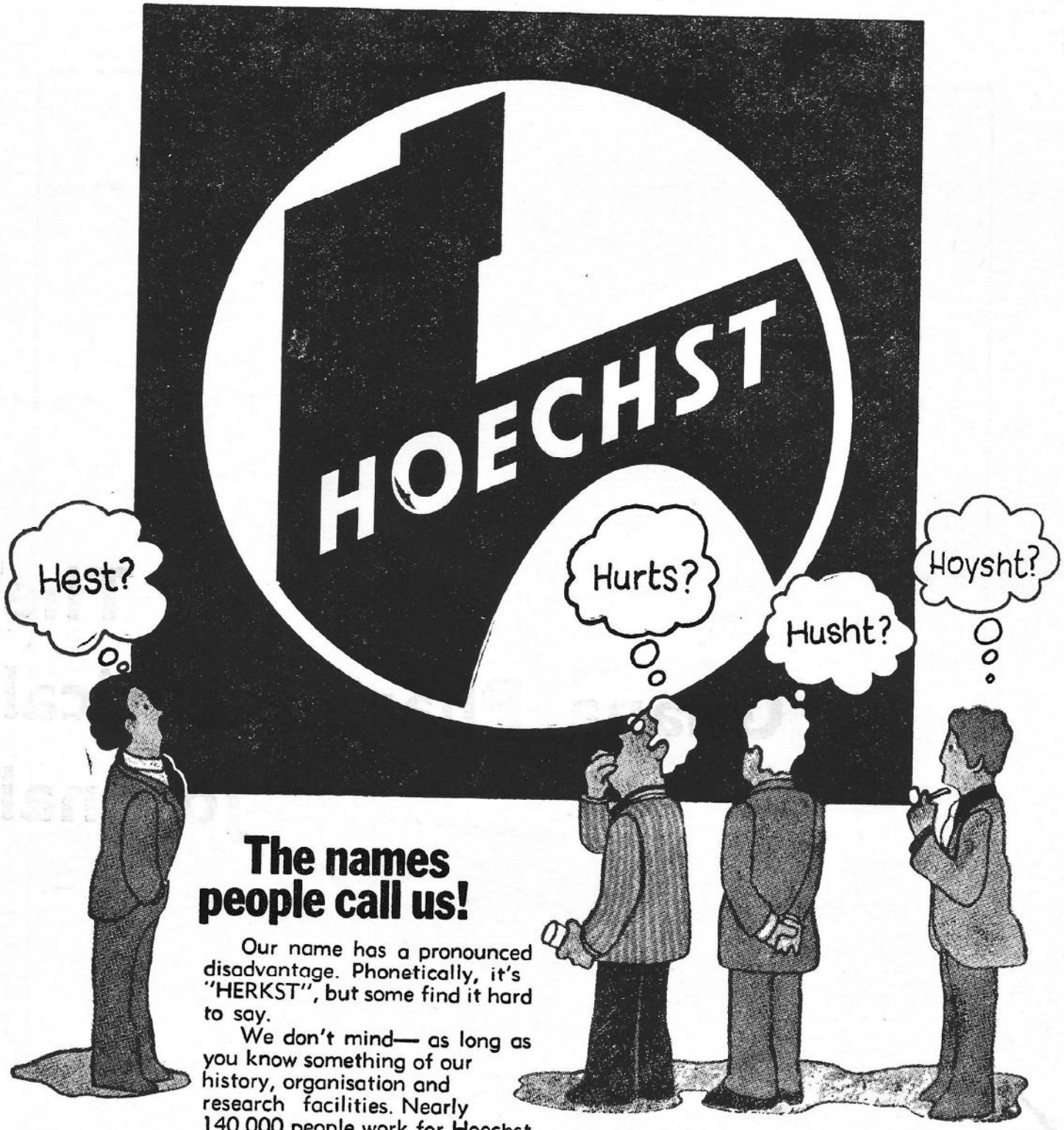
THE GHANA PHARMACEUTICAL JOURNAL

OFFICIAL ORGAN OF THE PHARMACEUTICAL SOCIETY OF GHANA

Volume 4 Nos. 3 & 4 December, 1976

The Ghana Pharmaceutical Journal



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Published by the
Pharmaceutical Society of Ghana

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Information
The Ghana Pharmaceutical Journal is published quarterly by the Pharmaceutical Society of Ghana at 268 North Kaneshie Estate, Accra, Ghana.

Editorial and Advertising Offices
268 North Kaneshie Estate, P.O. Box 2133, Accra, Ghana

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

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HYPERTENSION

By H. K. Abutiate, B.Pharm. MPSG.

INTRODUCTION: The purpose of this article is to touch rather lightly on this big subject of Hypertension (also known as High Blood Pressure), and then delve deeper into the portion which will be of more interest to pharmacists, that is, drugs being used to treat this condition.

BACKGROUND INFORMATION: Clinically, Hypertension may be classified as Primary or essential Hypertension and Secondary Hypertension. Primary or essential hypertension is defined as a disorder of unknown origin, characterised primarily by an elevated diastolic pressure usually greater than 95mm Hg. and associated with generalised arteriolar vasoconstriction. Secondary Hypertension, as its name implies, results from a known cause. Some of the causes are Renal, Endorcrine, Neurogenic and Miscellaneous. Secondary hypertension is cured when the cause is removed by either surgical operation, example in pheochromocytoma, aortic coarctation, etc., or drug therapy. Because it is curable, it is not so much feared or economically important as essential hypertension. Since essential hypertension indicates arterial pressure without known cause, it is essentially a negative diagnosis and can be applied realistically only when there are no signs and symptoms to suggest a secondary form of hypertension. Sex, race, weight, family history, diet, skin pigmentation, plasma renin activity, drug resistance, age, obesity/salt intake and cigarette smoking are some of the factors which are said to relate to its occurrence.

The reason why hypertension has become so important is because if it remains untreated it KILLS. The clinical course of essential hypertension is variable in the extreme. While some patients live a life of normal length, most do not. The hypertensive disease affects the arterioles, thus leading to arteriolar vaso-constriction and to arteriolar destruction, affects the heart causing heart failure, affects the retina of the eyes causing retinal haemorrhages and excudates, affects the kidneys causing renal failure (the major cause of death if the illness is untreated) and affects the brain causing stroke and paralysis.

DRUGS: The drugs used in the treatment of hypertension may be divided into three classes:

1. Diuretics
2. Direct vasodilators
3. Sympathetic inhabitors

ORAL DIURETICS: These are said to reduce blood pressure probably by decreasing plasma and extra cellular volumes and by reducing sympathetic nervous activity. They also prevent sodium and water retention. Diuretics control blood pressure in at least a third of patients with mild hypertension. When more potent antihypertensive agents are needed, the concomitant administration of diuretics often permits control of BP with smaller doses of the non-diuretic agent. Diuretics are considered as the basic therapy in hypertension, provided the renal function is normal. Major side effects of diuretics are hypokalaemia, hyperuriceamia and hyperglyceamia. Examples of common oral thiazide diuretics are hydrochlorothiazide (HYDROSALURIC, MODURETIC), frusimde (LAZIX), chlorothalidone (HYGROTON) and polythiazide (RENESE). Triamterine (DYRENIUM) amiloride (MIDAMORE) and spironolactone (ALDACTONE) have all been used to check diuretic induced hypokalaemia. Potassium supplements have also been used, but were found to cause peptic ulceration and also could not correct the hypokalaemia.

VASODILATORS: Hydralazine (APRESOLINE) is the only agent presently available for oral use which reduces blood pressure by dilating arterioles, thereby decreasing peripheral resistance. Side effects include tachycardia which is controlled with sympathetic blocking agent.

SYMPATHETIC INHIBITING AGENTS: Except for diuretics, the most commonly used antihypertensive agents block sympathetic nervous activity at one or more sites.

RAUWOLFIA COMPOUNDS: They interfere with sympathetic activity in the brain and in the peripheral autonomic system by depleting the sympathetic nerve endings of nor-adrenalin. Side effects include drowsiness, lethargy, assitude and depression. Breast cancer development in women has recently been associated with these compounds, but no conclusive reports have come out yet. If reserpine is to be used at all in the management of hypertension, it should be used with a diuretic agent in patients with mild or moderate hypertension. Popular Rauwolfia compounds on the market are reserpine and Renese-R.

GANGLION-BLOCKING AGENTS: These drugs block the sympathetic and parasympathetic systems at the autonomic ganglia. Although they are the most potent agents available, they are seldom used because of their blockage of

the parasympathetic systems which results in annoying side effects such as exercise and orthostatic hypertension, blurred vision, dryness of the mouth, constipation, diarrhoea, urinary retention, inability to ejaculate and impotence. The popular member of the group is Guanethidine (ISMELIN). Concomitant therapy with amphetamines, chlorpromazine and, especially, tricyclic antidepressants will interfere with the antihypertensive action of guanethidine, because these compounds prevent guanethidine from getting into the sympathetic nerve ending where it exerts its force.

FALSE NEURO TRANSMITTERS: Members of this group have been postulated to inhibit sympathetic nervous activity by formation of false transmitter which is a weaker substitute for nor-adrenaline. Methyldopa (ALDOMET) is the most important in this group. Side effects include drowsiness.

SYMPATHETIC RECEPTOR BLOCKADE: Sympathetic nervous activity can be reduced by blocking the receptors in the heart or blood vessels. Members of this group have become very important and interesting because of their ability to control blood pressure and lack of depressive effects on the male sexual organs. Members of the group inclule Proparnolol (INDERAL), Timolol maleate (BLOCADREN) Oxyprenolol HCl. (TRASICOR) and Prindolol (VISKEN). Side effects include headaches. They are, however, contraindicated in congestive heart failure and asthmatic patients since they tend to depress the activity of the heart and constrict the bronchioles.

CONCLUSION: The treatment of hypertension cannot be approached by a single programme or a simple regimen. A wide variety of effective pharmacologic agents are available, but these drugs must be tailored to the needs of the patient. The physician, the pharmacist, the nurse and the patient must constantly be aware that essential hypertension is only controllable—never curable—and therefore will require a life long treatment. It will be a good habit for every citizen and, especially, members of the medical team to have a check up once every six months, for one can never tell when he becomes hypertensive, unless his blood pressure is taken. With all the available drugs now, one's blood pressure can be controlled and thus prolong one's life, for untreated hypertensoin will surely kill eventually. GET A CHECK UP TODAY!

References:

Merck Manual
Handbook of Hypertension
Hypertension - A mozaic in Medicine
Clinical pharmacology - Goodman/Gillman

THE ORGANISATION OF HOSPITAL PHARMACY

By E. Osei-Tutu, Deputy Chief Pharmacist, Ministry of Health, Kumasi.

The Organisation of Hospital Pharmacy covers such a wide scope that with the limited time at my disposal, I will only dilate on certain aspects or functions, the proper and effective management of which give maximum benefit to the patient.

Image of the Pharmacist: The image of the pharmacist in almost every country depends, to a very large extent, on the way and manner the hospital pharmacist renders services to the general public. Every effort must therefore be made to raise the standard, as well as the status, of the hospital pharmacist, both professionally and socially, if the pharmacist is to obtain public recognition.

The days are gone when the pharmacist was regarded as a person who only "counted and poured." Even though "count and pour" is one of the basic jobs of the hospital pharmacist—a function which can now be delegated to trained supportive personnel—it is undoubtable that the pharmacist has been educated to do more. It is that "more" in the service of the hospital pharmacist that is needed to place him on equal footing with other professionals.

One of the main concerns of the hospital pharmacist in the developed countries these days is that "pharmacist-patient relationship". The pharmacist who has been in the "out-patient-care" area is now moving gradually to the "in-patient-care" area with his knowledge in clinical pharmacy.

Clinical Pharmacy may be defined as "that area of pharmacy practice which deals with patient care with emphasis on drug therapy. It seeks to develop in the pharmacist a patient oriented attitude." The clinical pharmacist provides drug information to the physician and monitors adverse reactions of drugs among other functions.

Location of the Hospital Pharmacy: Most of our hospital pharmacies in this country have been so badly planned and located that one is inclined to assume that the pharmacy was considered only as an afterthought.

Before any hospital pharmacy is constructed the pharmacist must be brought into the picture right from the onset. The placing of the sections and each room in the pharmacy must be thoroughly discussed before the building is started.

The floor space of the pharmacy must be determined by the population it is to serve—the maximum number of beds in the hospital and the approximate number of out-patients to be served every day.

Adequate floor space must be provided for the various departments of the pharmacy, notably:

1. **Stores**—Proper and adequate storage facilities for all the various types of drugs used in the hospital.
2. **Manufacturing Room**—Bulk compounding for both wet and dry preparations.
3. **Sterile Products Laboratory**—For the preparation of intravenous infusions, eye drops, etc.
4. Inpatient Dispensing Section.
5. Outpatient Dispensing Section with adjoining spacious waiting hall to accommodate the patients.
6. Prepackaging and labelling section.
7. Quality Control Laboratory.
8. Offices for the Pharmacists.
9. Office for the Clerical Staff—Stenographer/Secretary, etc.
10. Reference Library or Drug Information Centre.
11. Rest room for pharmacy staff.
12. Toilet facilities.

The provision of these facilities depends on the size of the hospital or the population it is meant to serve. In a bigger hospital there may be additional facilities whereas in a smaller hospital some of the facilities listed above may be superfluous.

EQUIPMENT: The hospital pharmacy must be well equipped to enable the pharmacist perform his duties in a most satisfactory manner. It may not be possible for me now to list out all the items required but some basic ones may suffice here:

1. **For Manufacturing Laboratory.**
   - (*a*) Mixing bowl or pan with electric agitator suitable for preparing mixtures or suspensions i.e. an electric mixer;
   - (*b*) Homogenizer for emulsions and creams;
   - (*c*) Weighing scales, various with both metric and imperial weights;
   - (*d*) Hot air oven.

For Sterile Preparations

(*a*) Water still.
(*b*) Filtering Units
(*c*) Autoclaves
(*d*) Bottle washer.

SUPPLY OF CONTAINERS TO OUT-PATIENTS: Dispensing containers must be regarded by the hospital pharmacist as a very important aspect of his job since the supply of medicines in unsuitable or contaminated containers adversely affect the efficacy of the drug.

You are all aware that in this country, in almost all our hospitals, out-patients bring in their own containers to collect medicines especially, mixtures, lotions and ointments. You all know the various types of containers brought in by the patients for their medicaments. Most of these containers—empty beer bottles, soft drink bottles, cigarette tins, etc—are not hygienic, some may contain residue of medicines which have previously been used, others may contain residue of kerosene, oil, etc. What are we as hospital pharmacists doing about this deplorable state of affairs? Surely it is the responsibility of the hospital pharmacist to ensure that medicines are dispensed in proper containers. It is the hospital pharmacist who knows the type of container suitable for every drug. It is therefore, imperative that we make positive efforts to provide suitable containers to the patient even if this will mean an extra cost to the drug bill. There must be no compromise.

PRE-PACKAGING: There is no doubt that pre-packaging of certain routine and fast-moving drugs greatly improves dispensing. This however must not be done in isolation by the hospital pharmacist. There must be a workable formula which is better achieved when the pharmacist liaises with the medical staff as to what drugs are to be pre-packed and in what lots. For example, routine drugs such as Multivitamin, Ferrous Sulphate and Calcium tablets should be pre-packed, ready for use, before a busy ante-natal clinic commences. Ointments and creams prepared in bulk in the pharmacy must also be pre-packed in suitable ointment jars ready to be given to the patient on demand.

Pre-packaging surely cuts down the waiting time of the patient and the supportive staff must fully be used in this regard.

WARD INSPECTION—CARE AND KEEPING OF DRUG CABINETS

The hospital pharmacist must consider ward inspection, with particular reference to care and keeping of drug cabinets, as mandatory. The ward drug cabinet or the nurse's drug station is in reality a "miniature pharmacy" with a nurse in charge. In order to function properly therefore it must be governed by all the rules and regulations applied to hospital pharmacy.

It is a pity to note that in this country some hospital pharmacists consider this aspect of the work as only part-time and to be performed at their own free will. The pharmacist superintendent or Senior Pharmacist in charge of the hospital pharmacy should establish a policy whereby each ward or any unit where drugs are supplied to, from the pharmacy, is inspected at least once a month. This should be mandatory.

More often than not the pharmacist's excuse for neglecting this aspect of the work is attributed to shortage of staff and pressure of work. But once an inspection policy is established and a time table drawn up this job can easily be accomplished. The inspection need not be carried out always by the head of the pharmacy department. This function may be delegated to another pharmacist. It is helpful to have a check list during the inspection tours on the following lines.

I. DRUG CABINETS:

(*a*) Are drug cabinets under lock and key? If not one must be provided immediately.

(*b*) Are drugs stored in proper containers with covers?

(*c*) Are drugs in the containers those issued by the pharmacy and properly labelled with the generic or official name of the drug, and the strength? The proprietary name may be written in perenthesis, if need be. It should be noted that only pharmacy personnel are permitted to label drug containers.

(*d*) Are drug cabinets clean and dust-free?

(*e*) Are biologicals such as vaccines and sera and insulins requiring refrigeration found in the drug cabinet?

(*f*) Are out-dated drugs, especially antibiotics found in the drug cabinet?

(*g*) Are labels on reconstituted solutions found dated by the pharmacist at time of preparation so that they may be discarded after the expiration date? This applies especially to paediatric antibiotic granules such as penicillin V, ampicillin, oxytetracycline, etc.

(*h*) Are any drugs found in excess because the patient has expired or medication discontinued?

II. REFRIGERATOR FOR BIOLOGICALS

(*a*) Is the refrigerator in proper working order?

(*b*) Are only drugs such as vaccines and sera, insulins, etc. found in the refrigerator?

(*c*) Are labels on the containers well secured?

(*d*) Are food items not found in the refrigerator?

III. NARCOTICS

(*a*) Are current records on narcotics and other scheduled drugs in agreement with records in the pharmacy?

(*b*) Are extra-security measures being enforced for narcotics?

(*c*) Are there any narcotics not being used or in excess of requirements? If so, they should be signed for by the pharmacist and returned to the pharmacy.

This check list may be elaborated depending on what the hospital pharmacist wants to look for. Of course the pharmacist's main motive should not be to "catch" the nurse on say infringing narcotic regulations. The nurse may be made to feel free that the pharmacist's main pre-

HEADQUARTERS BUILDING FUND

During our General Meeting in Kumasi in August 1976, the following resolution was passed on the **Headquarters Building Fund.**

"Every member who is in arrears or who has defaulted in paying his Building Fund must pay up by **30th November 1976** and that those who are unable to pay cash or cheque in full must give a banker's order to their regional representatives so that by the end of the year the Secretariat could compile the list of the names of defaulters from the register of Pharmacists."

Voting — Unanimous.

I am by this notice reminding Pharmacists who are still in arrears of the Building Fund and wish to inform them that, the National Council is determined to see to the implementation of the Kumasi resolution on contributions to this fund.

H. K. ABUTIATE
Hon. General Secretary

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occupation is to see to it that the drugs are so kept that the patient will derive the maximum therapeutic effect when administered.

This periodic inspection must be carried out at least once a month as I have already suggested. You will all agree with me that without these routine and follow-up inspections most of the wards may not be able to cope with the high standard of drug keeping expected of them and thereby deprive the in-patient of the maximum therapeutic effects of the prescribed medicaments.

PHARMACY AND THERAPEUTICS COMMITTEE OR DRUGS COMMITTEE

It is my view that for a hospital pharmacy to function more effectively there should be in existence at the hospital a pharmacy and Therapeutics committee or Drugs committee.

This Committee normally should have not less than three members chosen from the medical staff—preferably from various clinical units,—with the pharmacist in charge as the Secretary, with of course voting rights.

The main objective of the committee is to recommend therapeutically effective drugs for use in the hospital, without needless duplication, and ultimately compile a hospital formularly.

The Committee is the final authority in all cases involving drug usage in the hospital. It should also be entrusted with the responsibility of recommending what drugs should be kept as ward stock in the various nursing units.

HOSPITAL PHARMACY ADMINISTRATION

The head of the hospital pharmacy, as other departmental professional heads within the hospital, shall be directly responsible to the Administrator in charge of the hospital.

It is the responsibility of the pharmacist-in-charge to develop rules and regulations for his department and also other departments in the hospital in relation to drug usage.

One of the most important duties of the hospital pharmacy administrator—due to the changing trends in medicine, medical care and new drugs—is to act as a consultant to the physician, the nurse and the hospital administrator on drugs.

The hospital pharmacy administrator should not isolate himself but co-operate with the other departments within the hospital and also attend departmental head meetings. He should be thoroughly familiar with office management, the proper handling of personnel, preparation of duty roster and dealing with correspondence.

He must have a full knowledge of the use, care and maintenance and full use of every piece of equipment within the department—balances, autoclaves, mixers, water stills, etc.

The hospital pharmacy administrator should act as the Secretary of the Pharmacy and Therapeutics or Drugs Committee. It is his sole responsibility to see to it that meetings are called frequently to discuss issues relating to drugs.

He must be a good buyer but should not in any way sacrifice quality for low price.

The hospital pharmacy administrator should be responsible for the training of housemen or interns. A proper programme should be instituted for them to follow.

PERSONNEL

The staffing of the Hospital Pharmacy with professionally qualified, experienced and competent pharmacists as well as trained supportive staff such as Dispensing Assistants should be of prime concern.

For example in this country, in our Regional Hospitals such as Korle Bu Teaching Hospital, Okomfo Anokye Hospital, Tamale Regional Hospital, etc., the personnel listed below may represent the ultimate pharmacy staffing.

1. Head of the Pharmacy Department—Principal Pharmacist.
2. Assistant Head of Department —Pharmacist Superintendent.
3. Senior Pharmacist.
4. Pharmacists
5. Pharmacist (Housemen)
6. Trained Dispensing Technicians.
7. Trained Dispensing Assistants.
8. Dispensary Attendants.
9. Labourers.
10. Clerical Staff—Store-keepers, Stenographers, etc.

It will be realised that this staffing requirement will have to be scaled down as we move down to a District Hospital, Health Centre, etc. In any case, the important thing is that there should be adequate staff to cope with every situation. It is important that the Pharmacist be assisted by a Store-keeper to carry out the non-professional aspects of the work such as ledger entries.

Clerical and Stenographic assistance in the keeping of records, writing of reports, typing of labels and correspondence is also a great asset to the Hospital Pharmacist. All these are geared to giving the pharmacist ample time to concentrate on the professional aspects of his work.

CONCLUSION: It is my belief that hospital pharmacists regard themselves as the torch-bearers of our noble profession and that their actions and deeds professionally and otherwise, must be geared towards enhancing the good reputation of the profession as a whole.

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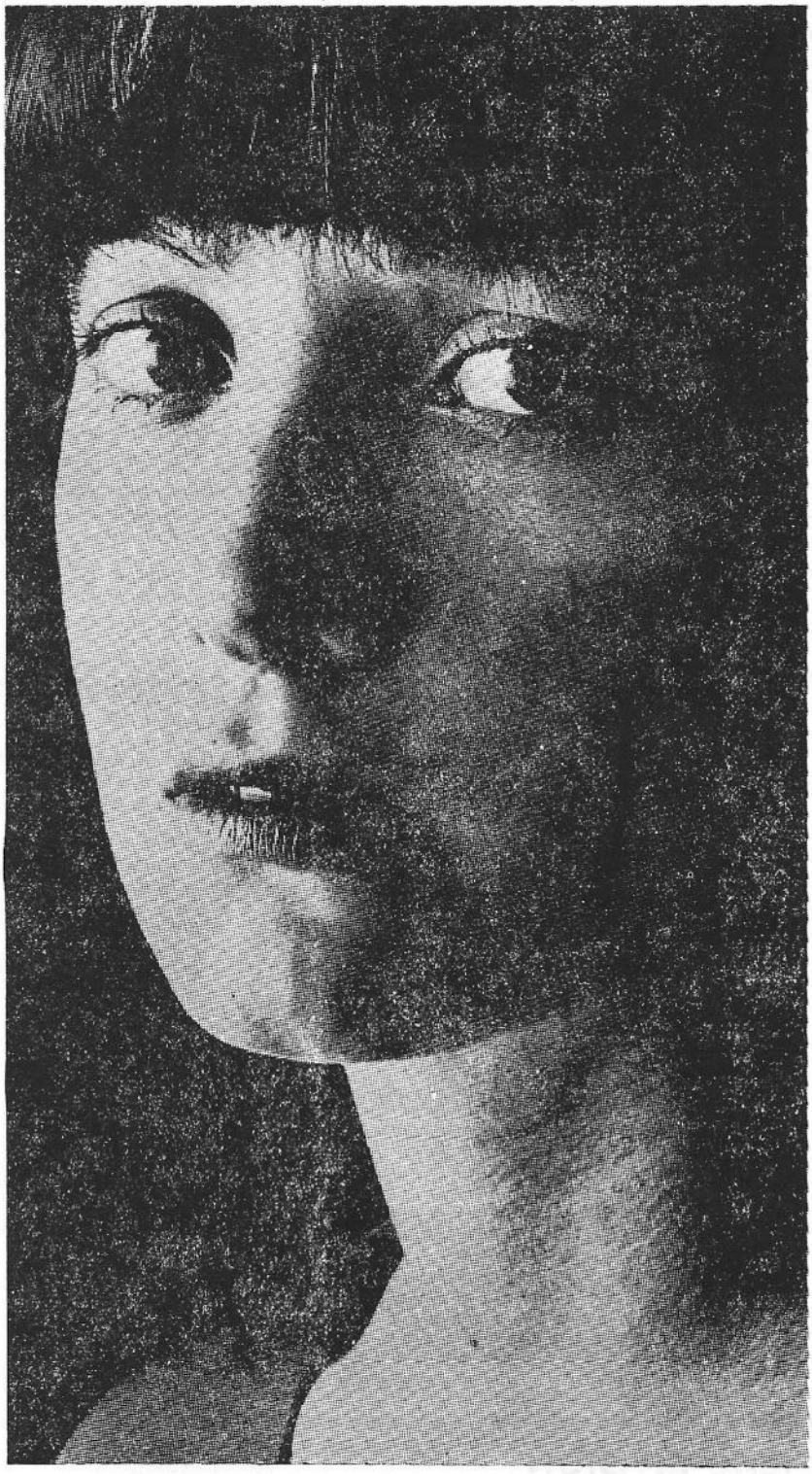

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BREAST CANCER

By H. K. Abutiatè, B.Pharm. M.P.S.G.

The mammary gland is subject to a variety of disorders whose presence should be more readily detectable than they often are, because breasts can be inspected and palpated regularly by the patient. One of these disorders is breast cancer, a condition characterised by the slow growth of a painless mass in the breast. Some of the major factors influencing the development of breast conditions are:

1. SEX—about 100 times more common in females than males.
2. HEREDITARY—development occurs more frequently among individuals with a family history of the disease.
3. INFLUENCE OF THE ENDOCRINE GLANDS—resulting in premenstrual breast discomfort in some women, transient enlargement of certain breast masses, especially cysts, immediately before menstruation and following the menopause, while certain benign conditions drop (e.g., chronic cystis, mastitis or nodular inflammatory conditions of the breast) the incidence of breast cancer rises.

METHODS OF EXAMINATION AND DETECTION: Three methods exist, two of which can be performed only by a doctor—Mammography—a painless X-ray that exposes small abnormalities and thermography, a picture of heat patterns of the breast. The other very important and effective means of detection is self-examination. The overwhelming majority of breast cancers are found by the victims themselves. Self-examination is very easy and should be carried out by all women every month after a menstrual period and women in menopause should practise the routine at monthly intervals. Look for any abnormal lump, thickening, nipple discharge or discolouration or change in appearance of the breast. If you find such symptoms do not panic, see your physician at once.

METHODS OF BREAST EXAMINATION: Standing in front of a mirror raise both arms over your head and examine your breast carefully, looking for any change in size or shape or any discharge from the nipples. Then check for lumps by moving your flattened fingers in a circular motion from the base of one breast progressively getting smaller towards the nipple. Repeat the exercise for the other breast too. Then lie down on your back. Put your left hand behind your head. With right hand fingers flattened examine your left breast. Repeat for your right breast too and remember to use the surface of your fingers and not your finger-tips. Sit down and repeat the procedure for both breasts. These changes in position may allow you to detect lumps not noticeable while lying down. If detected early, the rapidly reproducing cancer cells in the breast —they or the entire breast can be removed or treated with a radiation therapy and the chances are high that the patient can be cured and can live a normal life.

Although most breast cancer occurs in women, men are also afflicted with the disease.

References:

Ebony, Merck Manual

OPENING ADDRESS—1976 ANNUAL GENERAL MEETING OF THE PHARMACEUTICAL SOCIETY OF GHANA

By Major L. K. Kodjiku, Ashanti Regional Commissioner

Mr President, Distinguished Guests, Ladies and Gentlemen, it is with great pleasure to be here this morning to open this year's annual general meeting of the Pharmaceutical Society of Ghana. I gladly accepted the invitation to attend this function because I thought it would give me the opportunity to share with you my ideas about your profession.

I have observed that notwithstanding the legal rights of pharmacists as the custodians of the nation's drugs it appears the people controlling the drug trade in this country are non-pharmacists. As a matter of fact one pharmacist has remarked to me that he sometimes has to go to these semi-literate traders to buy drugs for his shop. It is my strong belief that this unfortunate situation has in no small way contributed to the case with which all sorts of unscrupulous people obtain and go about selling highly potent and dangerous drugs around the lorry parks and in the market.

I am not quite sure whether our drug laws are too loose or some pharmacists are not behaving properly but whatever the reasons may be the nation expects your Society to initiate moves to get things corrected. We accept the fact that drugs are not ordinary articles of commerce like sardines and milk which anybody can handle.

Another point which give cause for great concern is the refusal or unwillingness of young pharmacists to join the Ministry of Health. A hospital like Okomfo Anokye would do with a small manufacturing unit producing many of the preparations which patients are presently being asked to go and buy from town because government finds it difficult to import sufficient quantities to meet total demand. We are aware that producing some of these items at the Regional hospitals could cut down the nation's drug bill by at least thirty per cent and it will also enhance the reputation of the pharmacists since patients can see in a positive way what pharmacists are capable of doing.

I do not accept the argument put up by government hospital pharmacists that they cannot make full use of their knowledge because they do not have the facilities. To prove them wrong I would like to point out that at least one Regional hospital is sufficiently well designed and equipped to run as any of the good pharmacy departments one finds in other countries. You know I am talking of the new Tamale hospital where the pharmacy department has not made any impact just as all the others in the country. The problem is of personnel, pharmacists and technicians to make use of the equipment bought with the scarce foreign exchange earned through the toil of the farmers. A place like Tamale needs a minimum of fifteen pharmacists if the facilities are to be put to full use and a proper pharmaceutical service is to be provided. What I want to emphasise is that the basic problem in the Pharmacy Division of the Ministry of Health is acute shortage of personnel so even if the government were to build modern dispensaries with well-equipped manufacturing units the nation will not benefit.

Ladies and Gentlemen, at this point I will appeal to the young pharmacists to consider joining the government service to help the poor farmers and workers at whose expense you received your education. If even this noble course does not appeal to you, please do so just to acquire more practical experience. The health needs of the people is one priority area of the Government and I will wish that the Government makes it obligatory for new pharmacists to work in Hospitals for a specified period before they opt to join other establishments. Our priorities must be put right. I know you are attracted by the better conditions and salaries offered by the private sector. Please remember that money alone does not give satisfaction. Quite often, coming to the aid of people who can be helped only by you, provides a deep inner satisfaction. I can however assure you the government is determined to do something about the situation.

Very soon there will be dramatic improvement in the salary and conditions offered by the hospitals and that pharmacists will leave industry and

chemist shops to go and work in the hospital.

Distinguished Guests, Ladies and Gentlemen, I would like to take this opportunity to welcome those of you who travelled from other parts of the country to the garden city. I am sure our fast improving city and in particular the University campus will provide the right atmosphere for useful discussions.

I now have the pleasure in declaring this year's annual general meeting of the Pharmaceutical Society of Ghana open.

Thank you.

REQUIREMENTS FOR REGISTRATION OF RETAIL PHARMACY PREMISES

1. Applicant should duly complete application Form No. 10 (Reg. 12) obtained from the Registrar of the Pharmacy Board. The name and registration number of the Superintendent Pharmacist should be supplied.

2. Premises should be neat with washable walls and floors.

3. Appropriate shelves and show-cases should be provided to ensure proper storage of drugs.

4. A DANGEROUS DRUGS CUPBOARD should be provided.

5. A DISPENSARY if present should be partitioned from the area of the Pharmacy open to the public. It should be supplied with a sink and running potable water.

6. There should be a Dangerous Drugs Book and a Prescriptions Book as prescribed by the Act on the premises.

7. The following equipment must be provided:

   (i) Refrigerator

   (ii) Pestles and mortars (appropriate)

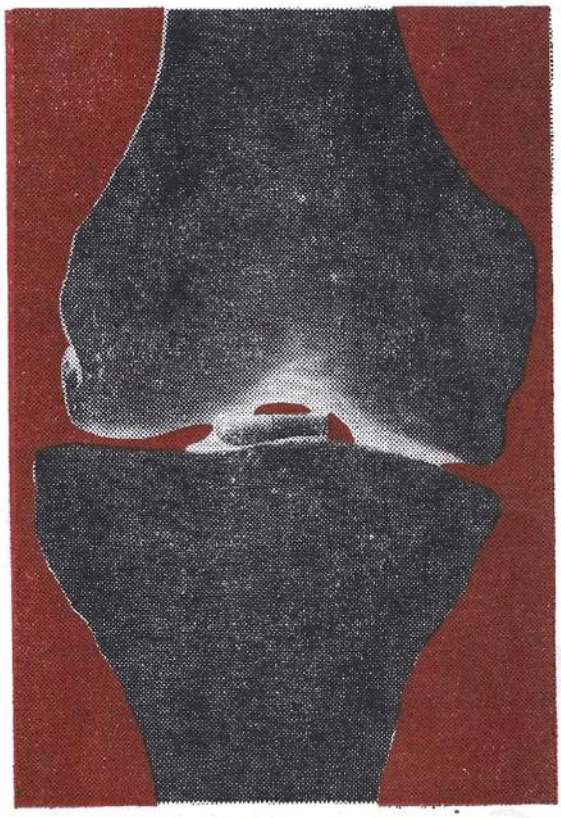
   (iii) Scales

   (iv) Measures (appropriate)

8. There must be a Facial Board indicating the name of the Pharmacy and a notice showing the hours of business.

— REGISTRAR, PHARMACY BOARD

'Orudis' in arthritis



Optimal efficacy and tolerance now further confirmed by two new studies

Activity equal to that of phenylbutazone

"... in 47 patients with osteoarthrosis of the hip, it has been shown that there is little to choose in efficacy between ketoprofen ['Orudis'] 200mg daily and phenylbutazone 300mg daily... Side-effects were mild..."[1]

Comparative clinical studies with indomethacin[3] and ibuprofen[4] have already shown that 'Orudis' affords both significant therapeutic effect and low toxicity in the treatment of arthritis.

Tolerance markedly superior to that of aspirin

"... a trial with gastroscopic examinations has allowed the adoption of the hypothesis that the new anti-inflammatory product ketoprofen ['Orudis'] is better tolerated by the gastric mucosa than acetylsalicylic acid."[2]

The latest comparisons with two further widely prescribed agents provide additional cogent evidence of its ability to meet the criteria for optimal drug management.

1 *Rheumatol. and Rehabil*, **13**, 125, 1974
2 *Scand. J. Rheumatol.*, (in press), 1974
3 *Br. Med. J.*, iv, 398, 1972
4 *Br. Med. J.* iv, 82, 1973
Full information available on request

Orudis

'Orudis' is a trade mark of May & Baker Ltd Dagenham Essex RM10 7XS England for its preparations of ketoprofen
May & Baker Ltd P.O. Box 159 Tema

M&B May & Baker

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MA 2381

BRAND VARIATION IN PHARMACEUTICAL PRODUCTS

By John Ocran, B.Pharm., Ph.D., MPSG., Dept. of Pharmaceutics, Faculty of Pharmacy, UST., Kumasi.

To be able to talk meaningfully about brand variation we should first of all make an attempt to understand the legal implications.

One cannot claim to have exclusive use of an identifying name or symbol for his product if that name or symbol has not been registered as an Ordinary Trade Mark with the Registrar of Trade Marks. It should also be borne in mind that the Registrar will not accept for registration a name or symbol which is common to the trade e.g. Bee-Co for Vitamin B-Complex. No manufacturer will waste his time to get a mark registered if he is not convinced he has something to protect and invariably what he seeks to protect are his own good name or the good name and reputation of the company and his financial investment in the product. The fact that some doctors, pharmacists and patients will insist on a product from a particular manufacturer which bears a special name or symbol, notwithstanding the price, suggests that these people have very good reasons for being so stubborn, if we may describe those who behave in this way as such.

I would like to discuss some of the reasons which make a doctor, pharmacist or patient insist on prescribing or buying a particular brand of a product assuming we are dealing with a normal situation where people have the choice.

Whether it is a doctor or pharmacist the most important desirable quality criterion for a product is bioavailability or therapeutic efficacy. Biopharmaceutics became a very important subject in the sixties when it was realised that there can be significant biological and/or clinical differences among commercially available drug products containing equal amounts of the same active ingredient. The pharmacist forms his ideas on bioavailability of various brands from his general literature reading and the information provided in the leaflets which go with the package.

He should not take any information given by the manufacturer as gospel truth because an unscrupulous manufacturer will not hesitate in making false claims for his shoddy products. The research activities of the manufacturer are an important guide in deciding whether or not to accept what he says on his label and in the insert. A research based manufacturer is more likely to produce better products than one who is looking out to copy others formulae and imitate their labels.

The pharmacist who thinks there is no point in reading professional and scientific journals will certainly not be in a position to tell which company takes the trouble to ensure that its products are of the highest quality. Whenever he has the opportunity the pharmacist should make it a point to pay occasional visits to his suppliers whether he is in industry, hospital or general practice because this also helps in making up his mind about products from various sources. Take the case of compound Tablets of Aspirin; so many firms are compressing granules of this simple preparation one sometimes finds it difficult to decide which brand to buy. I now know which brand to buy after seeing the conditions in the various factories producing this preparation. In any reputable manufacturing house no product leaves the warehouse without a certificate issued by the head of the quality control unit. If on going round one finds that in a particular factory there is no quality control unit or one exists only in name or is headed by a laboratory assistant who, not being so qualified can be pushed about by the management one will be justified in suspecting that there cannot be any effective check on quality. This shows that the calibre of personnel employed by a manufacturing company should help the pharmacist in choosing a brand of a product.

Sometimes the country of origin will be an indication of quality. If it is known that a country has very strict laws and an efficient set-up controlling drug manufacture and the registration of new drugs we may be inclined to believe any claims made by the manufacturer. However one has to be careful here because it is possible drugs meant for the export market may not be subjected to the same scrutiny as products to be used locally if the manufacturer knows that the importer accepts anything without bothering to check on quality standards.

Having discussed at length how the pharmacist comes to select his brand of choice it is now appropriate to bring in the other two categories of people interested in brand variation i.e. the doctor and the patient. Neither the doctor nor patient knows as much about drug manufacturing as the pharmacist so when confronted with a problem of choosing from various brands of a drug

for the first time they will probably be influenced more by the packaging and labelling than by anything else. Notwithstanding the fact that in pharmaceutical packaging functional efficiency is more important than anything else, aesthetic appearance should therefore not be overlooked, especially for over the counter products.

It does not require any knowledge on drugs to form an opinion about the manufacturer and the quality of his products if one finds that a container bears two different labels. Any reputable manufacturer knows that packaging and labelling form a very important part of drug manufacturing process and therefore takes every possible measure to ensure that serious errors like wrong labelling and double labelling will never occur. Having been able to convince the doctor to prescribe or the patient to buy a particular brand for the first time, the pharmacist should realise that his reputation is at stake because the doctor or patient will not think much of him if the drug does not do what it is supposed to do or what the pharmacist claims it could do. In other words, nobody can be persuaded to obtain a particular brand for a second time if he realises it has no therapeutic value, no matter how cheap it is. This means that price does not or should not be an important factor in deciding on one's source of supply for drugs. The question of price comes in only after considering all other factors. There is certainly no point in saving money by buying cheap, useless, ineffective brands of a drug.

This is bad economics because the condition for which the drug is required may worsen and this will mean having to obtain more of the expensive and therapeutically effective brand than would have been required originally. Manufacturers should not capitalise on the present shortages to put any shoddy drugs on the market; surely the products will sell because the patients and doctors have no choice. However if we think of our profits first rather than our reputation and responsibility to the patient we have no right to claim to be respectable men guided by professional code of ethics.

Manufacturers and promoters of poor quality drugs are doing a great disservice to the cause of pharmacy.

DRUG MANUFACTURE AND QUALITY CONTROL

By S. K. Ayim, B.Pharm., Ph.D. (Lond.,) MPSG. Department of Pharmaceutical, Chemistry, Faculty of Pharmacy, UST., Kumasi.

Drug manufacture involves two main stages: the first stage may be termed the SYNTHETIC STAGE: during this stage simple chemicals are converted into complex molecules with desirable biological activity; the second stage is the compounding stage during which the pure drug is formulated into various dosage forms. Every process involved in the manufacture of any drug affects the quality by introducing one or many factors. The chemical reactions involved in the synthesis of any drug are invariably accompanied by side and parallel reactions which produce synthesis of phenytoin-sodium).

This compounding processes tend to cause decomposition and therefore lowering of the prescribed dose. Some decomposition products may be toxic. E.g. Epianhydrotetracycline formed in the presence of moisture from tetracyclines may cause kidney lesions, salicylic acid formed from asprin in the presence of moisture is toxic to the gastric mucosa.

The foregoing appear to suggest the need to control the level of undesirable compound in the final product—the drug—and also to assure that the dosage level is maintained as stated on the product.

Now, therefore, any properly organised drug manufacturing concern must have a Quality Control and Assurance Department to effect the above.

The Aims of the Quality Control and Assurance Department should be to see to it that drugs put on the market have the right chemical composition, activity, are free from impurities within acceptable standards and meet laid down specifications designed to produce effective and reproducible dosage.

SIGNIFICANCE OF QUALITY CONTROL

A. TO THE DRUG MANUFACTURING FIRM

The importance of the Control Department is highly recognised by well established firms with reputations to maintain. Such firms are normally in (or out of) competition with other firms for a market. They therefore try hard to ensure that the goodwill of the public is maintained. They invest heavily in the control department in terms of high calibre personnel and efficient equipment to work with. The Quality Control Manager is put on the same level as (not under) the Production Manager.

Small manufacturing firms tend not to recognise the importance of proper control; they consider any investment in that section as waste; they invest little in terms of Personnel and materials in Quality Control. Unfortunately, most Firms in Ghana fall in this category. The Quality Control Department should be considered as a Grade A Embassy, a most sensitive section in a manufacturing business in a free Market State.

B. TO THE SOCIETY:

The consumer (patient) is entitled to a good Product with the expected and desired activity, free from undesirable effects, in exchange for his money.

The dual functions of Quality Control are conflicting; this makes it imperative that the quality control man must be well trained for his work, independent in thinking free from control by Production Managers, and most important of high integrity.

THE DRUG CONTROL AND STANDARDS BODIES

In a free Enterprise State where the consumer has a choice in the selection of any single commodity he decides in any point in time to purchase the Goodwill of a firm earned through the Quality of its most important. In a situation where the consumer has very little choice Quality Control becomes much more important if society is not to suffer at the hands of profit-conscious investors. This makes the work of Control Bodies like the Pharmacy Board and the Standards Board most important. But their effectiveness may be negligible unless they can effect control in the factories where the products are being made. Samples of drugs for Certificate of high quality must be presented to the Control Bodies.

Ghana may be considered as a restricted Market where drugs are concerned. A survey conducted during the past six months in the Local drug market has revealed that individual firms control the supply of very important drugs.

Drug	*Supplier*
Ergometrine injection	GIHOC
Chloroquine injection	,,
DIAZEPAM	,,
SULPHUR DRUGS	,,
Procaine penicillin inj.	ICAP
Penicillin G. inj.	,,
Cloxacillin inj.	,,
Ampicillin capsules	,,
Antibiotic syrups (various types)	,,
Paracetamol Elixir	DUMEX (Danafco)
Multivitamin Syrup (Baby)	,,
HYDROGEN PEROXIDE	BIKKAI
COD LIVER OIL	,,
Imported	
Tanderil	CIBA-GEIGY
Ambilhar	,,
ALPHACILLIN	M.S.D.

These data have been based on supplies to Komfo Anokye Hospital, and selected Pharmacies in Kumasi.

QUALITY CONTROL IN GHANAIAN DRUG FACTORIES

During the planning stage of this paper a survey was made by Dr Fiagbe and Dr Ayim on Quality control in selected Factories. We concluded from the survey that generally

(1) there is inadequate investment in QC

(2) Personnel in QC are either inexperienced or improperly trained

(3) Facilities for QC are scanty and inadequate

(4) Factories do not have laid down policy on quality control

(5) Quality Control tends to be supervised by production managers

(6) Most management do not seem to appreciate the important role of Quality Control

The above have been confirmed by a small research conducted by the author.

(1) A sample of Fortified procaine penicillin (imported) was found to contain one part procaine penicillin to five parts penicillin G; the official requirement is the reverse.

(2) A unit dose assay of an antibiotic capsule gave activity of 75 per cent to 120 per cent, average 96 per cent, of stated potency; this arose from weight variations.

(3) A capsule on the market was found to contain 30 per cent of stated activity.

Investigation suggested that the supplier of the active ingredient adulterated the drug with some sugar and duped the buyers with seemingly authentic CERTIFICATE OF ANALYSIS and such practices are rampant on the European continent.

(4) Assay of vials of a drug used against resistant staphylococci gave 135 per cent of expected potency. This is a complete waste of material which could have produced 35 per cent more products.

The examples are many and come in every day.

The above show that both investor and consumer suffer where there is inadequate drug quality control.

I would like to make the following proposals for an effective quality control of drugs in the country.

1. Permission for a firm to manufacture drugs must be conditional that effective provision is made for quality control.
2. It should be an offence to market any drug without a certificate of Analysis quality checks.
3. Certificate of Analysis given by Standards Board must be only on samples taken from the store of the manufacturer during a snap check.
4. The manufacturer must be able to produce to Standards Board documentation showing quality tests performed on every batch.
5. Manufacturers may be categorised into TWO.

A GROUP: Those with efficient quality control department with recognised personnel, who are allowed to operate without much control.

B GROUP: Those whose Control Departments are not good enough and who require close supervision from Standards Board.

An efficient Control Department requires investment which may not be easy for a new firm or a small one.

Survey has shown that Ghana has a few experienced and well trained personnel in a few places, Faculty of Pharmacy, Standards Board. These two institutions have between them the know-how and machinery needed to do most work required. The above facilities have been used by two firms for the past 2 years; they tell me quality of their products have gone up and profits have gone up.

One production manager in Accra has proposed that a common service laboratory should be set up to cater for the need of drug manufacturing firms. Who will finance such a Laboratory? I will suggest that any body which sets up such a Laboratory will be self supporting considering fees which will be collected.

In the interim the facilities at the Faculty of Pharmacy are more than could be set up anywhere, and it could be used.

REMEMBER THE ANNUAL

RETENTION FEE IS NOW

C50.00

PER MEMBER.

PLEASE PAY NOW!

PHARMACEUTICAL SOCIETY OF GHANA

EXECUTIVE SECRETARY

Applications are invited from qualified Ghanaian Pharmacists registered with the Pharmaceutical Society of Ghana for the above post.

Duties: The Executive Secretary will be responsible for the operations of the Society's Headquarters Secretariat. He will also be required to liaise with Regional branches of the Society and this would involve extensive travelling.

Salary: Negotiable but not less than ₵6,000 p.a. plus fringe benefits.

Age: Not more than 45 years.

Applications should be addressed to:—

The Hon. General Secretary,
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Published by the Pharmaceutical Society of Ghana, Ministry of Information. Licence No. ISD/HM25/73.
Text printed by New Times Corporation, Ring Road West, Accra.
Cover printed by Catholic Press, Liberty Avenue, Accra: Editor: K. A. Ohene-Manu.

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