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PHARMACEUTICAL SOCIETY OF GHANA
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THE GHANA PHARMACEUTICAL JOURNAL

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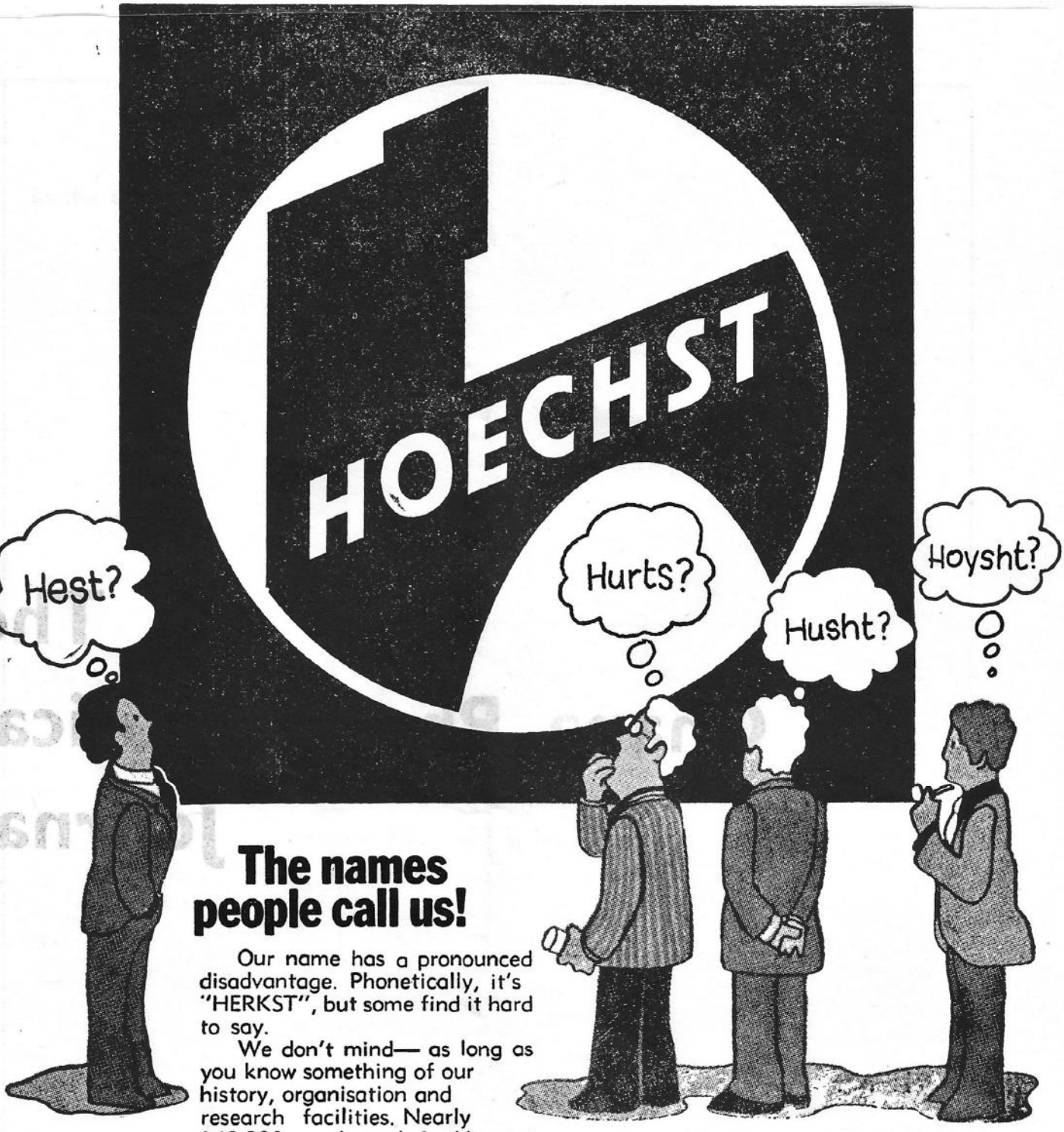
Volume 2 No. 3 & No. 4 December, 1974

The Ghana Pharmaceutical Journal



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VOL. 2 No. 3 & 4 DECEMBER, 1974

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1973—1975

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A STATEMENT BY THE NATIONAL COUNCIL OF THE PHARMACEUTICAL SOCIETY OF GHANA ON THE RESIGNATION OF MR V. K. AIDOO AS PRESIDENT OF THE SOCIETY ON

12TH OCTOBER, 1974 AND SUBSEQUENT DEVELOPMENTS

It has come to the National Council of the Pharmaceutical Society of Ghana as a complete surprise that Mr V. K. Aidoo, until 12th October, 1974 the President of the Society has since his resignation as President that day, been presenting a rather untrue of what led to his resignation. This sad state of affairs has led to a number of unfortunate and unnecessary recriminations and we set out below the true facts of the case:

1. On April 30th, 1974, Dr K. Sarpong, Vice President of the Society and one of three nominees of the Society on the Pharmacy Board wrote to the Hon. General Secretary as follows:

"It would be recalled that at the last meeting of the National Council of the Pharmaceutical Society of Ghana, held at the Society's Headquarters on Saturday, 9th March, 1974, Council resolved that all Pharmacists who have not had their Certificates of Registration committed must be allowed to register Pharmacy premises whether such persons are fully employed elsewhere or not, provided that such premises operate strictly within the framework of the Pharmacy and Drugs Act, 1961, (Act 64). Council directed the Hon. General Secretary to inform the Pharmacy Board accordingly.

At a meeting of the Pharmacy Board held on Wednesday, 27th March, 1974, a letter from the Secretariat of the Society on the matter was read. Unfortunately the letter did not appear to convey in clear terms the decision of Council and therefore no decision was taken on it by the Board. Those of us representing the Society on the Board conveyed this to the Hon. Secretary and advised him to write a fresh letter to the Board stating in no uncertain terms the resolution of Council. Members of the Standing Executive of the Society had the opportunity of reading this letter on the resolution at a meeting held at the Society's Headquarters on Saturday, 20th April, 1974, and agreed that it conveyed the views that Council expressed in the resolution.

The letter was brought before the Pharmacy Board at a meeting held on 24th April, 1974, only 4 days after the said meeting of the Standing Executive. We did our best to defend the Council's resolution but unfortunately our President, Mr Aidoo came out to completely dissociate himself from the resolution of Council and said, to quote him, "I was not even given the chance to speak on it. Someone just moved and they all voted on it. Even when the Society becomes the Registering Authority we will consider applications carefully before registering."

Mr General Secretary, I consider this rather serious especially whe at the 1st meeting of the reconst tuted National Council, held at th premises of Messrs. Pharco (Ghan Ltd, on Saturday, 8th Septembe 1973, Council resolved that ever member was duty bound to defen all resolutions of Council. I quot below extracts of the minutes of th meeting.

"The Hon. General Secretary ex pressed his regrets on the stan some Council members took i opposing Council proposals pre sented to the Conference and sai he felt that every Council Membe was duty bound to defend ever decision or proposal that th Council makes unanimously or b majority decision. He stresse that he considered it a matter o bad faith for Council Members t openly vote against a proposa that the Council presented to th general membership.

These observations made by th General Secretary were *seriousl* discussed by Council and afte several members had emphasise that Council members should no have expressed dissenting view at the Conference in matters o which Council had unanimousl taken decisions the *President* aske that it should be placed on recor for the future guidance that Coun cil members are bound by majorit decision of Council."

It is therefore serious for th

President of the Society to take such a stand on a resolution of Council and to give the impression before non-pharmacists that "jungle law" operates at our meetings and that the Chairman is not even allowed to control meetings.

I consider the President's behaviour as betraying the Society since on two occasions, firstly at the meeting of the National Council where this resolution was tabled and secondly at the meeting of the Standing Executive when the second letter of the Hon. General Secretary was read, the President had every opportunity to make known his views on the issue to his Council members but refused to say even a word at these meetings."

2. The Council was unable to deal with Dr Sarpong's letter until a meeting of the Council held on 12th October, 1974 when the matter was brought up. "Dr Ocran, supported by Mr Ago-Simmonds, suggested that somebody should chair the meeting since the President was directly involved. Mr Osei-Tutu was then elected interim Chairman. Mr Aidoo in answering his charges, asked that Dr Sarpong should withdraw the word betrayal referred to in his letter as he had never betrayed anybody and the "word itself is very insulting."

Mr Aidoo categorically denied having spoken against the Council resolution at the Pharmacy Board meeting and said Dr Sarpong was only drawing a wrong inference because he Mr Aidoo had in the past expressed his disagreement over wholesale registration of premises by Pharmacists engaged in other gainful employment.

Several members of Council who have had occasions to hear Mr Aidoo defend his conduct at the said Pharmacy Board meeting expressed great concern over Mr Aidoo's flat denial of the charge of a breach of faith and Dr Boakye-Yiadom and Prof. Gyang both Council members and members of the Pharmacy Board who were at the Pharmacy Board Meeting in question were asked by the Chairman individually to tell Council whether Dr Sarpong's allegation against Mr Aidoo was true or false. These two members confirmed that Mr Aidoo acted exactly as reported by Dr Sarpong. After an exhaustive discussion of the matter during which Mr Aidoo still denied the charge, both Mr Aidoo and Dr Sarpong were asked to leave the Council Room to enable Council take a decision on the matter.

The Chairman then asked Council to decide by a vote as to whether with the evidence before it, Mr Aidoo was guilty of the charge or not. Council unanimously voted (with two abstentions) that Mr Aidoo was guilty of a breach of faith in contravention of the principle that he himself had enjoined all Council members to follow.

Following this, Mr Anim-Addo moved that since Mr Aidoo's conduct at the Pharmacy Board meeting was improper and he had also told lies to Council, by denying that he ever stood against the Council decision, he was no longer competent to remain president and that he should be called upon to resign his presidency. This motion which was seconded by Dr Ocran was unanimously carried.

Mr Aidoo and Dr Sarpong were then recalled to the meeting and the Chairman informed them of the two decisions taken by Council. He therefore asked Mr Aidoo to decide on what he wished to do. After some moment of silence, Mr Aidoo announced, "Mr Chairman, under the circumstances I hereby resign as President of the Pharmaceutical Society of Ghana with immediate effect". He then thanked members of the Council for having worked with him during the period of his presidency and begged leave of the Council. Before he left the Council Room, however, he indicated that he would also resign as one of the Society's nominees to the Pharmacy Board but said since the substantive appointment to the Board was made by the Commissioner for Health, he will address his resignation to the Commissioner. Mr Aidoo left the meeting after this."

3. On October 14th, 1974, Mr Aidoo wrote to the Commissioner for Health resigning his membership of the Pharmacy Board with immediate effect. In this letter Mr Aidoo gave his reasons for resigning as follows: "My reasons for doing this (resigning) is that the Council of the Pharmaceutical Society has made it a policy that any member of the Society whose certificate of Registration has not been committed to any premises, shall have the right to register a premises if he so desired. My view on this policy are that University Lecturers, Medical representatives and other pharmacists who are in full time employment cannot register premises and become superintendent pharmacists . . . . ."

4. On 24th October, 1974, Prof. A. N. Tackie, Mr S. A. Allotey and Mr J. E. K. Djan, all Fellows of the Society rather strangely wrote to Mr Aidoo (through his private postal address!) addressing him as President—12 days after his resignation—to express their disquiet about his resignation and calling on Mr Aidoo:- "to cause to convene in your own right, in Accra, a One Day Extra-Ordinary General Meeting of members of the Society to resolve the issues involved and your uncalled for resignation from the Pharmacy Board and other related matters. . . .

In the meantime we are asking the Commissioner for Health to stay action on your letter pending the outcome of the Extra-Ordinary General Meeting".

The Council does not wish at this stage to comment on the letter written by the Fellows.

5. Not surprisingly as a result of the dubious reasons Mr Aidoo gave the Commissioner for Health in resigning his membership of the Pharmacy Board following his resignation as President of the Society and the letter the three Fellows wrote the Commissioner for Health, had cause to write to the Hon. General Secretary as follows, on the 13th of November, 1974:

1. "I have received a letter of resignation as a member of the pharmacy board from Mr Victor Kofi Aidoo who until 14th October, 1974 was the President of your Society and consequently a member of the Pharmacy Board. This unfortunate state of affairs indicates disunity in the National Council and this situation will eventually seek down the Society.
2. It is my wish that whatever caused the resignation of Mr V. K. Aidoo should be examined. However, I do not wish that non-members of the Society

should be involved in this investigation.

3. It is, therefore, requested that the National Council of the Society should convene a meeting before the 21st of November 1974 with Professor A. N. Tackie in the chair to resolve any differences which might tend to make Mr Aidoo rescind his decision to resign as President and also as a member of the Pharmacy Board.
4. The report should reach this office not later than 29th November, 1974."

It should be obvious from the inconsistencies in Mr Aidoo's own defence before the Council (contained in (2) above) and his stated reasons for resigning in his letter to the Commissioner for Health (see (3) above) that Mr Aidoo's moral probity is in doubt and in fact his actions following his resignation confirms that he has not been honest in his dealings with the Council and it was for this reason that made the Council vote over-whelmingly to ask for his resignation as President of the Pharmaceutical Society of Ghana. The Council believes that if at this point in the history of the Society and of the Country as a whole, a leader does not have moral integrity, he is unfit to continue in office and it further affirms that it is determined to have absolutely honest men handle the affairs of the Society in the best interest of all and not allow any individual, not withstanding his position, to act the way he wants.

In taking the decision to ask for Mr Aidoo's resignation as President, the Council was guided by the highest principles of fair play, moral probity and the supreme interest of the Society as a whole. Surely there is no disunity in the Council. Mr Aidoo would make us believe that because Council unanimously asked for the resignation of one of its members for wrong-doing the Society has come to an end!! Indeed it is Mr Aidoo's attitude since his resignation which is causing unnecessary recriminations and making Council waste its energy and effort in defending an action which is perfectly legitimate and indeed laudable in any democratic Society.

Council is convinced that not until every member of the Society exhibits the highest sense of responsibility and integrity, the aims and aspirations of the Society "Amicus Humani Generis" can never be attained; and who else should set the right example but the President and the Council?

Council stands by its action which it deems irrevocable and it believes it has the support of the majority of the membership of the Society in the moral principles involved in it asking for the resignation of Mr Aidoo as President.

Council is aware of its responsibilities to the entire Society and it is determined to ensure the discharge of these responsibilities, without fear or favour, in the supreme interest of all.

OPENING ADDRESS BY THE CENTRAL REGIONAL COMMISSIONER, Lt. Col. E. A. BAIDOO, AT THE 1974 ANNUAL GENERAL MEETING HELD AT THE UNIVERSITY OF CAPE COAST

Ladies and Gentlemen,

It is my great pleasure to be invited this morning to open this year's Annual General Meeting of the Pharmaceutical Society of Ghana. I learn with great interest that this is the first time such a meeting is being organised by your Society in Cape Coast. May I say a big welcome to you to my Region. It is my hope that your organising the Conference in this Region will spur up the morale of your members in the Region to give the very best of their service to the public.

From your programme, I can see that your main theme for this year's General Meeting is to consider amendments to Pharmacy and Drugs Act, 1961. Obviously, certain portions of the Act which may be incompatible to the present trends in the practice of pharmacy and use of drug will attract your attention. Since 1961 many drugs have come to the world market and they will need to be controlled by a government instrument. The past decade has also seen many potent but useful drugs being made available to the sick. However, there are some of us who without any knowledge in the use of drugs do indulge in taking potent drugs without medical advice. This drug misuse has led to people having adverse reactions to some drugs. It is for you pharmacists who actually dispense drugs to people to educate them on the proper use of them. Drugs misused is money wasted in terms of the foreign exchange used to import them and the manpower lost through sickness. We want your Society to help curb this.

Whilst on drugs, I want also to draw your attention to the rising National bill for drugs. This trend is not likely to decrease in view of the over increasing world inflation. It is needless to say that as a small nation, there is a limit to the amount of money one can make available for purchasing drugs. However, it is obvious that we are having at the moment certain drugs on the market which may be considered not essential. We cannot continue to spend money on non-essentials. We shall need your continual advice on this so that our drug bill will be limited to essential drugs for the people.

I learn with interest that Pharmaceutical Society of Ghana is one of the first professional bodies to be registered under the N.L.C. Decree 143 on Professional Bodies. You may therefore have to consider suggesting amendments to Pharmacy and Drugs Act to be in conformity with the Decree 143. This Decree empowers the professional bodies to regulate the practice of their profession. The people of Ghana therefore expect you to regulate the practice and ethics of your profession to the betterment of the people in the country.

It is rather unfortunate to note that many of you have left the Government Service. Since the Government controls the greater proportion of hospitals in the country, your import in the service to people in this area may not be felt if we don't have reasonable number of pharmacists in the hospitals. The explanation given to the exodus of pharmacists from the hospitals is that the conditions of service as given to pharmacists in the hospitals is relatively poor.

Attempt is being made to ratify this situation so that conditions of service for pharmacists in the government sector will be the same as other professionals like engineers. You may be aware of a special Committee that has been set up in the Ministry of Health to reconsider certain anomalies in the salary review report. Your problem is receiving due attention.

Now, Ladies and Gentlemen, I have the pleasure to declare the 1974 Annual General Meeting of the Pharmaceutical Society of Ghana, open, I wish you all the best in your deliberations.

Thank you.

ADDRESS BY THE PRESIDENT OF THE PHARMACEUTICAL SOCIETY OF GHANA AT THE 1974 ANNUAL GENERAL MEETING, CAPE COAST

It affords me great pleasure to welcome our guest of honour, Lt.-Col. Baidoo and other distinguished guests and members of our profession this morning.

The theme of this year's conference is the "Amendment of the Pharmacy and Drugs Act". (Act 64), this Act purports to regulate the profession of pharmacy and to control the supply manufacture, storage and transportation of drugs in this country.

The general provisions of this Act are reasonable, although a number of sections require revision.

Under the Professional Bodies Registration Decree promulgated in January, 1973, the Pharmaceutical Society of Ghana was one of the first three professional bodies to be fully registered under Decree 143. The provisions of this Decree vest the absolute control of each profession in the respective professional body registered under it.

In August, 1973, a delegation of the Pharmacy Board met the Commissioner for Health on the revision of Act 64. It was at this meeting that I informed the Commissioner for Health that now that the Pharmaceutical Society of Ghana has fully registered under Decree 143, the Pharmaceutical Society would submit proposals on how best the Act could be revised to bring its provisions in line with the provisions and spirit of N.R.C. Decree 143.

The purpose of our meeting this week-end is to discuss amendments to Act 64 and to submit proposals for the consideration of Government.

I believe that it is in the public interest that:-

1. the sale and supply of medicines in the urban areas both human and veterinary should be restricted to pharmacies.
2. Doctors should diagnose and pharmacists dispense.
3. Council should continue to seize every opportunity to ensure that the pharmacist takes his rightful place as a member of the health team and the public and government re- cognise it.
4. that great care should be taken to ensure that the interest of all pharmacists both proprietors and employees are protected.
5. There is complete integration of the various branches of pharmacy. This I hope is our survival as a profession.

I am convinced a bright future can be secured for pharmacy. The whole profession must be examined and its future options appraised. Unity must also be our theme, for it is in unity that our greatest strength lies.

Although I am a general practice pharmacist the problems of my colleagues in the hospital, industrial and academic branches of the profession are of paramount importance to me for it is my firm conviction that advancement for any branch of the profession means advancement for pharmacy as a whole.

We should continue to strive for the recognition of the pharmacist not as a custodian of the nation's medicines but a full and valuable member of the health team.

Pharmacy in Ghana and in Europe is still in the melting point. We are still in the area of debate. Opinions, ideas and theories will continue to be canvassed both in this country and elsewhere. It is therefore important that Council continues to have the widest possible consultations and discussions before arriving at policy decisions that will have, in the long term, a profound effect on the future of pharmacy in this Country.

We must ensure that no individual section of our profession is allowed to put the clock back, no matter how well intentioned their aim. In modern

general practice pharmacy, marketing methods have a useful and necessary role to play but they must always remain subsidiary to, and never conflict with, professional practice.

The promulgation of a new Pharmacy and Drugs Decree must be used as a spring board to increase the influence of our profession at all levels. Pharmacy has a fundamental and increasing role to play in the well-being of the patient. Our voice must not only be heard but be attended to and we must continue to work for the advancement of pharmacy both professionally and economically.

We are grateful to have with us Lt.-Col Baidoo, (Central Regional Commissioner) who has kindly consented to open our conference. As I said at the State House a year ago at the opening of our 32nd Conference by the Chairman of the N.R.C., we have followed with keen interest what the N.R.C. Government has been doing for the Pharmaceutical Society of Ghana. We appreciate their efforts and we are indeed grateful.

Again, I say many thanks to our guest of honour and to our distinguished guests present here this morning.

Finally to the members of the Pharmaceutical Society, I seize this opportunity to welcome you to our conference and I look forward to active participation by all. I trust that the climate and contents of deliberations will be such that will produce practical and useful results for the benefit of the country.

Thank you.

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THE GHANA CO-OPERATIVE PHARMACEUTICAL SOCIETY LIMITED

By George W. Armah, MPS (G) M.I. Pharm M

Introduction

The idea of a Pharmaceutical Co-operative Society is not new even though the formation of the Society itself opens a new page for Co-operative development in this country. For sometime now only the following grades of co-operatives were known in this country:— Credit Unions, Housing Co-operatives, Farmers Marketing Co-operatives, Fish Marketing Co-operatives, Transport Co-operatives, Bakers Co-operatives and Craftsmen Co-operatives, to name a few. The Pharmaceutical Co-operative is the first to be formed from the Professional Bodies in Ghana. Already it has created much interest in Government circles, in Pharmacists with commercial bias and among officials who are themselves organisers of Co-operative Societies in the country.

Source of the Pharmaceutical Co-operative Idea

The Pharmacy and Drugs Act, 1961 (ACT 64, which is under review) Section 6 subsection 2, charges the Pharmacy Board with responsibilities for encouraging and facilitating the formation of Co-operative Societies embracing persons carrying on Pharmacy Business.

The Health Committee appointed in 1966 wanted to see a properly organised Ghanaian Firm established in a co-operative basis to enter the drug Importation Trade and to dispense out-patient prescriptions, and strongly recommended that the Pharmaceutical Co-operative should be given preferential treatment by Government, since it is obvious that no developing country such as ours can view with complacency a vital sector of its very existence dependent entirely on expatriate firms.

The developments that followed this report which I am going to treat in three stages have made this Ghana Co-operative Pharmaceutical Society Limited the viable baby of the Health Committee of 1966. The Society is therefore a new venture in Co-operative development in this country.

First Attempt of a Pharmaceutical Co-operative, 1967

Barely a year after the Health Committee report, the Retail Pharmacists Association took up the challenge and decided to come together to form a co-operative. This society was shortlived and could not be registered for some reasons including absence of proper direction.

Second Attempt of a National Pharmaceutical Co-operative, 1971

Four years after the first attempt, some members of the Kumasi branch of the Pharmaceutical Society of Ghana came together to form the nucleus of a National Co-operative Movement in 1971. Unlike the first attempt, this was better organised with membership of twenty one Pharmacists with the Secretary of the Ashanti Branch of the Pharmaceutical Society, Mr Isaac Ampah, as the Vice Chairman and Mr Victor Aidoo as Chairman. One would have thought that this could have been the beginning of the realisation of the Co-operative idea mooted out by the Health Committee of 1966 since Mr Isaac Ampah who was so much involved in this has the rare quality of a first class organiser as demonstrated by his handling of our Pharmaceutical Conference of 1971 at the Kumasi University. Unfortunately, there were difficulties beyond Mr. Ampah's control. Even though he completed his organisational work culminating in the setting up of a small co-operative shop, the actual registration of the Society was not successful. Attempts by the Society's Chairman in Accra failed. A delegate, according to Mr Ampah, was sent from Kumasi to Accra to follow this up but again the registration was unsuccessful. Whatever the conditions prevailing at that time, this second attempt in Kumasi would have been a big Drug House if all had been well with it. I think the oganisers did well.

Third Attempt of a National Pharmaceutical Co-operative 1973/74

Towards the end of 1973, a third attempt was made in Accra towards the setting up of a National viable Pharmaceutical Co-operative Society. Some meetings were called by Mr Victor Aidoo assisted by Mr Samuel E. Archer to kindle interest in Pharmacists and to organise membership drive. The response given by some pharmacists was encouraging. The real turning point came around the middle of February 1974 when a General Meeting at the Avenida Hotel, Accra, was addressed by Mr B. K. Senkyire, Secretary General of the Ghana Co-operatives Council Limited. Another meeting followed in a few days time at the

same venue. At this meeting attended by some regional members, election of a Management Committee was organised under the Chairmanship of the Secretary General. I have already sent details of this meeting to all Regional Secretaries of the Pharmaceutical Society of Ghana.

Present Membership

The Pharmaceutical Co-operative has a membership of 80 Pharmacists at present. This number comprises members from the Western Region, Central Region, Greater Accra Region, Eastern Region and the Volta Region. The Ashanti Region is ready to join and arrangements have already been made to offer them seats on the various National Committees.

Shares and Entrance Fees

The Co-operative is a voluntary organisation open to all Pharmacists who have registered with the Pharmaceutical Society of Ghana. Every member pays on enrolment, an entrance fee of ₵10.00 and should hold at least ten shares with a value of ₵10.00 each provided that his total share holding does not exceed 25 per cent of the total paid up share Capital.

Registration of Society

The Ghana Co-operative Pharmaceutical Society was registered in July, 1974 by the Registrar of Co-operatives, Ghana, with Registration Number 4332. The Society is therefore guided by the regulations of the Co-operative Societies Decree No. 252 of 1968 and its amendments All members have to subject themselves to the Principles involved in Co-operative organisation in this country. Members have been supplied with copies of our Constitution, bye-laws and regulations and articles of association.

Aims and Objectives

The aims and objectives of the Society are set out in the bye-laws and articles of Association obtainable from the Executive Secretary. Like all Co-operative Societies, the primary aim is to promote the economic interest of its members, but as a National Professional Body our important objective is to do service to our Country by ensuring that Pharmaceutical Service reaches our people more conveniently. We also intend helping to promote the practice of Pharmacy in Ghana, and to win for our Profession the respect due to it.

Strategies of Operation

The first strategy of the Society is to set up wholesale and Chemist Shops in Regions all over the country. The first wholesale will start operation in Accra at the end of August, 1974. A wholesale has been acquired at the Cantonments, Osu, and half a year's rent has already been paid. The Society has applied to be a distributor of the Pharmaceutical Divison of GIHOC. Application has also been sent to the Executive Chairman of the Accra-Tema City-Council for as hop at the Kaneshie Ultra-modern Supermarket which is fast nearing completion. The idea is to open a first class Chemist shops. All facilities will eventually be extended to the Regions and Districts of Ghana.

Importations

The Society has plans to import Pharmaceutical preparations, dressings, surgical instruments, etc. from both the Western and Eastern countries.

Arrangements have been made for registration with the Pharmacy and Poisons Board, the Ministry of Health and the Ministry of Trade. An Import Licence worth ₵100,000.00 will be applied for initially.

Advantages towards Practice of Pharmacy

At this stage it will be necessary to mention some of what the Ghana Co-operative Pharmaceutical Society stands to do for the practice of Pharmacy in the country.

1. Out-Patient Dispensing

At the appropriate time, the Society will undertake the dispensing of out-patient prescriptions thus giving the Hospital Pharmacists adequate time to see to other things. Shops in the vicinities of Korle Bu, Komfo Anokye, Effia Nkwanta and Tamale hospitals as envisaged for the future in furtherance of this plan.

2. Check on Trespassers

At the appropriate time when the Society has much share of the distribution business of Class A and Class B Drugs efforts will be made to prevent Chemical Drug Sellers and other trespassers from infringing on the rights of Pharmacists to be the sole handlers of these Pharmaceuticals. For this reason, all members have been warned to desist from any conduct likely to bring disrepute to the Society. This regulation is stated in Section 9 subsection 4 of the Society's constitution.

3. Utilisation of Cross-Section of Pharmacists

For greater success and advancement of the Pharmacy profession, Pharmacists belonging to all branches of the profession will be utilised at the proper time. For the start we have formed three important sub-committees, i.e. INDENT COMMITTEE, FINANCE COMMITTEE and PLANNING COMMITTEE. We have Commercial or Proprietor Pharmacists on the Indent Committee which is charged with the responsibility of indenting, pricing and of making sure that all our wholesale in the country have stocks at all times. The Planning Committee is a mixture of Medical Representative, Academic Pharmacist and businessmen. The Finance Committee comprise Financial men and a member from the Ministry. At the appropriate time, the Industrial Pharmacist will be called upon to assist.

Academic Consultancy and Test of Batches

As I have already indicated, the Pharmaceutical Co-operative intends ordering from both Western and Eastern countries. In case of doubt as to the quality of some preparations, ampoules tablets, intravenous solutions, etc., will be referred to our Academic Members for routine testing. By so doing, the Pharmaceutical Co-operative hopes to distribute throughout the country drugs of the finest quality.

Plant extraction and local raw materials research will be handled by our Scientist members at a future date when we establish raw materials farms in the country.

In conclusion, I would like through this article to inform interested Pharmacists in Ghana that the Co-operative we intend to run is not the work of one man. We have the full backing of the Government and people of Ghana. Let us therefore accept the challenge with open minds and take our proper place among the Professional Bodies in Ghana.

QUANTITATIVE EVALUATION OF SOME CANNABIS SATIVA (INDIAN HEMP) SAMPLES FROM GHANA

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Summary

The levels of three Cannabinoids — Cannabidiol, (CBD) Delta-9—Tetrahydro Cannabinol (THC) and Cannabinol (CBN) in 24 samples from the various regions in the country have been determined using gas liquid chromatographic method. The levels of THC (the biologically active cannabinoid) in the samples ranged from 0.039 — 1.549 per cent w/w with coefficient of variation of 2.45 per cent. Classification according to phenotype ratio method put the Ghanaian samples into phenotype I. The content of CBD ranged from 0.116 — 0.620 per cent w/w whilst the levels of CBN fell between 0.049 — 1.069 per cent w/w.

Introduction

The levels of Cannabinoids in Cannabis sativa (L) are known to be influenced by factors such as ecology, stages of development of the plant, genetics and seasonal changes 1–2. Various attempts have been made to classify Cannabis according to the geographical origin but not with much success (3 – 6). Difficulties encountered in such classification exercises have been attributed partly to the fact that there are a whole range of unauthenticated samples of Cannabis obtainable from unauthorized cultivations from all corners of the world. The problem is made more difficult by the unstable nature of Cannabis samples on storage. These difficulties in classification are not encountered with Opium where cultivation in most parts of the world is authorized and the opium samples tend to be more stable on storage than Cannabis.

Despite the above mentioned difficulties, some efforts have been made to classify various samples of Cannabis using other characteristics of the plant. Content of Cannabinoid acids and phenols in Cannabis has been used to classify the plant into fibre and drug types[7]. Fetterman et al[8] recently also suggested another way of classifying Cannabis into chemical phenotypes: phenotype ratio = (% (—) Δ9—trans-tetrahydrocannabinol +% Cannabinol): %Cannabdiol.

According to this method, Cannabis samples with phenotype ratios greater than 1.0 are classified as phenotype I. The phenotype I is regarded as biologically active and samples with ratios less than 1.0 are classified into phenotype II or the fibre-type Cannabis.

This method of classification is used in classifying 24 samples of Cannabis randomly selected from Police seizures from the various regions in Ghana. Up-to-date no data on quantitative levels of Cannabinoid in Cannabis samples as found in Ghana have been reported. With complexing problems in classifying the various types of Cannabis samples, it is necessary that the various samples as found in many parts of the world are systematically studied. The present report is part of a programme initiated in our Laboratory to examine systematically samples of Cannabis in Ghana.

EXPERIMENTAL

Materials

Cannabis Samples

Random samples were taken from Police seizures of Cannabis from the various regions in Ghana. The samples were air-dried at room temperature (air - conditioned room — 22° — 25°C) for three days. The dried plant materials (flowering tops) were powdered into a fine powder and passed through No. 44 sieve (355 mm. aperture). The powdered materials were then stored in stoppered amber-coloured bottles and stored in a cold room (4°C) up to the time of analysis. The storage time in each case did not exceed one month.

Apparatus

Gas chromatograph — varian model 1700 with flame ionization

detector. Column: Stainless steel column (5' × 9") with stationary phase three per cent SE 30 on Var pak Q (80–100 mesh) Column temperature was programmed from 170° — 230°C at the rate of 6°C/min. Injector and Detector temperatures used were 270°C and 250°C respectively. Nitrogen gas was used as the carrier gas with the flow rate of 30 ml/min. The flow rate for the hydrogen gas and air were 30 ml/min and 300 ml/min respectively.

All the chemicals used were of analytical grade (B.D.H.).
United Nations Authentic samples of Δ^9—THC, CBD and CBN were used as standard cannabinoids.

Assay of Cannabinoids

Gas liquid chromatographic method as described by Binka and Bediako-Donkor[9] was used to evaluate quantitatively the content of CBD, Δ9—THC and CBN in the 24 samples of Cannabis with slight modifications. About 0.50G of the powdered plant material was accurately weighed and extracted with 3 × 20 ml, hot methanol. The methanolic extract was filtered through No. 4 Whatman paper and the filtrate evaporated to dryness using vacuum evaporator. The residue was wetted with 0.5 ml benzene and taken up with 0.5G florisil (60 — 100 mesh). A column chromatographic clean-up was set up with 2G slurry of florisil prepared with benzene. The column dimensions were 12 × 1.2 cm. and the plant extract mixed with florisil was transferred to the column and eluted with 3 × 25 ml. benzene. The benzene extract was then evaporated to dryness under vacuum and the residue was taken up in n-hexane, containing 0.2 per cent w/w of anthracene as the internal standard into 10 ml. volumetric flask and made up to volume.

The contents of CBD, CBN and THC were estimated by the method of peak areas. An extract from the Cannabis sample No. 9 was analysed for its THC content eleven times and the results were statistically evaluated. Variations in THC content in the 24 samples analysed were also evaluated using the following formula:(2)

Coefficient of variation =

$$= \frac{100}{\sqrt{N}} \sqrt{\Sigma \left(\frac{X_2 - X_1}{X_2 + X_1}\right)^2}$$

N = number of pairs of assays and × 2 and × 1 results from each pair.

Results and Discussion

The mean values of CBD, CBN, THC from duplicate results from the analysis of the 24 different samples of Cannabis are as shown in Table I. The coefficient of variation from eleven repeated analysis for THC content in sample No. 9 was found to be 2.45 per cent with the mean value of 1.466 per cent w/w. Coefficient of variation of THC content in all the 24 samples analysed was found to be 2.36 per cent. These results indicate that the prescribed procedure for the determination of the Cannabinoids was reasonably reproducible and they compared favourably with those reported by Fairbairn and Liebmann (1973)[2]. The retention times for the Cannabinoids relative to anthracene (o min) were as the following:—

Cannabidiol, 12 min.
(—1 Δ^9—Tetrahydrocannabinol— 14 min.
Cannabinol — 15 min.

Using the phenotype ratio method all the Ghanaian samples analysed could be classified as belonging to phenotype I group of Cannabis sativa (L). It could therefore be inferred that the samples were biologically active. One cannot say much about differences in the content of cannabinoids in samples from the various parts of the country. Realistic comparsion could be made from Cannabis grown in the same season and harvested at the same time.

Acknowledgement

We are grateful to Dr Olav J. Braerden, Chief of the United Nations Narcotics Laboratory, Geneva, for providing us with the reference substances.

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TABLE I

QUANTITATIVE EVALUATION OF CANNABIS SAMPLES FROM GHANA

Sample	Region	CBD (%w/w)	THC (%w/w)	CBN (%w/w)	Phenotype Ratio
1	Greater-Accra	0.241	0.523	0.516	2.158
2	,, ...	0.420	1.032	0.681	4.079
3	,, ...	0.620	2.307	0.158	3.976
4	,, ...	0.214	1.308	0.135	7.690
5	Western	0.116	0.629	0.539	9.870
6	,, ...	0548.	1.011	0.502	2.760
7	,, ...	0.258	1.466	0.639	8.159
8	,, ...	0.164	0.921	0.172	6.665
9	,, ...	0.200	0.829	0.176	6.128
10	,, ...	0.198	0.699	0.536	6.207
11	,, ...	0.298	0.507	1.069	5.289
12	,, ...	0.494	0.636	0.372	2.242
13	,, ...	0.394	1.431	0.498	5.741
14	,, ...	0.336	1.549	0.236	5.313
15	,, ...	0.272	1.093	0.274	5.026
16	,, ...	0.422	1.062	0.274	3.166
17	,, ...	0.162	0.887	0.244	6.981
18	,, ...	0.234	1.331	0.302	6.265
19	,, ...	0.1851	0.836	0.272	5.449
20	,, ...	0.152	0.917	0.049	6.289
21	Central	0.140	0.039	0.123	1.157
22	Brong-Ahafo	0.186	0.928	0.803	9.306
23	,, ...	0.200	0.210	0.974	5.920
24	Eastern	0.414	0.753	0.131	2.135

HOSPITAL PHARMACY IN GHANA AS I SEE IT — — — — II

DRUG PROCUREMENT, STORAGE AND CONTROL

By Eniton R. Gavu, (Mrs) B. Pharm., MPSG
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Drug procurement, storage and control of the various classes and their inventory or stock control are very important in hospital Pharmacy. Drugs are acquired in the various hospitals, urban health centres and clinics by sending requisitions to drug depot, the Central Medical Stores or the Regional Stores in the various regional capitals. However, a few big hospitals, the Private and Mission ones do procure some of their drugs by directly purchasing from the drug houses using Local Purchase Orders (L.P.O.)

The method for drug requisitioning in the government medical stores is not satisfactory and causes too much delay. Let us examine a requisition from Korle Bu Hospital, for example, to the Central Medical Stores at Tema. The Pharmacist in charge of the Hospital's Medical Stores prepares the requisition which is thoroughly vetted and signed by the Principal Pharmacist. It is then sent to the hospital administrator for his approval and then to the Ministry of Health for further endorsement by the Chief Pharmacist or his representative. From here, it goes to the stores Superintendent at the Central Medical Stores and he finally endorses it before at long last it reaches the Pharmacists responsible for the various sections of the Stores for the supplies to be made. The procedure in the smaller hospitals and Polyclinics is very similar except that the requisition goes finally to the Regional Stores and not to the Central Medical Stores.

I feel this lengthy procedure needs some remedy. Let us examine some of the causes of the delay with requisitioning and some suggestions which could eliminate the delay. The officers responsible in the signing of requisitions are too many and this leads to bureaucratic bottleneck. Most of our record books and other stationery papers in use now are the same as those used 15–30 years ago. Unfortunately, the scientific world is changing so fast that we cannot just continue using these out-dated materials. It is time the Pharmacy Division of the Ministry of Health changed some of the details in the record books used for requisitions, and stock control. In the Daily Issue and Requisition books, for instance, the column for the Medical Officer in charge could be changed to Senior Pharmacist in charge or the Principal Pharmacist who should take full responsibility in the requisition for drugs. He should check possible errors in the books.

As already mentioned, a lot depends on the Pharmacist too. Some do requisitions without being realise tic. Some do not even have any idea as to the average rate at which the various drugs move, e.g. the quantity of antihypertensives, analgesics, antibiotics, etc. used daily, weekly or monthly. But we need these data to enable us make realistic requisitions. If correct data on the consumption of drugs are known, problems like 'artificial' shortage resulting from hoarding of slow-moving drugs in a particular hospital whilst there could be none available in the other hospitals could be arrested. A hospital pharmacist needs to keep adequate records to help him plan ahead and manage his department effectively. There is no need requisitioning for 50,000 capsules Tetracycline instead of 20,000 actually needed or 20,000 Acetylsalicylic Acid Tablets instead of 60,000. It must be kept in mind that stocks should not get to "NIL" before a requisition or order is made. Under normal circumstances, the Medical Stores should have all the items needed but quite often, they don't. In these cases they should be in a position to advise when the requisitioning pharmacist should go back for drugs which are undersupplied. But the Medical Stores themselves also face a dilemma because most often they also run out of many items and do not know when next they are getting fresh stocks of items which were in short supply.

Transportation of drugs from Medical Stores to hospital pharmacies is another problem. Most of the time, transport is not available in the hospitals when the Medical Stores are ready to supply requisitions and when there is transport, the Stores are not ready to supply either as a result of other accummulated requisitions, or shortage of the products needed. It is imperative that the transport system of the Ministry of Health should be re-organised to facilitate quick and regular transportation of drugs and other supplies

establishes inaccurate returns, the treatment sheet must be checked so that the errors of entry are corrected before she leaves the ward.

It is urgent to discourage the misuse of drugs in Ghana. There are some people who prefer self-medication and as such go out to any Pharmacy to ask for drugs. This must be discouraged. The problem of drug abuse in Ghana needs a quick solution. Pharmacists should endeavour to keep abreast with new developments to meet the demands of change brought about by the rapid progress in medical care. The procedures for procuring drugs, storage conditions and control of all drugs must be looked into and improved upon as early as possible to enable effective and efficient practice of pharmacy. It is necessary that "the Stores Regulations" booklet be made available in all hospitals to make store keeping easier and more straightforward than it is now.

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between the Medical Stores and Hospitals.

One other method of obtaining drugs for the use of hospitals is "local purchasing" which is the ad hoc buying of much needed supplies in small quantities from individual drug houses for use in the hospital concerned without going to tender which is the normal way by which the Medical Stores obtain their supplies. As said before, this method of requisitioning should also be the prerogative of the Pharmacist.

A leading advocate of the school of thought that pharmaceuticals and related items constitute specialities which require the technical skills of a formally trained individual for their proper selection and purchase is Dr. Malcolm T. Mac Eachern who states " . . . . the purchase of drugs and pharmaceuticals is a speciality which can be carried out to the best advantage by a pharmacist trained in managing a hospital pharmacy . . . . This is the only department in the hospital in which it is usually not advisable to have purchasing done by a general purchasing agent."[1]

One of the principles enunciated in the American Society of Hospital Pharmacists' 'Minimum Standard for Pharmacies in Hospitals' is that "... the pharmacist in charge shall be responsible for specifications both as to quality and source for purchase of all drugs, chemicals, antibiotics, biologicals and pharmaceutical preparations used in the treatment of patients . . . ."[2]

STORAGE AND CONTROL

It is most frustrating to find that a Pharmacist who knows, by his training, that drugs have to be kept in a store with adequate facilities like shelves, locks, burglar proof air-conditioners for temperature and humidity control, etc. finds himself storing drugs under very appalling conditions because the Ministry of Health which he serves cannot afford or would not bother to provide adequate storage facilities. This needs urgent attention in order to cut down drugs decomposing because of poor storage conditions. We must remember that many drugs decompose under high temperature and humidities as found in a Tropical country like Ghana. Dispensing a decomposed drug could also be a health hazard to the public. We cannot afford at this time of world economic crisis to spend our hard earned foreign exchange on drugs just to allow them to deteriorate. For both short and long term benefits, it is in our interest to have our medical stores fully air-conditioned.

The drugs in the store could be arranged in such a way that it will be easy to pick up any wanted item easily. The most useful method is by arranging drugs according to pharmacological activities, e.g. analgesics, antihypertensives, antibiotics, etc. Within pharmacological group, drugs can be arranged alphabetically. It should however be stressed that inflammable and volatile substances should always be kept separately. Below is another suggested grouping for a Medical Store:

1. Narcotics — to be under lock
2. Capsules and Tablets
3. Injections and Intravenous Infusions
4. Eye, Ear, Nose preparations
5. Powders
6. Galenicals and Bulk Liquids
7. Ointments
8. Vaccines, Sera, Biologicals and other Pharmaceuticals needing refrigeration
9. Other miscellaneous products
10. Volatile and Inflammable products
11. Equipment and machines

It happens that some pharmacists do not create a system of differentiating between the old and new stocks and the end result is that the old stocks are left on the shelf for a long time and the newly arrived ones are issued out. This problem is often experienced especially in the big medical stores and a method needs to be found to alleviate this problem.

Some drugs like vaccines, sera antibiotics etc. are dated. But it does happen that some pharmacists may forget about some of these with a short period left to expire. These require special control in order to ensure potency at the time of dispensing and to be sure that the Pharmacy is not carrying worthless stock. One needs to keep special records which provide such information as the name of product, date of arrival, dates of manufacture and expiry and the batch number for such drugs. This will also help when sending the drugs to Drug testing laboratories like the Government Chemical Laboratories for analysis when the need arises. Even if there are no adequate facilities in a store, one needs to improvise to ensure that items like powders are not packed on the floor.

Let us examine the control of drugs. The handling of Narcotics should be strictly the responsibility of the Pharmacist in charge of the Department and not the post graduate students on practical training. Likewise the Sister or Nurse in charge of the ward should be responsible for the storage and use of the ward's Narcotics. The request form for the ward stock or the prescription form must bear the date, the total quantity of the drug required, the name of the ward or patient, the patient's registration number, the name of the doctor (and not only his signature) and the signature of the sister-in-charge.

It is important to visit and check the ward stocks often and advise the nursing staff about their responsibilities e.g.

1. They must make entries in the ward register immediately after administering the drug to the patient.
2. If a patient refuses a dose especially a narcotic mixture or an ampoule broken or half ampoule left for more than 24 hours, it must be entered in the register by the nurse and countersigned by the Senior Sister since the Pharmacist is not available at that time. It is advisable to record why the drug was not administered resulting in the surplus or shortage e.g. "Refused by patient" or "Ampoule Broken" or "Half ampoule discarded" etc. If an ampoule or vial of a narcotic was broken then the piece should be kept and shown to the Pharmacist when fresh stocks are being collected.
3. It must be stressed that it is important the nurse coming on duty carefully checks the physical stock against the balance in the Dangerous Drugs Register esepcially when many patients are on the drug. If the first check

STERILIZATION OF SURGICAL DRESSINGS [PART ONE]

SOME FACTS AND PROBLEMS

By G. H. Konning, M.Pharm. Ph.D (Lond)

Introduction

Sterilization, the subject matter of destruction or removal of micro-organisims from dairy, food and pharmaceutical products has judiciously acquired much prominence. In pharmacy products ethically dispensed free from micro-organisms include eye preparations, parenteral solutions, and surgical materials such as lubricants, instruments, sutures and fabrics. Whilst the majority of the products enumerated above are usually obtained as sterile from reputed external suppliers, surgical instruments and fabrics eg. gowns, beddings, towels and dressings used for surgical operations and post surgical care are sterilized on location.

The need for using sterile dressings has been recognized for nearly a century. As early as 1887, Louis Pasteur is reported to have declared to an Academy of Scientists (Wilkinson, 1959):

> "I would only use lint, bandages and sponges which had previously been raised to a temperature of 130° – 150°C. I would only employ water which had been heated to 100° – 120°C."

This historical statement by one of the world's most eminent surgeons of all time was obviously an expression of the awareness of the existence of 'germs' of sterile and non-sterile products and indeed of the principles of heat sterilization. Whilst the problems associated with the sterilization of surgical instruments are relatively few, those associated with fabrics are many and subtle. To the unwary the problems may even appear unimportant and exaggerated yet any disregard for details in the sterilization of dressings could result in the production of non-sterile dressings which, when inadvertently used, could lead needlessly to risks of septic complications and to possible fatalities.

Dressings may be sterilized by exposure to certain gases e.g. ethylene oxide, ozone etc but since gaseous sterilization is a slow, expensive process and because the gases are usually irritant, explosive or have some other serious side effects, autoclaving has become the sterilization procedure of choice for surgical fabrics, a process which involves the use of steam as the sterilizing agent. Steam suffers none of the disadvantages of the gases.

The current paper is intended to focus attention on sterilization of dressing by autoclaving, its principles and problems. Since steam is the sterilant in the process, it is perhaps appropriate to discuss, initially, those aspects of steam that relate to microbial destruction.

STEAM AND MICROBIAL DESTRUCTION

When supplied with kinetic energy in the form of heat, water boils at 100°C at atmospheric pressure; an increase in pressure increases the boiling point. Further supply of heat to boiling water converts it to steam. One gram (1g.) of water absorbs 100 cal. of heat (sensible heat) to reach boiling point at normal atmospheric pressure and a further 540 cals. approx (latent heat) to convert it to steam at the same temperature. Steam therefore carries a tremendous load of heat in amounts which differ with pressure (Table 1).

At any specified pressure steam can exist in three forms (Fig. 1).

1. **Supersaturated steam** carries

water droplets in suspension and has a poor heat convent; it is therefore unsuitable for sterilization.

2. **Superheated steam** is drier and hotter than it would be if it were saturated; it is however generally inefficient and is discussed more fully below.
3. **Saturated steam** is just sufficiently dry and possess the ideal conditions for the destruction of microbial contaminants.

When saturated steam at a specified temperature comes into contact with a cold object e.g. microbial cell it liberates its tremendous amount of latent heat to the organism without losing its sensible heat and in doing so it condenses to water without a drop in temperature. Condensation of steam wets the organism and additionally results in a substantial contraction in volume which in effect creates a temporary vacuum around the microbial cell. The vacuum is instantly filled by more steam which in turn imparts its large store of latent heat to the cell. The process which perpetuates itself rapidly raises the temperature, and the heat together with the moisture causes an irreversible damage to the organism. Proteins constitute an essential part of the enzymatic systems of all living cells. Thermal destruction of cellular proteins and therefore of the cell itself is markedly enhanced by hydrolysis. Moisture which is amply present under wet heat conditions is therefore of tremendous importance in the thermal break down (denaturation) of cellular proteins.

STERILIZATION PROCEDURE

The sterilizer for fabrics may either be the small bench type autoclave which generates steam internally from water placed at the bottom of the chamber or a specially designed jacket-walled dressing autoclave. For reasons of economy, efficiency and load capacity the dressing autoclave is the sterilizer of choice (Fig. 2). One significant feature of this relatively large sterilizer is that its steam supply for sterilization is generated from a central supply and led through pipes into the autoclave; the other is the jacket which surrounds and provides an effective insulation for the chamber.

Prior to sterilization dressings are laundered and dried at ambient temperature and humidity. Dressings may be packed in fabric-lined dressing drums with air vents that can be closed or opened by drawing a sheet of metal band. However, tough paper, nylon, muslim and plastic wrappers have now largely superceded the use of drums. Once suitably packed dressings are ready for autoclaving.

Steam under pressure from the central supply is fed into the jacket until the desired pressure is attained. The packages or drums are placed in the chamber and the autoclave closed tightly. Air in the chamber and in the packed dressings is evacuated by means of a vacuum pump. Steam is then quickly fed over baffles into the chamber until the pressure and therefore the temperature equals the desired value. The load is held at the specified temperature for a definite prescribed time. Temperature — time, combinations considered absolutely minimum for effective sterilization have been suggested (Perkins, 1960) (Table II). The steam is then turned off and the pressure allowed to decay to atmospheric. This causes some condensation and at this stage the dressings appear soggy and need to be dried. Vacuum is applied to the chamber and this accelerates evaporation of residual moisture from the dressings. Dry and hot filtered air (sterile) is admitted to complete the drying after which the sterilizer is opened, the packages removed and then stored at a suitable temperature and humidity prior to use.

SOME PROBLEMS ASSOCIATED WITH STERILIZATION

Notwithstanding the simple steps involved in the actual manupulation of the autoclave, the course of sterilization is fraught with a string of practical problems; these may broadly be identified as the physical state of the dressings prior to sterilization, the quality of steam in the autoclave and post-sterilization handling of the dressings.

Most surgical dressings are made of cotton fabric composed largely of cellulose (90 per cent), some amount of moisture (7–8 per cent) and small proportions of wax, fat etc. (Trease, 1961). The moisture is in the bound and not in the free state. Whereas laundering and drying at normal conditions of temperature and humidity have practically no deleterious effect on the fibres, disregarding normal wear and tear, drying at higher temperatures or at low humidities markedly reduces the normal moisture content of the fibre in proportion to the severity of the conditions applied. Moisture is also extracted from the fibres in the chamber when the packages of dressings are exposed for too long to heat transmitted from the jacket when the chamber is void of steam, a situation which is met with just after loading the chamber. All such carelessly dried or desiccated fibres lose their tensile strength, become brittle and deteriorate rapdily after few sterilization cycles.

The mode of packing dressings and loading the packages in the chamber markedly influences the rate of sterilization. Interstices of fabric are occupied by pockets of air. Since air is denser than steam and exerts considerable resistance, dressings must be packed with folds going one way to allow steam to easily displace the air, penetrate and raise the temperature of the entire package quickly. For the same reason the packages are best placed inside the chamber with the folds vertical and not horizontal (Fig. 2); drum containers are best placed side-on with the air vents open to allow the downward escape of air. Although tightly loaded chamber may not prevent eventual sterilization it certainly does retard steam penetration and therefore the rate of sterilization.

DEFECTS DUE TO AIR

Presence of air in the chamber due to ineffective evacuation poses a hindrance to sterilization. When air mixes with steam in the autoclave at a specified pressure each component of the mixture carries part of the load (pressure) in proportion to its volume according to Dalton's Law of Partial Pressures. Hence, the pressure and consequently the heat content of the steam component is smaller than that recorded by the recording instruments. The higher the proportion of air in the mixture, the smaller the heat content of the steam component. This effect is illustrated in Fig. 3.

Due to density difference an air-steam mixture in a closed chamber separates into an upper stratum of steam and a lower stratum of air. As a result of the poor thermal capacity of air the packages exposed to the air layer may not be sterlized.

It must also be recognized that the residual heat due to steam in the air-steam mixture may be so small that there will be no sterilization in that layer either unless this had been foreseen and sufficient extra time allowed to compensate for the reduced temperature.

QUALITY OF STEAM

The success of sterilization in an autoclave depends directly on the type of steam generated (Fig. 1). The inefficiency of supersaturated steam, and the properties of saturated steam which make the latter an efficient sterilant have been mentioned above. The third type is superheated steam — i.e. steam at a temperature higher than it would normally be if it were in equilibrium with its boiling water.

Superheated steam arises in an autoclave in one of several ways. A jacket (Fig. 2) maintained at a higher temperature causes the temperature of saturated steam in the chamber at a specified pressure to increase; the superheated steam thus produced is hotter and drier and avidly extracts moisture from the cotton fabric in the chamber. Again, when excessively dry fabric from the laundry is exposed to saturated steam, it initially absorbs both latent heat moisture from the surrounding saturated steam but when the temperature of the fabric reaches equilibrium with its surrounding it continues to absorb moisture from the surrounding steam with the result that the unrequired latent heat liberated serves only to heat up the saturated steam in the immediate vicinity of the fabric, thus causing superheating. Superheating may also arise as a result of air-steam mixtures. The true pressure and therefore temperature of steam in air-steam mixtures is less than the total recorded by the gauge. If the steam component existed only at the temperature equivalent to its own partial pressure it would remain saturated existing as it does at the higher ature of the mixture, such fact superheated and dry. content of superheated a that of saturated steam co , besides, the ability be steam to penetrate relati at to fabrics is basis. since it does not affair. provide ade- ortant in the **Merchan** of microbial Having ham is generally unsuitable for sterilization purposes.

Experimenting with microbial spores exposed to saturated steam superheated to various degrees, Savage (1959) obtained results (Fig. 4) which indicate that a few degrees of superheating (2° – 5°C) at temperatures usually employed for sterilization i.e. 115° or 121°C may not abolish the efficiency of steam altogether but above this degree of latitude (5°C) superheated steam is useless. At 121°C and above, however, superheated steam remains effective regardlesss of the degree of superheating. Notwithstanding this observation, it must not be overlooked that fabrics repeatedly exposed to even a few degrees of superheating lose moisture and with it their tensile strength. What is even more important is that since cotton is chemically glucose residues linked together, the fabrics map in fact be destroyed and charred up superheat.

Superheated steam can be converted to the ideal and efficient saturated steam by (*i*) Saturating it with water, (*ii*) allowing its temperature to fall by an amount equivalent to the degree of superheating or (*iii*) increasing its pressure while maintaining its temperature constant. (Fig. 1). However, those corrective measures require complex manipulations and superheating is best avoided in the first place. Alternatively, the temperature of the superheated steam may be raised to 150° in which case the steam destroys micro-organisms efficiently by oxidation just as does hot air. This suggestion, however, is absolutely untenable since superheated steam at 150° will char not only the microbial contaminants but the dressings as well.

Condensation of steam in the chamber is essential for the liberation of latent heat and the wetting so essential for destroying microbial contaminants, however, unless condensation is carefully controlled it adversely affects sterilization. Condensed steam creates water droplets which supersaturate the chamber and absord considerable amounts of latent heat from the surrounding saturated steam thus reducing its efficiency. Inside the chamber itself condensation occurs when saturated steam loses its store of latent heat to the dressings; condensation may also occur in the steam transmission pipes due to lack or improper insulation. Condensate in the pipes is swept into the chamber by the pressure of the incoming steam from the central supply. The defect can be minimized by effective lagging of pipes and the use of baffles in the chamber to sweep off the condensate from the incoming saturated steam. Condensate from the pipes together with that produced in the chamber itself must be got rid off; this is channelled out through steam traps situated at the bottom of the chamber (Fig. 2).

The process of microbial destruction by heat is dynamic and therefore time dependent; the time required for holding a package of dressings at a specified temperature is of absolute importance to the success of sterilization. Holding time is the sum total of thermal death time, heating up (penetration) time and safety time. Thermal death time (TDT) is the time required to kill a culture of micro-organisms at any specified temperature. One-half of TDT (Safety Time) is often added on to ensure safety. Whereas, TDT may not alter significantly, the rate of penetration of steam into the centre of packages is markedly affected by several factors including size and number of packages, presence of air in the chamber etc. Thus while a few small packages of dressings loaded loose in the chamber require a relatively short period of time for the whole bulk to reach the specified temperature, large and tightly packed packages require a much longer time. Since the interior of the package reaches a specified temperature less readily than the outside, it is essential to hold the package for that period of time when the centre of the package, and to the chamber, attains the specified temperature, this is the only way to ensure success.

DRYING AND STORAGE PROBLEM

Regardless of successful sterilization in the autoclave, dressings can be contaminated by the use of inefficient drying and storage procedures. For instance air drawn through the wet package for drying purposes may infect the sterile package unless the air itself is sterile. Dressing drums with air vents left open after removing them from the autoclave allow atmospheric contamination of the contents. When dressings wrapped in paper or fabric are removed

from the autoclave it is bad practice to place them on cold and entire shelves because it is usual for traces of vapour in the still-hot packages to form pools of condensate on the shelves; these attract aerial contaminants and the result is that the pools of condensate may rapture paper — wrapped packages or may seep through fabric — wrapped packages causing contamination of the dressings. Packages are best stored loosely, at least initially, on wire mesh to allow free air circulation around the packages; this precaution eliminates condensation in the first place. Finally the packages need to be stored under conditions which will not only protect them from insects which might creep in and contaminate the dressings but also under temperature and humidity conditions that will not cause moisture loss from the dressings.

Barring faulty equipment and other technical problems which are beyond the scope of this discussion but which nevertheless may contribute to sterilization failures, the problems outlined above constitute a part of those members of hospital staff charged with the responsibility of sterlizing surgical dressings must be able to identify and suggest remedies to when they do crop up. It is absolutely doubtful whether apart from pharmacists members of any other group of professionals in the health service receive sufficient instructions in this field during their course of training to be able to appraise the difficulties let alone find solutions. The situation is even more piteous when one looks on while laundry hands, without any supervision whatsoever, are left in charge of dressing autoclaves of which they know next to nothing.

To argue the point that no serious infection cases due to the use of surgical dressings have been reported in this country, notwithstanding the use of innocent labourers to do the job, is only trying to be presumptious and acquiescent about a really serious health risk. While the current author does not pretend to know of any such incidence himself, he nevertheless asserts that it would be worthwhile to investigate the causes of some wound infections in our hospitals.

TABLE I

HEAT CONTENT OF STEAM AT VARIOUS PRESSURES

Steam Pressure (p.s.i.)	Steam Temperature (°C)	Heat Content (GAL/G)		
		Sensible	Latent	Total
0	100	100	539	639
5	109	109	534	643
10	115	115	530	645
15	121	121	525	647
20	126	126	522	648

From 'Bentley's Textbook of Pharmaceutics 7th Edn. 1961 p.646

TABLE II

EFFECTIVE STERILIZATION CYCLES

M. R. C*		Heat Content (Gal/G)		
Steam Pressure p.i.s.	Steam Temp. "C"	Time Mins.	Steam Temp. °C	Time Mins.
10	—	—	116	30
15	121	15	121	12
20	126	10	125	8
30	134	3	132	2

* Medical Research Council conditions. Found in * Recent Developments In the Sterilization of Surgical materials, The Pharmaceutical Press London, p. 1–6.

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A TALK ON PHARMACEUTICAL MANAGEMENT

By J. Pearce-Biney, BSc. (Pharmacy) MPSG—Pharmacy Merchandise Controller—Kingsway Stores of Ghana Limited.

The field of pharmaceutical management has many complexities and folds which range from Industry, Hospital, Education and Wholesale to retail pharmacy. On analysis one would find that the basic problems in these fields look pretty much the same everywhere. Why then should solutions differ. The answer of course, lies with the economic factors of each country, government controls and legislatures which should be observed by individual businessman and of course the people themselves and their varying reflexes, values and expectations.

Confining ourselves to wholesale and retail pharmacy businesses one might wonder initially what one is after when he is motivated to go into business with some capital. Is he after money? Is he after services to the community or is he after both for the betterment of his welfare? The answer is both, for no business has ever survived without profits.

Capital:

The initial capital for a business depends on the size and here it must be emphasised that many big businesses sprang up from smaller ones with modest beginnings. It is wisely said that a pesewa looked after yields a Cedi in no time. In a country like ours a capital could be obtained from one's own savings, relatives, bank or on co-operative basis. This is much of an individual affair.

Merchandise:

Having had the capital the next thing one considers is the type of business to deal in. Pharmacists apart from dealing in the normal traditional drugs have wider range of merchandise for diversification and expansion. It is in the question of merchandise that the pharmacist training and skills should be given a projection. The range of merchandise is seen to include classes like Perfumery, Cosmetics, Toiletries, Surgical Dressing and Sutures, Insecticides and Disinfectants, Pharmaceutical and Laboratory Chemicals, Agricultural Chemicals and Fertilizers, Manures, Pest Killers, Surgical equipments and Photographic Chemicals and materials. These classes of items have been mentioned, for an insight will reveal to the pharmacist that he is the one who has the expertise knowledge on these products and hence can expand in these fields to give better service to the community.

Choice of Area:

Having considered the merchandise to deal in the next is the place for marketing. Here one should consider critically the people of the area, their income, competition as well as the size of the population. Critical assessment of these factors will enable the pharmacist to decide whether it will be profitable or not for him to set up his business within the area.

Purchasing/Stocking:

These could be classified into:—

(*a*) Local Purchasing and
(*b*) Import.

Regarding local purchasing, it is wiser to know your suppliers and establish a healthy relationship. Periodically, market survey of your goods should be conducted for the maintenance of even market prices, and also for commodity flow. This will enable the buyer to get good prices from suppliers and also avoid over or under buying. Over buying locks up capital, whilst under buying reduces turnover and profits. Factors such as quality, quantity and age of merchandise should be considered when buying. It is always better to bargain for the best.

Import:

Bigger capital is required and in most cases merchant houses dealing in imported goods are financed by a bank. Currently, in this country before goods are imported, the business concerned has to obtain specific import licence in our case from either Ministry of Health or from both Health and Trade Ministries, depending on the choice of merchandise. Import Licences are granted upon submission of business registration certificate, income tax clearance certificate and also records showing previous performance regarding turnover. When the licence is given proforma invoices are required from the Overseas supplier. Upon receipt of proforma invoices, Letters of Credit are established by the banks to effect the necessary import. Beginners may well contact trade sections of foreign Embassies concerned in Accra for further information. The banks are also available for further assistance on

this subject. Perhaps, it must be stressed that one can see the Co-operative society being of much help in this regard. Also when one goes into import, it is important to study customs and excise tariff regulations and keep abreast with amendments due to government legislations.

Pricing:

This is predominantly controlled by ones budget which should be drawn before the commencement of business. In budgeting factors such as salaries, rent, electricity, transportation, stock losses and all other expenses and liabilities should be critically considered so that a profit margin is realised to off-set such expenses and also give a reasonable room for expansion and unforeseable eventuality but care must be taken to avoid over pricing as well as under pricing, the two evils in business. Under pricing is bad and is subject to public criticism as well as over pricing. Recognition should be given to Government control prices.

Stock Control:

It is a good business always to know your stocks and what is affecting your stocks. Business houses have different methods of controlling stocks, i.e., some may use the Kardex system or the bin card system. Both systems, when properly instituted reveals stock quantities, rate of sale, age and possible deterioration of products at a particular time. Furthermore, they expose possible pilferages. Doubtlessly, these controls draw attention to sales promotions for aged, soiled, damaged and new products for quick clearance thus avoiding capital held up to ease cash flow.

Finally, for a business to be run successfully it is important to acquire basic debit and credit accounting procedures and staff management relationship should be very cordial.

SOCIETY NEWS

The 1974 Annual Conference of the Society was held at the University of Cape Coast between 30th August to 1st September, 1974. The meeting which was attended by about 350 delegates was officially opened by the Central Regional Commissioner, Lt.-Col. E.A. Baidoo on Saturday, 31st August. In his speech the Commissioner noted with satisfaction the valuable role pharmacists are playing in the health care of the nation. In his speech there were indications that plans were afoot to improve the service conditions of pharmacists in the public service.

Principal Agenda: The main purpose of the meeting was to discuss amendments to two draft decrees:

The Pharmacy Decree 1974, and
Drugs and Cosmetics Decree.

The idea was to split Act 64 of 1961 into two in conformity with NRCD 143. Four Working Committees were set up for the purpose of the proposed amendments.

Business: The Business Session was conducted under the Chairman of the President of the Society, Mr V. K. Aidoo.

The following reports were made by the Hon. General Secretary, Mr J. Y. Binka.

a) Mr K.A. Ohene-Manu resigned his appointment as Hon. General Secretary in early March (for personal reasons). The Hon. General Secretary expressed his grateful thanks to Mr Ohene-Manu on behalf of the National Council and the entire membership of the Society for his contribution during his tenure of office.

b) During the year an Administrative Assistant, Mr. P.A. Asante was appointed to office.

c) Council decided to appoint a full-time Executive Secretary, who should be a pharmacist.

The Secretary also reported further additions and amendments to the bye-laws of the Society—Voluntary Pharmacy Inspectors, the Society's proposed Library, the Professional Bodies proposed headquarters building, and the Registration of Pharmaceutical Premises. References to these may be found in the Ghana Pharmaceutical Journal, Vol. 2 No. 2 of March, 1974.

Registration of Pharmaceutical Premises:

This subject engendered protracted argument in which motives were imputed to individuals and tempers ran high. The atmosphere being not conducive to further continuation of business the meeting was adjourned on a motion by Mr F. A. Jantuah and carried unanimously.

CPA PERSONAL MEMBERSHIP

The Commonwealth Pharmaceutical Association is a body representing the interests of the profession of pharmacy throughout the Commonwealth and in certain dependent territories. Full members of the Association are those organisations or bodies which represent the profession of pharmacy in each of the member countries, and full membership is open to one such national association from each country.

The Association's principal aims are to promote liaison between Commonwealth pharmacists, to foster high standards of professional conduct, pharmaceutical education and practice, and also a high standard of control of the quality and distribution of drugs and medicines, both by professional means and appropriate legislation. The Council of the Association will work towards fulfilling these objectives through meetings of the Council and the Executive Committee, the five yearly Commonwealth Conference, the Association's Newsletter which is to be circulated at least twice each year, and the appointment of persons within each country who will be responsible for contact with C.P.A. and with any pharmacists wishing to visit or obtain information about the country concerned.

At its meeting in February 1972, the council decided that the clause in the Constitution which permits the establishment of a class of Personal Members of the Association should be implemented. By this means any pharmacist who is registered to practise in a Commonwealth country or dependent territory can now become associated with C.P.A. and its general objective of promoting pharmaceutical standards and liaison throughout the Commonwealth.

The conditions of Personal Membership are as follows:—

1. Applications for personal membership shall be made to the Commonwealth Pharmaceutical Association Correspondent in the applicant's country, who shall maintain a register of personal members residing in his own country. The CPA Secretariat shall maintain a register of all Personal Members.

2. Personal Members shall receive copies of the CPA newsletter and any other documents that the Council decide to circulate fully.

3. Personal Members may be allowed a small reduction in their application fee for attendance at CPA Conferences.

4. The Secretariat will, on request, obtain and send to Personal Members any information that they might require about aspects of pharmacy within other member countries.

5. Personal Members will be asked to give full particulars of their qualifications and pharmaceutical experience, and also to indicate whether they will be prepared to give advice on matters within their experience, if requested to do so by CPA.

6. Personal Members shall be required to pay an annual subscription of £1 sterling or the equivalent. If an application to become a Personal Member is made after August 31, the £1 subscription will be effective for the following year ending December 31.

7. Upon registration, Personal Members will be supplied with a copy of the Constitution together with recent issues of the Association's newsletter.

Application forms are available from:
K. A. Ohene-Manu Esq.,
(CPA Correspondent)
Pharmaceutical Society of Ghana,
P.O. Box 2133, Accra.

COMMONWEALTH PHARMACEUTICAL ASSOCIATION

By K. A. Ohene-Manu
(C.P.A. Council Member)

The Council of the Commonwealth Pharmaceutical Association held one of its regular meetings at the Headquarters of the Pharmaceutical Society of Great Britain, **17** Bloomsbury Square, London, June **19** and **20**, **1974**.

Twenty-four CPA Council Members, representing **24** out of the **31** Commonwealth Countries whose National Pharmaceutical Societies or Associations form the CPA, attended the meeting. I serve on the CPA Council as the representative of the Pharmaceutical Society of Ghana, and I am happy to report on some of the general decisions the Council took at its meeting.

Conferences and Meetings:

1. Full CPA Conferences would continue to be held once every five years and the next Conference is scheduled to come on early **1977** in Bombay, India.
2. Each of the five regional groupings of the CPA should hold a regional meeting before the **1977** Conference. Ghana together with the other Commonwealth African countries constitute the AFRICA REGION and the Convener for the Africa Regional meeting is the Nigerian representative who represents the Region on the CPA Executive Committee.

Personal Membership of CPA:

The response to the drive for CPA personal membership which is open to all individual pharmacists, throughout the Commonwealth, who are members of their various national pharmaceutical societies and associations has not been very encouraging in certain member countries including Ghana and special efforts are now being made to attract more personal members. (Details of this appear elsewhere in this issue of the Journal).

Pharmaceutical Legislation:

The Council approved a document setting out CPA Policy on legislation affecting the manufacture, control and distribution of pharmaceutical preparations and this document would in due course be presented to Commonwealth governments through member associations and societies seeking the implementation of the principles contained therein.

Pharmaceutical Practice:

The problem of the provision of pharmaceutical services in rural areas of developing countries would be a topic for discussion at the **1977** Conference in India.

It was agreed that a working group comprising:

Mr O. I. Akinkugbe (Nigeria)
Mr G. A. Boyd (Guyana)
Mr D. A. A. Munasinghe (Sri Lanka), and

Mr K. A. Ohene-Manu (Ghana) should, in consultation with Dr Chilton, Assistant Secretary of CPA, produce a discussion document that could be presented at the **1977** Conference.

Group photograph of CPA Council Members during their June 1974 meeting in London. Sitting in the centre of the front row is Mr Albert Howells, OBE, President of CPA and on his right and left respectively are Mr R. Spafford (Australia) Vice-President of CPA and Mr D. F. Lewis, Secretary. Sitting third from right in the middle row is Mr K. A. Ohene-Manu.

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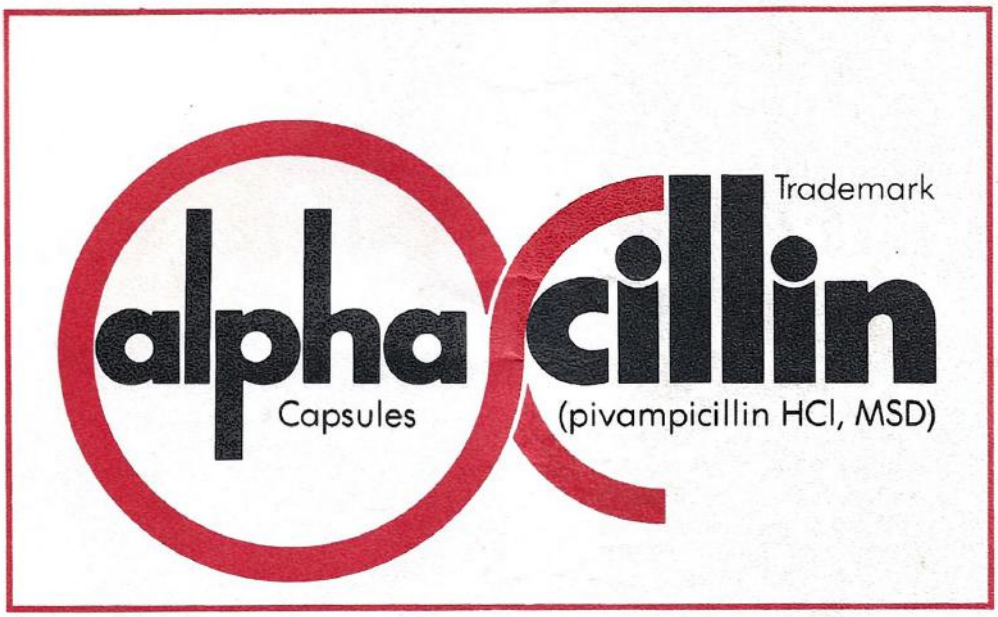

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