprobi Girls Middle School.



The names people call us!

Our name has a pronounced disadvantage. Phonetically, it's "HERKST", but some find it hard to say.

We don't mind— as long as you know something of our history, organisation and research facilities. Nearly 140,000 people work for Hoechst throughout the world and in 1972 Cedis 180 million was invested on research and development— the key to future progress.

Product successes include Lasix, the most widely prescribed diuretic in clinical practice, Daonil, a treatment for maturity-onset diabetes, Baralgin, Novalgin, Haemaccel and many more.

Our record speaks for itself

We pronounce it HERKST

HOECHST GHANA LIMITED, P.O. BOX 5290, ACCRA-NORTH
Associated with Farbwerke Hoechst AG., Frankfurt/Main West Germany.

Hoechst- a name you need to practice

THE SOCIETY NEWS

I. SECRETARIAT:

A. The Hon. General Secretary Resigns:

During last year's Conference, the then Hon. General Secretary, Mr Ohene-Manu, indicated that he would want to resign in early 1974. Mr Ohene-Manu has gone according to his words by tendering his resignation to the National Council of the Society during the Council's session in March this year.

The National Council on behalf of the Society, expressed our deep felt appreciation to Mr Ohene-Manu for his unreserved services to the Society. Mr Ohene-Manu has served the Society as Hon. General Secretary from 1971 up to March 1974. During his term of office the Society was ushered into major advancements notably, the publication of the Society's Journal, and the drafting of the Society's constitution together with code of ethics and the bye-laws. The Society says "ayikoo' (well-done)!

The Assistant General Secretary, Mr J.Y. Binka, takes the place of Mr Ohene-Manu. Mr D. Anim-Addo was elected by the National Council to the post of the Assistant General Secretary of the Society. Under the Society's constitution, the National Council may elect any member of the Society to make up for any resigned member of the Council.

B. Administrative Assistant:

The National Council engaged the services of an Administrative Assistant, Miss Amoah, early this year but resigned last March. The Council has engaged as, a temporary measure, a Shorthand-Typist, Miss Leticia Addo. Miss Leticia Addo is assisted by an office messenger.

In accordance with the Society's decision at the last conference, a full time Executive Secretary will be employed as soon as it is practicable.

The employment of Executive Secretary is now very pressing as effective operation of the Headquarters of the Society could be best done by a qualified pharmacist.

By-laws of the Society:

At the last National Council meeting of the society, the following additions and amendments were made to the bye-laws of the society.

A. Additions:

Termination of Office:

1. Any officer or elected member of Council shall cease to hold office if:
   - (*a*) He shall become incapacitated by way of illness; or be absent from Ghana or not in a position to perform the duties of his office for any cause for more than six months.
   - (*b*) He shall be declared an insolvent or bankrupt under any law.
   - (*c*) A vote of no confidence is passed by a majority of, at least, two-thirds (2/3) of members of council against him.
2. Any person who shall cease to hold office under the immediately preceding subsection shall thereupon cease to be a member of any organisation on which he serves as a representative of the council or society.
3. If any office shall become vacant because of any of the provision under subsection XVI (1), the council shall proceed to fill the vacancy as if the vacancy had occurred under Section VI.
4. The Council shall be dissolved if at a National Meeting of the society, a vote of no confidence of two-thirds majority of members present shall be carried against the members of the council en bloc.,
   - (*b*) Each council member shall, on ceasing to be a member following the dissolution of council, be eligible for re-election.

B. Amendment of Section II (1) of the bye-laws of the society.

- (*a*) The retention fee payable annually by a pharmacist resident in Ghana in respect of the retention of his name on the membership register of the Pharmaceutical Society of Ghana shall be ₵30.00, and membership fee for newcomers shall be ₵20.00.
- (*b*) The annual retention fee for a member who is temporarily not resident in Ghana shall be 50 per cent of the annual retention fee payable by a member resident in Ghana.
- (*c*) "Age of 60 years" appearing in this subsection shall be substituted by "age of 65 years."

Presentation to the Salary Review Committee:

A memo has been sent to the Salary Review Committee on behalf of the society about the salary structure of pharmacists in the Government service. It was proposed in the memo that there should be no salary differences between the salaries of various professions in the country which require the same number of years for their qualification. Where any difference in salary would occur, difference in number of years required for the qualification in the

professions should be the determining factor.

1974 Annual Conference (30th—31st August, 1974:

1974 Annual conference is scheduled to take place from 30th—31st August. The theme of the conference will be the "Pharmacy and Drugs Act, 1961, Act 64 Amendment."

The conference is taking place at Cape Coast University and it is going to be fully residential with meals provided. Each participant will have one-bedded room.

Other details of the conference are as following:—

(*a*) **Conference fee:** A Conference fee of ₵3.00 is to be paid by every registered member of the society.

(*b*) **Boarding and Lodging:** In addition to the provision of single-bedded rooms, supper on Friday and three main meals on Saturday, and breakfast on Sunday will be provided.

The total cost for boarding and lodging from Friday to Sunday morning will be ₵9.00. Members of the society will soon be informed of the details of the programme. Closing date for registration is end of July, 1974.

It was proposed at the last Annual Conference of the society that the Pharmacy and Drugs Act (Act 64) be amended to be in confirmity with the N.R.C. Decree (143) on the professional bodies. The National Council of the society requested Dr. Sarpong and some members of the staff at the Faculty of Pharmacy, University of Science and Technology, to work on draft proposals for the amendment of Act 64. The group has submitted a draft decree on the profession and practice of Pharmacy. This draft has been circulated to the Regional branches for their comments.

It is proposed to have another version of the amendment to deal with the control of medicines and poisons. It is, here, suggested that control of cosmestics will be incorporated.

Special committee has been formed to draft the Amendment for the medicines and poisons Act. They are:

Mr Osei-Tutu
Mr Awuku-Kwatia
Dr Charles-Buadu
Mr J. Y. Binka.

Voluntary Pharmacy inspectors:

The Pharmacy Board has made all the pharmacists on the Board Voluntary Pharmacy Inspectors for the Board. The Board also has approved in principle that members of the National Council could also act as Voluntary Inspectors.

The Council welcome this decision of the Board as it is seen that the ethics and the practice of pharmacy could be enforced more effectively because of the additional numbers to the existing inspecting body. Members will remember that it was reiterated at the 1973 Annual Conference that the respectability of the profession depends greatly on how members uphold the ethics of the profession. It is hoped that all pharmacists in the country will give all the necessary cooperation to the inspectors when they come round.

Registration of Pharmaceutical Premises:

The National Council of the society sought the view of the Pharmacy Board on question of the registration of pharmaceutical premises by registered pharmacists. This might appear to be unnecessary since there is no law banning registered pharmacists to operate pharmacy shops.

The society approached the Board on receipt of information that the Pharmacy Board was refusing registering Pharmacists engaged in one way or the other but whose certificates of registration were not committed in the operation of a pharmaceutical business. The Board has written to clarify that, the Board has no objection to a registered pharmacist whose certificate of registration is not committed to operate pharmacy shop.

However, the Board emphasised that each application from a registered pharmacist will be treated in its own merit in accordance with the provisions of the law.

The Society Library:

It is proposed to have a Library opened at the Society's Headquarters for use by its members. Letters have been written to various institutions, local and abroad, to help in the provision of books and periodicals for the Library.

Members of the Society who have some books to offer could do so by contacting the Society's Secretariat.

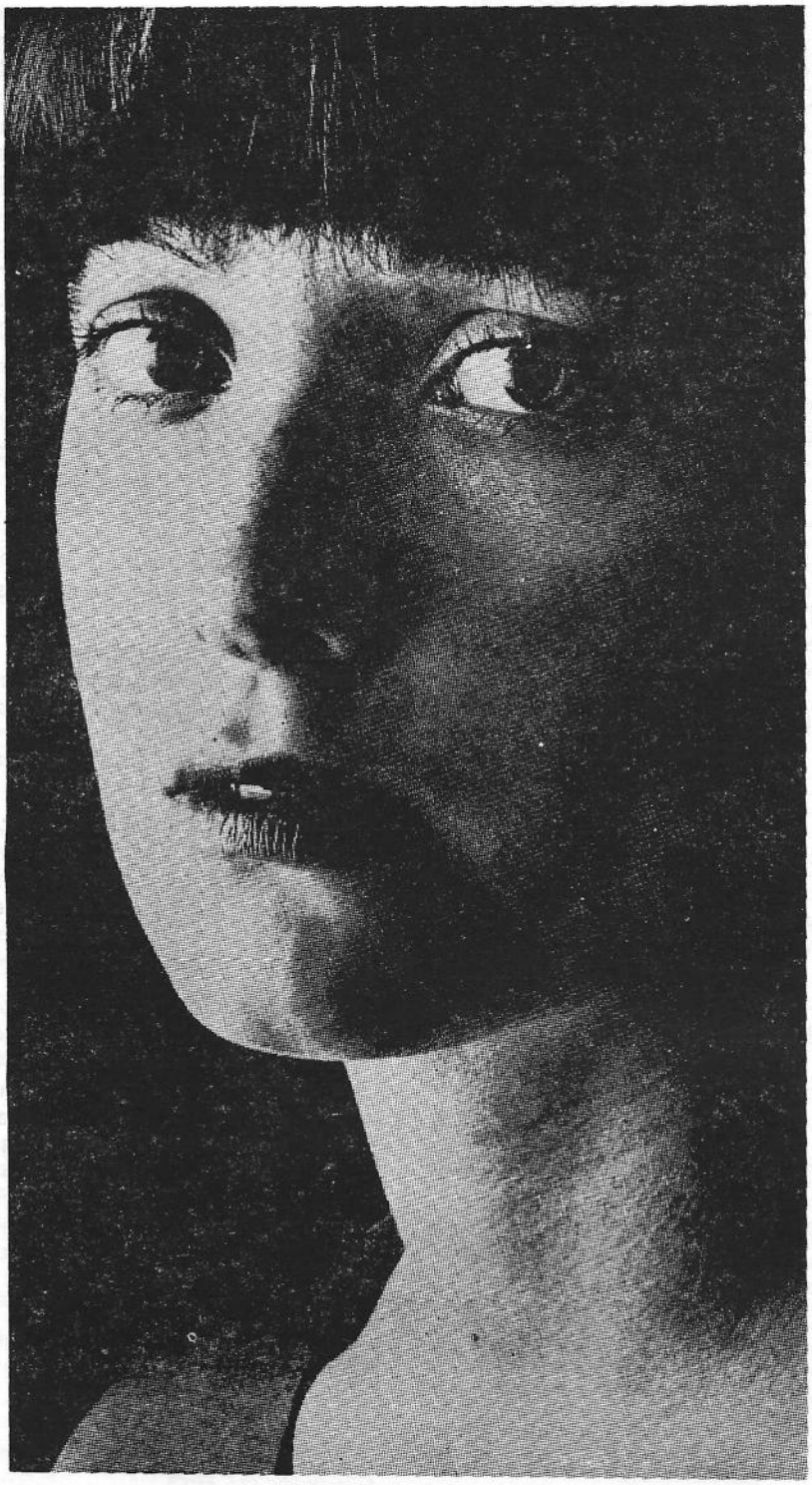
Commonwealth Pharmaceutical Association (CPA)

Commonwealth Pharmaceutical Association is holding a Conference in June, 1974 in London. Mr Ohene-Manu, who is the Society's representative on the CPA Council, will represent thet Society.

At the Conference, various topics affecting the training and practice of Pharmacy will be discussed. It is also hoped that at the Conference, the possibility of establishing a Regional Centre in Africa will also be considered.

THE DISTRESSING ITCH

BROUGHT HER TO YOUR OFFICE . . .



She can leave without the itch when you treat her vaginitis with

Triple Action Tricofuron®

(SUPPOSITORIES: 0.25% furazolidone, 0.375% nifuroxime—POWDER: 0.1% furazolidone, 0.5% nifuroxime)

Vaginal Suppositories and Powder

- Prompt relief of itching, burning and malodor from first office treatment with Tricofuron Powder.
- Home treatment with Tricofuron Suppositories for maximal therapeutic effectiveness and continued symptomatic relief.
- Effective against Trichomonas, Monilia (Candida) and Haemophilus—helps prevent recurrence due to overgrowth of untreated organisms.
- Reliable topical therapy.
- Economical.

SENSITIZATION occurs infrequently. If burning, pruritus or erythema increases, the patient should discontinue treatment, take a cleansing douche, and report to her physician. Simple, Two-Step Treatment

(1) TRICOFURON (furazolidone and nifuroxime) Vaginal Powder for office use, contains FUROXONE® (furazolidone) 0.1% and MICOFUR® (nifuroxime) 0.5% in an acidic, water-miscible base. 15 Gm plastic squeeze bottle with 5 disposable applicator tips (ask your Eaton representative for a complimentary supply).

(2) TRICOFURON Suppositories, for continued treatment at home contain FUROXONE (furazolidone) 0.25% (5 mg) and MICOFUR (nifuroxime) 0.375% (7.5 mg) in a water-soluble base. Boxes of 12 and 24 with applicator. 2 Gm each.

IMPORTANT—During treatment, patient should refrain from intercourse or partner should use protection. Continue use of suppositories during menses, introducing with aid of tampon or applicator. Treatment should be continued throughout a complete menstrual cycle and for several days thereafter and for at least one week after no trichomonads can be found microscopically. Microscopic examination of the vaginal smears should be conducted at monthly intervals for several months.

For 'round-the-clock medical consultation on Eaton products telephone Norwich, New York, Area Code 607, 334-9911

® Originators and Developers of The Nitrofurans
EATON LABORATORIES
division of Morton-Norwich Products, Inc.
NORWICH, NEW YORK 13815

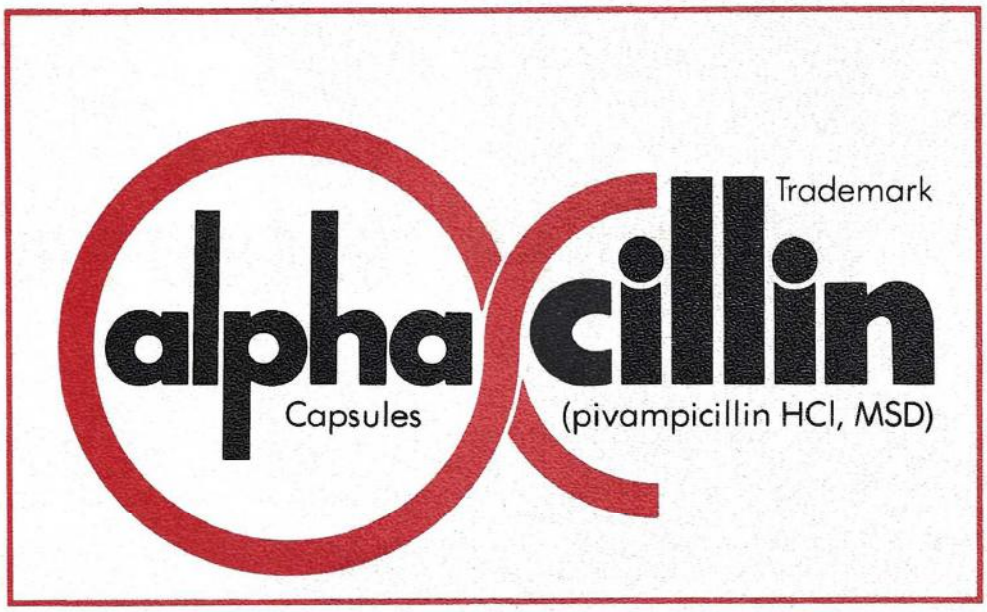
ETI 2-7379—As advertised in 1972 in:
American Family Physician
American Journal of Obstetrics & Gynecology
J.A.M.A.
J.A.O.A.
Obstetrics & Gynecology
Postgraduate Medicine
U.S. Medicine

SOLE DISTRIBUTOR IN GHANA:

GHANA DRUG HOUSE LTD.,

P.O. BOX 469, ACCRA & P.O. BOX 1040, KUMASI

Now take the oral route to the I.M. effect



amplified absorption... amplified blood levels... amplified scope for oral therapy

ALPHACILLIN Capsules in acute/chronic infections due to susceptible organisms

- maximal bactericidal blood levels average about 3 times higher than those obtained with molar equivalent doses of oral ampicillin
- absorption from the G.I. tract exceeds 90% on an average, compared to about 40% absorption with oral ampicillin
- a lower incidence of diarrhea than with oral ampicillin (due to almost complete absorption from the upper intestine, and therefore less disturbance of the intestinal flora)

Note: Detailed information is available to physicians on request.

MSD MERCK SHARP & DOHME INTERNATIONAL
Division of Merck & Co., Inc., Rahway, N.J. 07065, U.S.A.
where today's theory is tomorrow's therapy

DISTRIBUTORS: DANAFCO LTD: ACCRA, KUMASI, TAKORADI, HOHOE, KOFORIDUA