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CONTENTS

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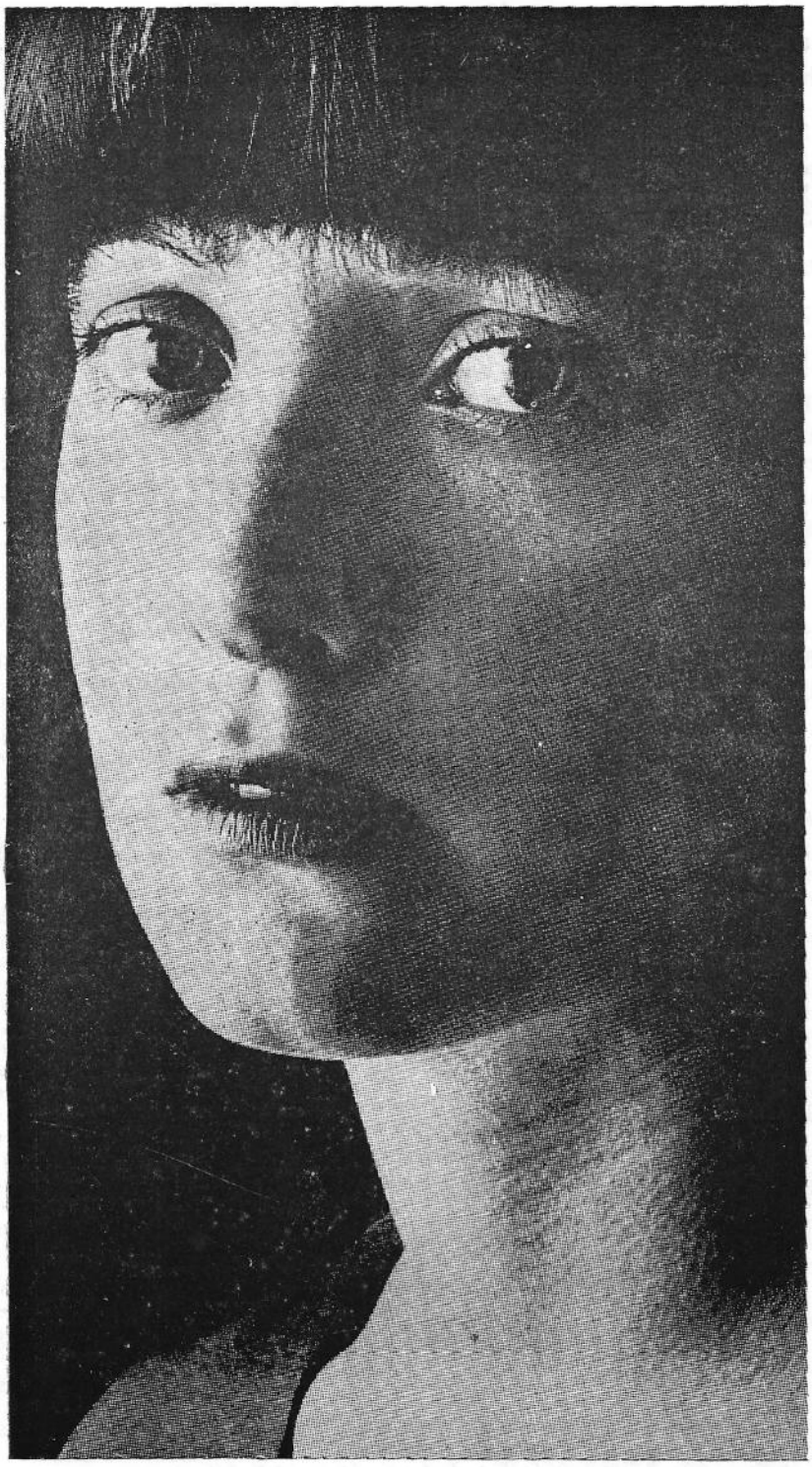

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EDITORIAL

GOOD PHARMACEUTICAL SERVICE IS A MUST

It is about a year and a half since the journal was last published.

The disappearance of the journal during this period could be attributed to the general economic depression affecting the length and breadth of every aspect of activity in the country. It has not been easy to get the papers for the journal to go into print. This has been the major cause of the disappearance.

The Ghana Pharmaceutical Journal has been one of the victims of economic problems facing Ghana now. The main areas of the Pharmaceutical activity have also suffered some form of set back. These areas are notably the General Practice Pharmacy, Hospital Practice and the Industrial Pharmacy.

Some essential drugs are difficult to come by and their stocks at the various warehouses are almost depleted.

The present atmosphere in the country has led to some lowering of morale in the pharmacy practice. Probably the morale in the Hospital Sector needs special mention. Pharmacists are leaving the hospitals to join the private sector who offer better conditions of service. Those remaining at the hospitals sometimes find the situation unbearable as they have in most cases, to turn away sick persons for lack of drugs.

Health for the people is a prime necessity and so the present rather dangerous situation requires urgent remedy. It is estimated that our annual drug requirement is about ₵250 million cedis. Thus any expenditure below this level is likely to create some difficulties in the drug delivery to the people. As the economy may not allow immediate importation of all our drug requirement both quantitative and qualitative control of drugs to the public area is a must. It is therefore in a good direction that we limit our drug importation to basic or essential drugs. The quantities of each essential item we bring into the country should not be seen to be at the expense of the required stock level of another essential drug. Quantitative evaluation of drug importation is thus required.

Despite the present constraints in the economy, pharmacists as the professional custodians of drugs and related items are required to exhibit professional ethics with the limited available resources. We must be seen to render our professional service to the nation. Let us seek to curb drug misuse and abuse in the society through drug information delivery and advice.

Let us offer advice to the patient on the use of drugs we dispense daily. Good Pharmaceutical Service is a must to the people. In the same breath we call upon the government to improve the stock level of drugs in the country by granting adequate import licence to cover our basic drug requirement.

A CRITICAL LOOK AT THE PROBLEM OF INCREASING EMPLOYEE PRODUCTIVITY

By Late J. E. Akyirem, Associate Member of the British Institute of Management.

Every organization or Enterprise places paramount importance on the management of its resources because the success of any undertaking depends to a large extent on its management. The concept of management itself is not new. As soon as people began to gather in tribes, to form families, to develop agricultural villages and to create communities, cities, nations and empires they recognised the need for leadership and some effective way of organizing and managing their common affairs.

The human resources aspect of every organization plays a very significant role. For this reason very attempt is made to get optimum output in the operations of the Organization. In examining the case of human resource management therefore, much emphasis is put on the full utilization of human resources. Any programme initiated in this direction calls for a total enterprise commitment from the establishment of a formal policy of increased productivity, to the setting of overall goals and specific action steps which hold the individual supervisor or manager responsible as a part of the criteria of his own performance.

The foregoing confirms the important role leadership plays in the operation of any Enterprise.

It is generally agreed by all people placed on Management and Supervisory positions that there is constant need to increase productivity in all fields of their work. The question which then comes to mind is; How do we increase productivity? The obvious answer to this question is that there is a process which may appropriately be followed, that there are certain characteristics of work involving better utilization of human talent. It involves formulation of policy and commitment to full utilization of human resources. With this done, certain basic action steps are possible without adoption of a programme. These include assigning responsibility for increasing productivity to supervisors throughout the organization, giving them time to do that job, and evaluating their performance in part on how well they perform.

Many techniques have been suggested as methods that can increase productivity. Some of these are:

1. Substitution of equipment for human efforts.
2. Activities directed at determining and applying the most appropriate methods of work.
3. Removal of unproductive practcies.
4. Personnel methods designed to help management utilize more effectively the human resources of the business.

Use of Equipment

As a general rule, the use of equipment and machinery in every project

accelerates the job involved. Thus we find that productivity in capital-intensive projects is higher than labour-intensive projects. This supposition is based on the assumption that the machinery is properly maintained and put to good use. In certain organizations the financial resources for capitalization of their projects are so limited and thus cannot afford the use of sophisticated machinery and equipment. There are others, which because of their organizational structure and objects for which they were established do not require machinery. Such enterprises apply the other methods for improved productivity.

Developing Better Methods of Work.

Since 1920 when the modern era of work methodization started, it has been the second contributor to the increasing productivity of the work force of many countries. A number of more specific activities is involved in this area. Some of these are facility layout and work-flow analysis. The contribution of methods improvement to greater productivity can be enormous.

Much of the work done in improving productivity through methodization involves a group project or contributions from a number of areas in the business. The industrial engineer certainly should be one of the participants in any such undertaking. So should the employees themselves, particularly when they are technical people who are applying technologies largely unknown to others. Personnel specialists also need to take part in this work. Line supervisors should not only be involved but should also have the basic accountability for proper work methods. Participation by a number of sections of the firm suggests the need for thoughtful review of the organizational structure to ascertain how their activities can be co-ordinated with the methods work to be done.

Unproductive Practices

In many enterprises unproductive practices have become a major factor which has caused a decline in productivity. The problem is bounded by very complex considerations. For instance, it may have to deal with opposing attitudes of a company and its employees concerning the relative merits of increased productivity versus decreased employment security.

Generally speaking there are two main sources of unproductive practices that have impacted many enterprises in a significant way. Probably the greatest single source of unproductive or restrictive practice has originated in collective bargaining. Union-negotiated provisions for the benefit of members have significantly detracted from the effectiveness of work. The other source is a significant list of self-improved unproductive practices that enterprises have injected or have permitted to happen.

Correction of unproductive practice involves virtually no capital expenditure. Even annual expenses associated with greater effectiveness of work from this course are minimal. Results are immediate or very short-term; removal of unproductive practices in some instances can be implemented in hours, days or weeks. Risks and mistakes involved are minimal; mistakes can be identified quickly and corrected. Obviously, all elements for increased work effectiveness are favourable. It is an area of opportunity which should be examined by every company. When potential opportunities are high, it may be the first priority in a serious and organized effort to increase productivity.

The inevitable problem facing a firm that sets out to correct unproductive practices involves dealing with vested interests, tradition and protectionism. These handicaps make it difficult to reject any unproductive practice that detracts from productivity when it is in fact, or is perceived to be of some value to some persons. These issues are not always factual or legitimate, but are frequently emotional or subjective matters to be dealt with.

In this research on motivation in the work environment conducted in Pittsburgh, Frederick Herzberg identified the following job dissatisfiers which in a way can decrease productivity tremendously:—

1. Company policy and administration under which the job is performed.
2. The type of supervision received while at work.
3. The quality of working conditions.
4. The wage or salary received for job performance.

Since this idea of unproductive practices contributes a lot to productivity, the subject will be discussed in detail. Unproductive practices include work that contributes little to the achievement of enterprise objectives. This type of work practice is inherently restrictive in that it prohibits or makes difficult a high level productivity. Specifically, restrictive practices refer to those rules, regulations, requirements or simply traditional operations that present roadblocks to effective work or impede increases of productivity.

Re-organization of a company is one example of a disruptive action. The change may be necessary and appropriate, but any change in organization structure has some disruptive effect because it disturbs established working relationships. It takes some time before these relationships can be re-established. The resulting loss of productivity represents a disruption cost. It means that for some time after re-organization, work is done less efficiently. Companies must readjust organizational lines from time to time, but consideration of disruption effects is a factor that should influence the extent of change, how often the structure should be changed, and the most appropriate change.

Unproductive work includes unnecessary activity or one that has a value less than its cost. It always results in lowered productivity. Employees might simply do things that are not necessary to the achievement of enterprise goals — they waste time.

Poor quality work is an example of disproductivity. The very likelihood of poor-quality work requires extra man-hours of effort to check and inspect work. For instance, the poor product is passed on to other workers who add something to it. Unproductive work of all kinds has a great effect on lowering productivity. When employees do the wrong or useless things or produce poor-quality work, they create unnecessary work for others, which is wasteful of time.

Collective Bargaining and Unionization

There are a number of ways union contracts and contract administration inhibit productivity. One is that most contracts require more employees than are necessary to do

the work. Many major industries have accepted union contract provisions that require retaining employees on the pay roll doing unnecessary work. Other rules stated in union contracts make it difficult to lay people off when they are no longer needed.

A variety of the provisions in union contracts seriously inhibit management's right to manage the business effectively. Sometimes there are restrictions on whom the employer can hire. More typically, management is restricted in transfer, promotion, and work assignment.

Unionization also means strikes and disruptions of work. These actions represent the extreme of unproductiveness. In some cases strikes and disruptions occur because of jurisdictional disputes or intra-union struggles. Here loss of output has nothing to do with conditions of work, but the union activity detracts from productivity all the same. Finally, there are subtle detractions from productivity under collective bargaining. For example because of contract requirements, management may be unable to take timely actions to solve production problems, and this restriction can significantly lower productivity.

Self-Imposed Unproductive Practices

Organizations of almost all types have imposed upon themselves a variety of unproductive and restrictive practices. This is particularly true of large, mature, and necessarily bureaucratically structured organizations. These restrictive practices can be eliminated by the company.

The difficulty with self-imposed company restrictive practices is that they are not obvious and sometimes not very visible. Certainly, nobody puts these practices into place to lower productivity. Many of them seemed like a good idea at the time, or even if they didn't, they at least didn't seem to be terribly harmful.

Self-imposed unproductive practices are frequently procedures, programmes, or traditions; the way a company does business. Generally speaking, they involve such things as unnecessary meetings, protectionist practices, and what might be called "business protocol."

Some companies that have looked at the subject closely have estimated that up to 5 per cent of their exempt employee payroll costs are represented in meetings, most of which are not really necessary. They could therefore reduce their payroll and increase productivity significantly by eliminating unnecessary meetings. Meetings, of course, are far more unproductive than just the time spent at the meeting. Frequently, each meeting also generates other unproductive work, such as the next meeting.

The area of unproductive practices is a subject that has not really received a great deal of well organized planning or concentrated efforts. Many self-imposed practices involve sensitive issues, sometimes with high-level persons. Overall, the relations risks associated with meaningful work in removing unproductive practices may be significant. There are also uncertainties: Once a firm starts on such a course of action the ensuing chain of events or reactions cannot be foreseen. But businessmen are risk takers by nature. When the productivity stakes are high enough when increasing productivity is important enough and other methods for improving productivity are less available there will be innovative ways to remove unproductive practices.

More Effective Use of Human Resources

Effective utilization of human resources is of paramount importance to every organization. In many enterprises today, increased productivity through better management of human resources may represent the number one opportunity of productivity improvement.

There is no single personnel technique or practice which in itself brings about greater productivity through better management of human resources.

It is essential to examine all opportunities in human resources management, and specific practices in each, as an early step in an organized approach to increasing productivity. Each company is truly unique, any divisions or sections within a firm would be likely to benefit from different areas of human resources management opportunities. Thus, it is necessary to treat each organization as a separate case, and to identify exactly where resources and time should be deployed in order to increase productivity. Frequently, improved effectiveness of work through better management of people will be one area. It is however, a relatively new area, with few usable tools available.

Methods For Increasing Productivity Personnel Management

There are five major areas of opportunity in the traditional functions of personnel administration which have the most direct relevance to increasing productivity. These are discussed briefly below.

1. *Selection:* This includes both selection of new employees and proper placement of current employees. Selection of new employees is in effective asset-acquisition management, and must weigh strategic considerations as well as near-term requirements. Placement of current employees has more direct impact on productivity in the sense of optimum asset utilization.

2. *Manpower controls:* From the relationship productivity—Physical Output.

Total man-hours of work, it can be seen that reducing the denominator, i.e. total man-hours of work will result in increase in the use of human resources. Control of manpower, assuring an appropriate number of employees with needed background, on a continuing basis is also part of the manpower control job.

3. *Organizational Structuring:* This is the vehicle through which the company work is accomplished. If the organizational structure is cumbersome, out-dated or inappropriate vehicle, it will certainly impede effective work. The more important aspect of organization work, which directly and significantly effects productivity is whether organization facilitates more effective work and smoother working relationships.

4. *Human Resources Development:* Training, or providing the knowledge and skills required to perform current job assignments effectively can have a most direct and immediate impact on productivity. Development activity promotes continuing productivity growth by providing knowledge and skills for future jobs or by developing greater or more diverse skills required by the enterprise.

5. *Motivation:* Any practice that motivates, encourages or otherwise induces employees to work more effectively than unproductively can be a key part of a programme to increase effective work. This includes proper financial incentives. Both financial and non-financial incentives are critical parts of any organized efforts to achieve and maintain a high level of productivity. Incentives provide motivation to do what is required and to do it effectively. There is a direct and frequently measurable relationship between many incentive plans or programmes and the productivity of workers. It should be noted however, that incentives alone will not bring higher productivity. Some companies have erred in the past by assuring that incentives would, by themselves, increase productivity. Incentives obviously are not a substitute for better management; rather, they are part of a management system's approach toward obtaining high levels of productivity. It is equally incorrect, however, to assume that there could be an effective work force or a high level of productivity without having incentives of work force or a high level of productivity without having incentive of some type.

Any enterprise that needs to create an environment and motivate employees to behave in a way not of their own intention must consider incentives of some sort. Frequently, incentive plans affect productivity studiatically. In operations work, studies show that productivity is typically 20 per cent higher under incentive plans, and there have been case here employee productivity doubled when a incentives plan was instituted.

CONCLUSION

The art of managing people at work is a complex subject which involves many issues, some of which are abstract in nature and cannot be measured directly. For this reason it is very difficult for any organization to determine whether its employees are giving their optimum output. The question of employee productivity is controversial in many respects and is affected by so many factors. In any enterprise there will be both external and internal forces which will militate against it and adversely affect its operation irrespective of the effective planning programme it has already laid down. Economic crises may set in to disrupt already prepared budget. Industrial unrest may be generated to lower productivity.

One significant fact which must be accepted and carefully considered by every organization is that business itself has evolved as a dynamic phenomenon which is constantly changing both socially and economically. It is therefore necessary for every enterprise to analyse critically the changing trends of business and adjust itself to these changes. The traditional mode of operation which was being adopted ten years ago may not be able to compete with the changes that have

taken place over the past decade. Cumbersome bureaucratic procedures and unnecessary "business protocol" must be eliminated for efficient operation. Any enterprise that fails to make such constant appraisal and review of its operation for the necessary corrective measures imposses upon itself internal factors that greatly lower productivity.

The concept of labour mobility which is popularly called brain-drain also has serious repercussions on productivity. Migration or movement of labour from one company to another has been attributed to certain factors such as job dissatisfaction, poor remuneration and bad company policies. It is really a big disaster for any organisation to lose its skilled workers including professionals who, because of their expertise become a great asset to the organization. The decrease in productivity resulting from such brain-drain may be so drastic that it presents a big problem to Management.

In view of the seriousness of the situation some companies conduct interviews, as a matter of policy for employees resigning from the companies. This enables management to identify the reasons which motivate such employees to leave the company and apply proper solution to prevent its recurrence.

Because human resource management plays a very important part in increasing productivity it becomes imperative for every organization to draw up proper personnel programmes aimed at training its staff for more skills.

Supervisors play an important role and have major responsibilities for human resources management and for the full utilization of the human resources of the enterprise. These responsibilities are not vague peripheral parts of the job of supervision. They need to be detailed and clearly understood. If supervisors are to be held responsible for their human resources management job, they should be supported in this work; and trained and developed to do it effectively. This is the cornerstone of increased employee productivity through more effective human resources management.

MASS-SPECTRAL STUDIES OF PERISOPROPYL SULPHONAMIDES

N. I. Y. Fiagbe, Department of Pharmaceutical Chemistry Faculty of Pharmacy, University of Science and Technology Kumasi, Ghana,

Abstract

The mass-spectral characterisation of the perisopropyl sulphonamides, an important group of chemotherapeutic agents, has been described in detail. The possibility of using gas-chromatography-mass spectrometry in their characterisation and identification is suggested. The relevance of these findings to the current biochemical work is indicated.

The sulphonamides [1], [2], [3], as a single effective chemotherapeutic agent as well as their combinations in numerous forms still play a major role in chemotheraphy to-day, despite the advent and wide use of newer pharmaceutical agents like the antibiotics.

The sulphonamides, as single or mixed sulphonamides could be administered alone or in combination with other agents to effect cure.

The standard assay of the sulphonamides is by the diazotisation or the 'dead stop end-point determination' method. This is an electrochemical method of titration using sodium nitrite and an acid [1,2]. It is an official method of assay in the British Pharmacoepia (B.P.) and it is reasonably accurate. The method however could not distinguish between the various components of a mixed sulphonamide, as such has some limitation in its application of the analysis of mixed-sulphonamides.

Gas-chromatographic (g.c) analysis of the sulphonamides has not received a serious consideration, probably because the sulphonamides are polar in nature and the subsequent difficulty of getting a suitable volatile, stable, derivative for g.c. analysis.

During a recent attempt on few non-derivatised, non-alkylated sulphonamides, subjected to gas-chromatographic, mass-spectrometric (gc-ms) analysis, distorted chromatographic peaks were reported[4].

The same compounds on alkylation and subjection to the same analytical procedure however yielded single, symmetrical peaks with reasonable retention times.

The characterisation of the sulphonamides and those marketed as mixed sulphonamides, for example, sulphatriad, could be done by gc-ms once the right derivative is obtained and by using either their retention times or the eight most intense peak index technique which the perisopropyl derivative can provide.

The perisopropyl derivatives are volatile and are stable over a long period. In this article preliminary studies of the perisopropyl sulphonamides has been reported, their detail mass spectral data are submitted and the use of the eight most intense peaks technique to characterise them is suggested.

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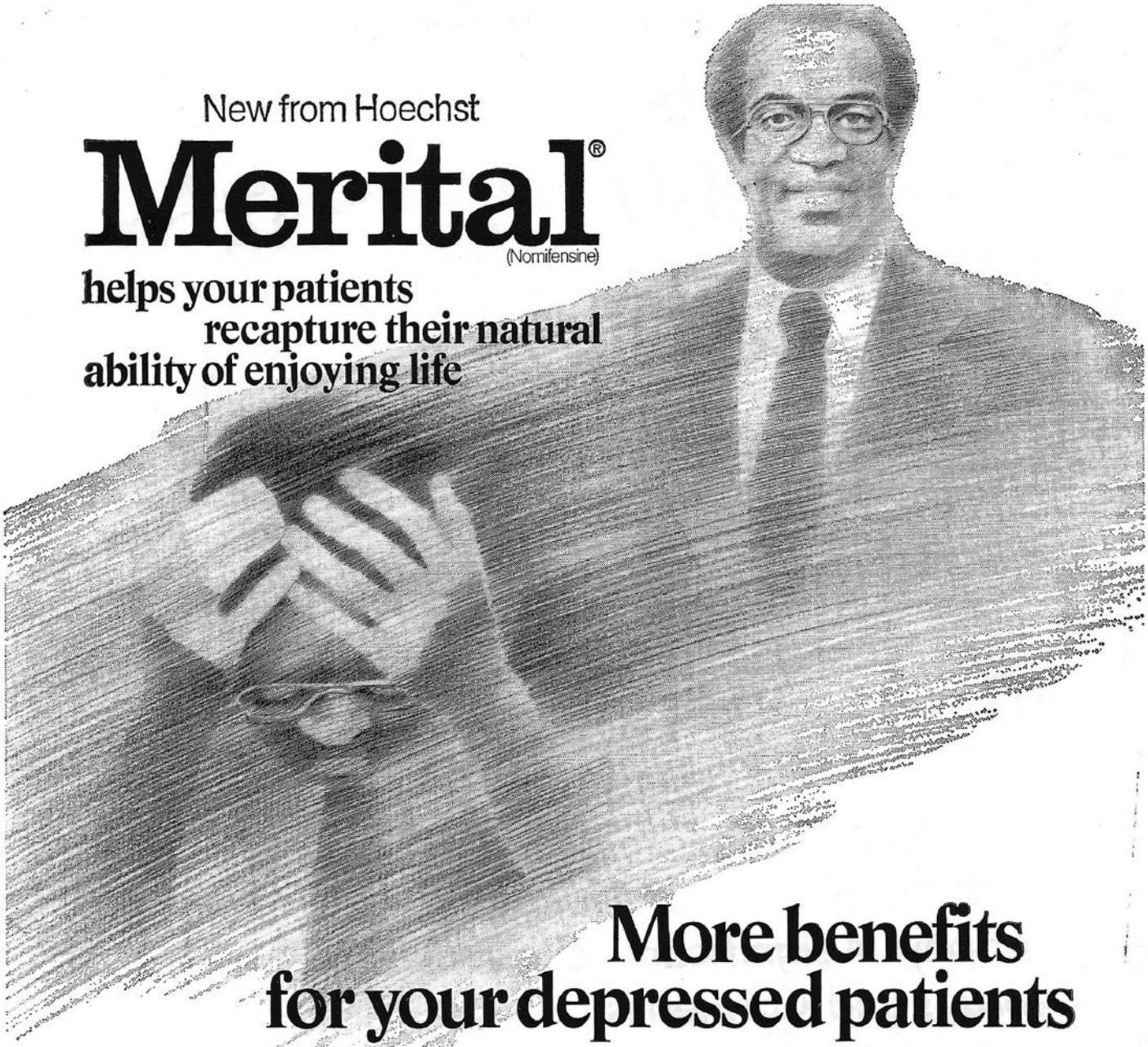

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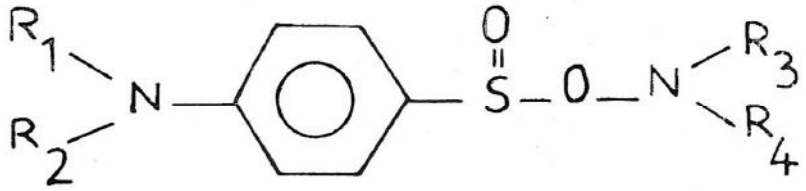
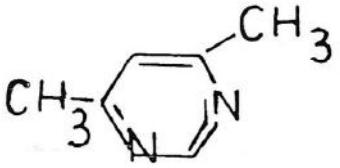
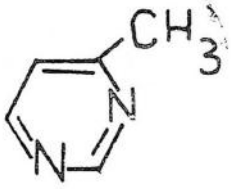
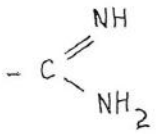
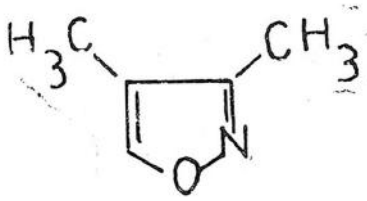
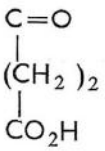
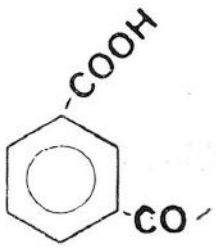
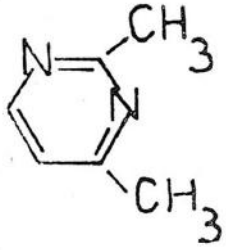
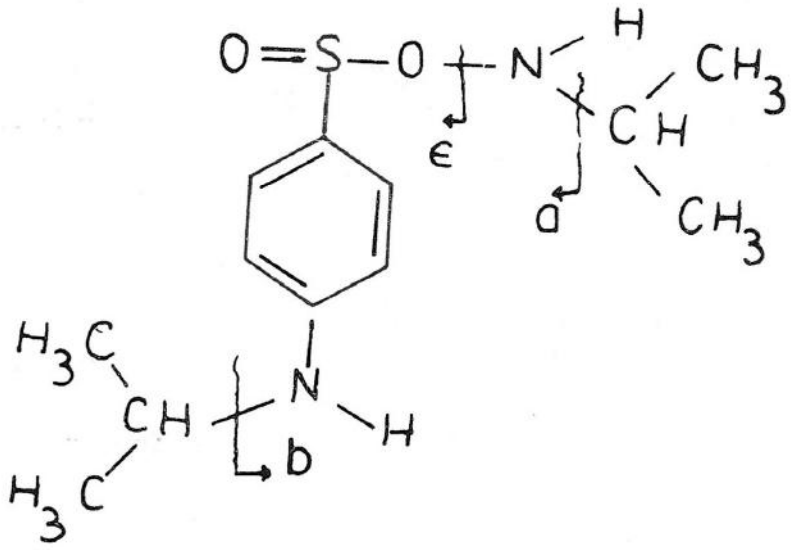


Structure A /Fig. I

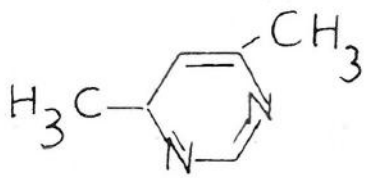
No.	R!	R2	R3	..	Name of compd.'
I	H	H	H	H	Sulphanilamide
II	H	H	H		Sulphapyridine
III	H	H	H		Sulphadiazine
IV	H	H	H		Sulphadimidine

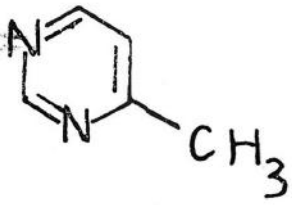
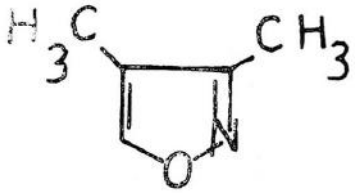
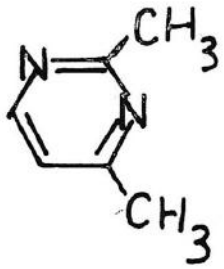
No.	R1	R2	R3	R4	Name of com'd
V	H	H	H		Sulphathiazole
VI	H	H	H		Sulphamerizine
VII	H	H	H		Sulphaguanidine
VIII	H	H	H		Sulphafurazole
IX		H	H		Succinylsulphathiazole
X		H	H		Phthalylsulphathiazole
XI	H	H	H		Sulphisomidine (Elkosin)
XII	H	H	—	—	Sulphanilic acid



Structure: B /Fig. 2

Table 2

No.	R1	R2	R3	R4	Name of the Derivative
I	$-C_3H_7$	H	H	$-C_3H_7$	Di-isopropylsulphanilamide
II	$-C_3H_7$	H	H		Isopropylsulphadiazine
III	$-C_3H_7$	H	H		Isopropylsulphadiazine
IV	$-C_3H_7$	H	H		Isopropylsulphadimidine

No.	R1	R2	R3	R4	Name of the Derivative
V	$-C_3H_7$	H	H		Isopropylsulphathiazole
VI	$-C_3H_7$	H	H		Isopropylsulphamerazine
VII	$-C_3H_7$	H	H	$-C_3H_7$	a* Di-isopropylsulphaguanidine
VIII	$-C_3H_7$	H	H		Isopropylsulphafurazole
IX	$-C_3H_7$	H	H		b* Isopropylsuccinylsulphathiazole
X	$-C_3H_7$	H	H		c* Isopropylphthalylsulphathiazole
XI	$-C_3H_7$	H	H		Isopropylsulphisomidine
XII	$-C_3H_7$	H	—	$-C_3H_7$	d* Di-isopropylsulphanilic acid

The Derivatives

On perisopropylation, the mass spectra of the derivatives revealed prominent molecular ion for almost all the compounds corresponding to the structure:

The spectra of compounds, a, b , e and d, are submitted separately as figures 3, 4, 5 and 6.

Table 3

Tabulated mass spectra (m/e, % relative intensity). Perisopropyl Para amino benzioic acid:

256, 2.1, Molecular peak; 241, 11.3; 214, 35.5; 199, 33.9; 158, 11.3; 157, 14.5; 156, 100%; 140, 11.3; 10, 37.1; 93, 16.1; 92, 69.4; 91, 11.3; 65, 35.5.

Compound II

291, 0.2, Molecular peak; 269, 15.9; 254, 14.3; 228, 9.5; 227, 58.7; 226, 33.3; 213, 17.5; 212, 100%; 185, 11.10; 184, 27.0; 156, 19.0; 135, 23.8; 121, 17.5; 119, 15.9; 108, 31.7; 95, 11.1; 94, 9.5; 93, 14.3; 92, 65.1; 79, 17.5; 78, 33.3; 65, 41.3.

Compound III

292, 0.2, Molecular peak; 270, 3.6; 255, 3.6; 229, 19.0; 228, 64.3; 227, 31.0; 214, 19.0; 213, 100%; 186, 14.3; 185, 19.0; 156, 19.0; 122, 14.3; 108, 19.0; 92, 31.0; 78, 40.5; 65, 23.8; 63, 47..6

Compound IV

321, 1.7, M+1 peak; 310, 2.9; 300, 19.5; 285, 17.1; 259, 17.1; 258, 63.4; 257, 17.1; 244, 17.1; 243, 100%; 214, 17.1; 213, 22.0; 164, 24.4; 156, 19.5; 151, 39.0; 150, 17.1; 108, 29.3; 107, 17.1; 93, 17.1; 92, 51.2; 67, 24.4; 65, 29.3.

Compound V

297, 3.1, Molecular peak; 275 21.9; 260 21.9; 233 50.0; 218, 62.5; 198, 21.9; 156, 84.4; 140, 31.3; 139, 21.9; 108, 46.9; 100, 21.9; 99, 100%; 93, 21.9; 92, 81.2; 78, 90.6; 65, 43.8; 63, 93.8.

Compound VI

306, 3.0, Molecular peak; 284, 22.6; 269, 22.6; 243, 22.6; 242, 71.0; 241, 29.0; 228, 22.6; 227, 100%; 200, 22.6; 199, 25.8; 156, 22.6; 150, 22.6; 136, 41.9; 109, 22.6; 108, 29.0; 93, 22.6; 92, 48.4; 78, 35.5; 69, 32.3; 67, 38.7.

Compound VII

298, 2.0, Molecular peak; 256; 16.7 241, 16.7; 214, 23.8; 199, 23.8; 157, 16.7; 156, 100%; 108, 35.7; 93, 19.0; 92, 59.5; 65, 38.1.

Compound VIII

309, 22.7, Molecular peak; 245, 10.6; 198, 34.8; 174, 10.6; 158, 16.7; 157, 25.8; 156, 100%; 151, 13.6; 149, 19.7; 140, 18.2; 134, 16.7; 119, 10.6; 112, 10.6; 111, 51.1; 109, 10.6; 108, 65.2; 96, 10.6; 93, 16.7; 92, 98.5; 91, 10.6; 81, 24.2; 68, 15.2; 66, 15.2; 65, 40.9.

Compound IX

397, 1.2, Molecular peak; 385, 29.6; 384, 35.2; 365, 18.5; 335, 20.8; 299. 16.7; 298, 14.8; 273, 35.2; 272, 25.9; 255, 11.1; 238, 18.5; 191, 14.8; 190, 11.1; 175, 22.2; 174, 46.3; 156, 16.7; 143, 13.0; 142, 16.7; 141, 100%; 335, 18.5; 108, 13.0; 101, 68.5; 100, 22.2; 99, 38.9; 93, 13.0; 92, 16.7; 91, 13.0; 90 13.0.

Compound X

445, 2.9, Molecular peak; 423, 28.6; 364, 21.4; 349, 28.6; 322, 39.3; 321, 21.5; 286, 32.1; 223, 28.6; 222, 100%; 156 25.0; 149 42.9; 141 75.0; 104 28.6; 99 60.6; 92 21.4; 76, 28.6.

Compound XI

320, 0.8, Molecular peak; 298, 42.3; 284, 26.9; 283, 34.6; 257, 26.9; 256, 76.9; 255, 26.9; 241, 100%; 214, 30.8; 213, 26.9; 164, 42.3; 156, 38.5; 150, 42.3; 149, 30.8; 134, 26.9; 108, 42.3; 107, 26.9; 93, 26.9; 92, 76.9; 66, 26.9; 65, 42.3.

Compound XII

241, 2.5, Molecular peak; 200, 17.9; 166, 104; 135, 32.8; 134, 11.9; 121, 13.4; 120, 100%; 118, 11.9; 106, 10.4; 95, 40.3; 92, 11.9; 78, 20.9; 66, 16.4; 65, 16.4; 64, 31.3

Experimental

Derivatisation

Essentially the derivatisation followed that of Pettit and Stouffer[5]. Approximately 10.Omg. each of each of the sulphonamide (compound) was dissolved in 5 ml. of dry dimethylsulphoxide. To the reaction mixture was added 0.2 ml. of dry isopropyl bromide, followed by sodium hydride which was previously washed with dry benzene. The reaction mixture was covered and left in a dessicator overnight. To the completed reaction mixture product was added 5.0 ml. of saturated brine and extracted into 2 ml. of chloroform. The extraction was repeated three times. The chloroform extract was pooled and washed

Table 4

Eight Most Intense Peaks

Compound	*Peaks*							
	1	2	3	4	5	6	7	8
I	156	92	108	214	199	65	241	256
II	212	92	227	108	65	184	135	291
III	213	228	63	92	214	78	185	292
IV	243	258	92	151	108	167	213	321
V	99	63	78	1156	218	233	108	297
VI	227	242	92	36	67	78	108	306
VII	156	92	65	108	214	199	241	256
VIII	156	92	109	111	65	198	149	309
IX	141	101	174	384	273	355	142	397
X	222	99	141	423	286	322	349	445
XI	241	256	92	298	164	108	283	320
XII	120	93	135	64	7	166	200	241

three times with 5.0 ml. each of brine and dried over an anhydrous sodium sulphate. The resultant chloroform mixture was concentrated by bubbling through a stream of dry nitrogen gas.

Mass Spectra

The mass spectra were run using a direct insertion probe, on an AEI MS-902 instrument, source 250°C, operating at 70eV ionising energy (volts), 100uA emission and 8KV accelerating potential.

Results and Discussion

The preliminary derivatisation shows that a reasonable, volatile, and stable derivatives are possible with the compounds under investigation, their structures are illustrated in Fig. 1 (structure A) and table 1. Fig. 2 (structure B) and Table 2 illustrate their perisopropyl derivatives. Characterisation of the compounds using gas chromatographic-mass spectrometric technique is also applicable, and it is possible to pick out the eight most intense peaks of the derivatised sulphonamides from a biochemical system containing not only the sulphonamides but also closely related drugs and their metabolic products which might also get perisopropylated. The three major mass units, a, b, c, produced in all the derivatives during the mass spectral analysis are shown in Fig. 2, while Table 3 shows the tabulated mass spectra with m/e and the percentage relative intensities. In Table 4, the eight most intense unique peaks are tabulated. Figs. 3, 4, 5, and 6 illustrate the structures of two di-isopropyl derivatives and two mono-isopropyl derivatives respectively.

Further work on quantitative and qualitative gas chromatographic analysis and biochemical analysis of the sulphonamides and other related drugs are in progress and will be reported later.

Acknowledgement

The author is indebted to May and Baker (Ghana) Ltd. for the generous gift of most of the sulphonamide compounds and to Dr Blessington of the Chemistry Department, University of Bradford for organising the running of the mass-spectra and for his useful advice on them.

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4. Blessington, B. Organic Mass Spectrometry, 6, 347348, 1972.
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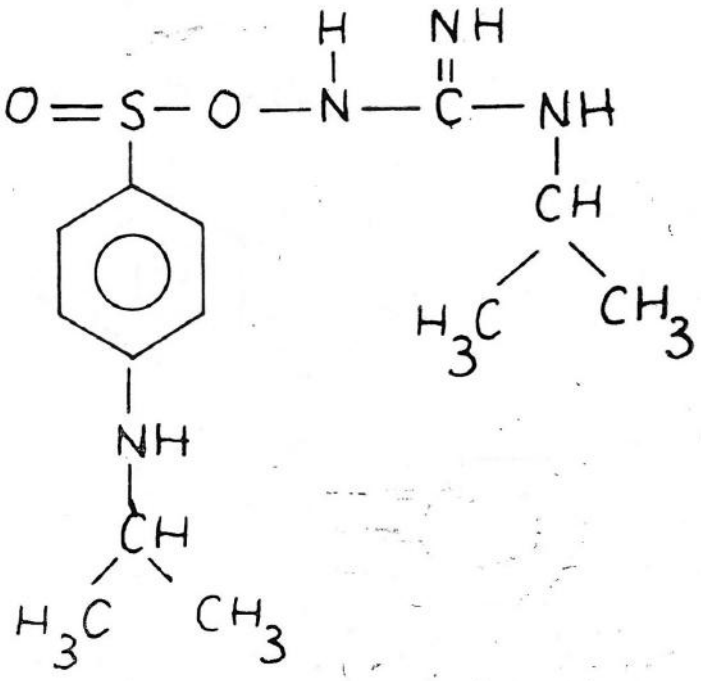
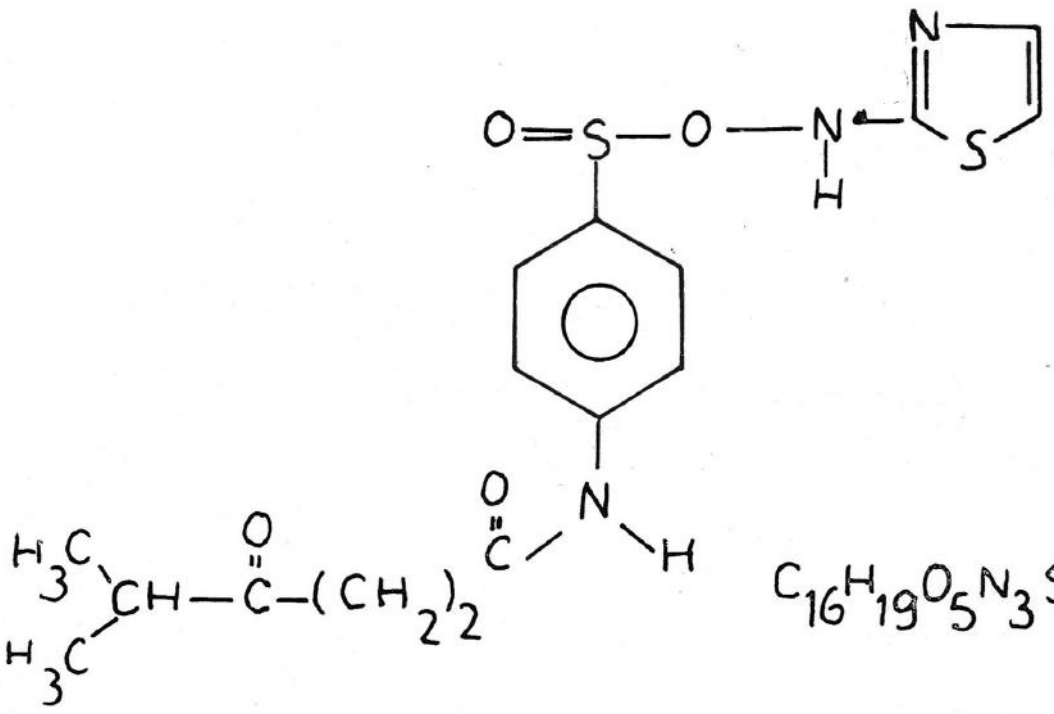


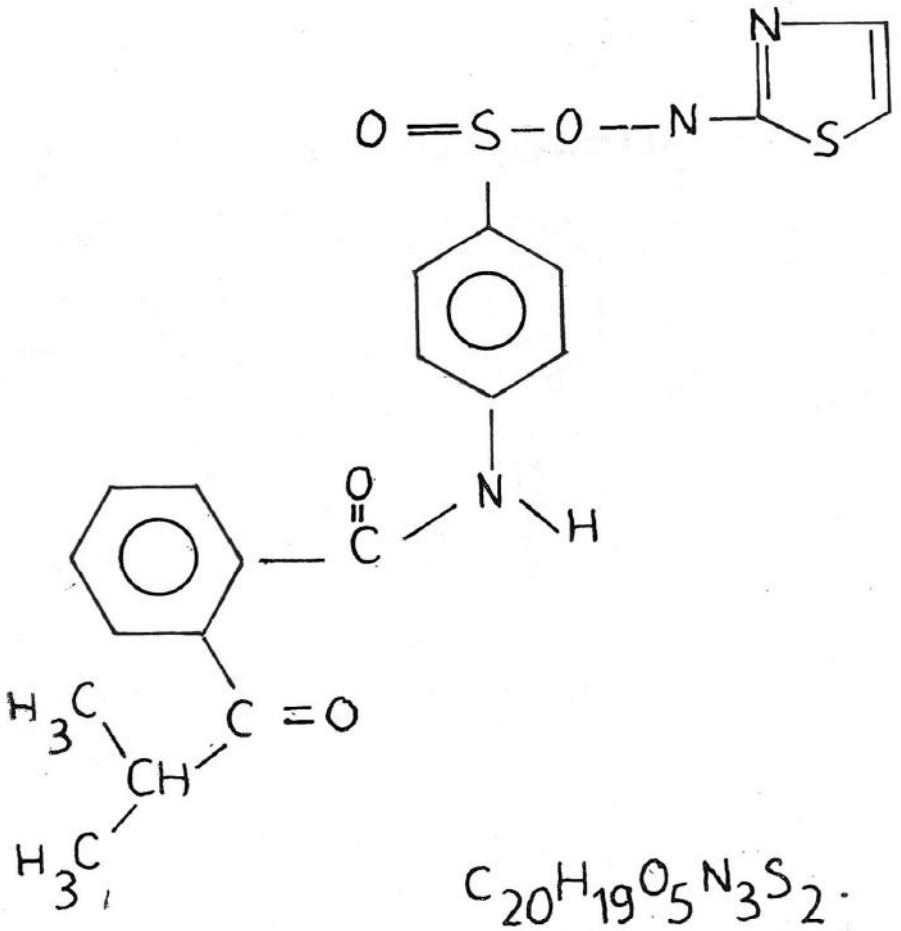
$C_{13}H_{22}O_2N_4S.$

Fig. 3



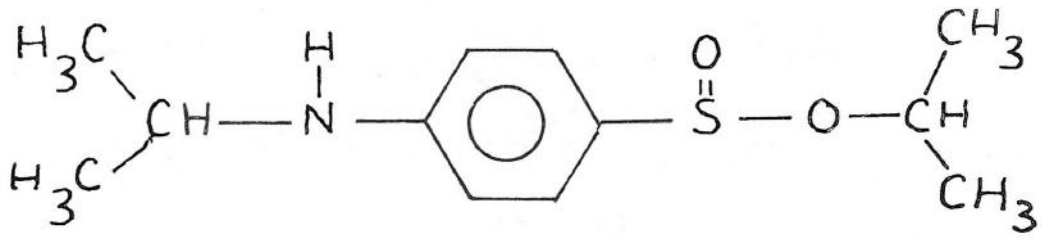
$C_{16}H_{19}O_5N_3S_2.$

Fig. 4



$C_{20}H_{19}O_5N_3S_2$.

Fig. 5



$C_{12}H_{19}O_2NS$

Fig 6

REPORT FROM F.I.P. 1979

JOHN OCRAN

The 27th General Assembly and 38th International Congress of Pharmaceutical Sciences took place in Cannes, France from 4 to 8 September 1978.

At the Council Meetings which were held two days earlier the main subject discussed was the Beckett Commission's report on the reorganisation of the FIP. The Bureau promised to circulate the proposals to the ordinary members of FIP so that they can study them before the next council meeting (September 1979) at which a final decision will be taken; any agreed changes in the statutes will come into effect in 1980.

Ghana's stand is that any changes should not further weaken the voice of the small countries nor alienate the non-European members of the FIP; there is no doubt that the FIP as it exists now is heavily dominated by Europe and countries outside Eurcpe feel less involved.

Main Symposium

The theme for the main symposium was "Pharmacovigilance" with four speakers discussing various aspects of this very topical subject such as (*a*) the influence of drug purity and formulation on stability and hazards of medication and (*b*) the involvement of the pharmacist in protecting the patient.

In summarising his conclusions on the main symposium Prof. Beckett (U.K.) made the following points: (i) Pharmacists should be involved in the post-marketing surveillance of new medicines by formally being involved with the spontaneous reporting methods of adverse drug reactions. (ii) Information on adverse drug reactions of a product should be made known by any regulatory body to the pharmaceutical company concerned. (iii) The unnecessary duplication of clinical trials of drug products in many countries is not in the best interest of the patient because t uses skilled scientific manpower in repetitive tasks rather than using them to better ensure pharmacovigilance and improved drug safety and efficacy. (iv) Every attempt should be made to ensure that decisions on the safety of a product are made on Scientific grounds rather than by wild statements of politicians and news writers with little knowledge and understanding of scientific evidence. (v) Schemes for post-marketing control should result in the reduction of irrelevant but extensive preclinical toxicological tests carried out with little consideration of the use of the drug. (vi) It is essential in adverse drug reaction reporting tc use the brand name of the product rather than the generic name of the drug contained therein because the formulation of a product intc a medicine can have a great effect on the observed efficacy and side effect; this emphasises the need for pharmacists to be involved because they know the product issued to the patient whereas the doctor frequently does not. (vii) Registration cf patients with pharmacists should be considered as applicable because adverse drug reactions are often influenced by the co-administration of other drugs. The Pharmacist is in a position to know the variety of products being used by the patient.

It is important for all regulatory agencies, including the W.H.O., to realise the necessity to get pharmacists to participate fully in all programmes of post marketing/registration surveillance.

Only the pharmacist can appreciate the fact that a perfectly safe drug can be rendered extremely dangerous or ineffective by simply altering the excipients during formulation; hence the need to follow-up the various formulations from different manufactures after the drug has been registered.

A subject which was also discussed extensively in another symposium and at some sectional meetings was "Clinical Pharmacy". There was the feeling that pharmacists should move away from being product-oriented and become more patient-oriented.

General Assembly

The Assembly received and approved reports from the various sections showing their activities during the past year. It was announced that the Board of Pharmaceutical Sciences had decided that the theme for the 39th International Congress of Pharmaceutical Science to be held in Brighton, England in 1979 should be "Towards Better Safety of Drugs and Pharmaceutical Products." The President of the Board said efforts would be made to keep costs as low as possible so that more young pharmacists could attend. The Academic Section plans to organise a workshop on Audio-Visual aids in Pharmacy Teaching just before the Congress.

Dues

In the treasurer's report he announced a new scale of dues for ordinary members for the period 1979-80.

The Pharmaceutical Society of Ghana with a membership of 250-500 has to pay Hfl 1,220 for 1979 and Hfl. 1,342 for 1980.

Elections

All candidates nominated by the Council to replace retiring members of the Bureau and Council were elected by the unanimous approval of the General Assembly.

Mr Andre Beda (Switzerland) replaces Dr Winters who has served for twelve years, as president. Dr Osorio (Spain), Prof. D'Arcy (Northern Ireland) and Prof. S. Sayed (Egypt) came in as vice-presidents in place of Dr Apple (U.S.A.) and Mrs Dony (Belgium). The General Assembly also elected Prof. Bremier of leyden to succeed Prof. Polderman as scientific secretary.

RESOLUTIONS

Dipyrone

As a result of further evidence made available to the FIP, the President introduced a recommendation

on Dipyrone which was intended to replace a resolution adopted by the 1976 General Assembly on the sale of Dipyrone. The new information indicated that the Product could be acceptable, provided the competent authorities permitted its use. (1) "That the resolution concerning the sale of preparations containing Dipyrone adopted at the Warsaw Assembly in 1976 be withdrawn. (2) That in accordance with the agreed policy of FIP the distribution of all medicinal products and thus preparations contain in Dipyrone be restricted to pharmacies only (3) That questions relating to the sale or supply of medicinal products containing Dipyrone, with or without a prescription of a medical practioner are matters to be settled by the competent regulatory/licensing authority of each country concerned.

The Responsible Person

(1) Noting present political developments in certain European countries which, in contradiction to the steady growth of Scientific knowledge, appear to envisage a reduction in the level of training for a pharmacist. (2) Recognising the need for a pharmacist to be able to carry out his duties completely in all his fields of activity, and among others in that of the responsible person in the pharmaceutical industry of the European Economic Community.

(3) **F.I.P.**

Conscious of the future health needs of the population

concerned as to the importance of the task which must be undertaken by the pharmacist of tomorrow in all branches of the profession, ask in the interest of public health, that Government authorities of countries establish for pharmacist a balanced and co-ordinated University Training at a uniformly high level,

acknowledges that whilst the words "responsible person" have a special application in relation to the European Economic Community

emphasises that the principle set in this recommendation is applicable to the training and duties of the pharmacist in all countries.

The Use of Colourants in Pharmaceutical Preparations

"The F.I.P. considering the atmosphere of distrust and disparagement which has been created and fostered in a number of countries for several months with regard to substances which may be added to medicines as colourants,

considering the extent to which decisions taken often appear to be hasty and prejudiced, and sometimes contradictory,

recognising the need to take steps to restrict or prohibit the use of such substances when adequate scientific evidence demonstrates that continued use would constitute a danger to public health,

draws attention of responsible authorities to the very real and significant dangers which could result from a general ban on the use of these substances which are an essential factor in the identification of medicines, and thus,—an aid to control during the production and storage as much as—an aid in the administration of medicine to patients both in the hospital and in the home,

— emphasis in particular, the positive aid which colourants provide to the elderly who receive concurrent therapy with several medicines, often more than other sectors of the population,

— fears that from a desire to avoid a limited or merely potential hazard, most serious consequences may arise due to confusion in the administration of medicines which could have grave, if not fatal, — as a consequence appeals to public health authorities to maintain a calm and realistic attitude, with full knowledge of all implications, to take steps to determine a balance between those risks which may arise from confusion in the administration of medicines.

F.I.P.'s Relations with Other International Organisations

W.H.O.

While relations between FIP and the WHO were being discussed the President referred to the message sent to the FIP Assembly by the Director-General of WHO. The importance of intensifying contacts with WHO was stressed by several speakers. To this end a plan of action designed to develop real co-operation between the two organisations is now being evolved along these lines:

1. Greater participation by F.I.P. experts in W.H.O. Committees studying pharmaceutical subjects.
2. F.I.P. support for pharmaceutical programmes for the developing countries. The necessity for pharmacists to be present at all discussions on drugs cannot be oyeremphasized so there was a request to member countries to appeal to their respective governments who appointed representatives to nominate pharmacists to attend these meetings whenever discussions dealt with drugs.

I.P.S.F.

The President of I.P.S.F. (International Pharmaceutical Students Federation) expressed his organisation's satisfaction at the manner in which contacts between the two organisations were developing and offered the I.P.S.F's Co-operation to FIP wherever the Federation might feel it would be useful.

WHAT IS F.I.P.?

It appears only a few Ghanaian pharmacists are aware of the existence of the international pharmaceutical organisations of which the Pharmaceutical Society of Ghana is a member. Lack of knowledge about these organisations has meant that members have not benefited from the opportunities offered by Ghana's membership to participate in the activities of these organisations which provide the best forum for the exchange of ideas, both scientific and professional.

Perhaps if the general membership was aware that a considerable portion of their retention fees are spent every year in meeting our financial obligations towards these organisations, they would be a little more curious.

The three organisations to which the Society belongs are the West African Pharmaceutical Federation (WAPF), Commonwealth Pharmaceutical Association (C.P.A.), and the Federation Internationale Pharmaceutique or F.I.P., for short. In this article I intend to deal with the F.I.P. because as the current representative for Ghana on the Council of the F.I.P. I think I owe it as a duty to publicise the activities of the Federation.

At the tenth International Congress of Pharmacy held in Brussels, in September, 1910 it was agreed

that an international association bearing the name "Federation Internationale Pharmaceutique" should be formed to unite all national pharmaceutical associations, Federations and Societies.

It is perhaps not surprising that the F.I.P. has its headquarters in Holland since the proposal to form the organisation came from the Dutch Society of Pharmacy.

Object

The objects of the Federation are to develop pharmacy world-wide as an applied science and to widen the role of the pharmacist in the field of public health.

The F.I.P. pursues these objects by:

1. establishing close contact with the WHO
2. by collecting documents dealing with the practice of pharmacy in every country and by communicating to its members records of progress in the scientific and practical fields of pharmacy.
3. by studying questions relating to pharmaceutical education, teaching and organisation with the objective of their gradual hormonisation;
4. by encouraging the development of the pharmaceutical sciences and their practical applications;
5. by studying the statutory provisions applying to the profession of pharmacy;
6. by procuring advice and information about pharmaceutical legislation;
7. by organizing international pharmaceutical meetings;
8. by keeping the records of these pharmaceutical meetings, classifying the subjects which have been dealt with, following up the decisions taken and studying fresh subjects ripe for discussion;
9. by regulating participation in meeting which have a pharmaceutical interest and by co-operating with other international associations;
10. by defining and consolidating the rights of the pharmaceutical profession;
11. by combating the practice of pharmacy and the sale of medicaments by people who are not qualified, whether they are certificated or not; by encouraging control over the sale of proprietary medicines and by opposing trading in secret remedies;
12. by supporting the development of national pharmaceutical associations and by encouraging their creation in countries where they have not been formed;
13. by encouraging the unification of the descriptions or names of substances used in pharmaceutical practice and the methods of testing and controlling them;
14. by concerning itself with the international implications of questions relating to processes of manufacture and to the trademarks of medicines;
15. by publishing material likely to be of interest to international pharmacy;
16. and in a general way by supporting anything which may lead to the attainment of the objects as defined above.

Library and Journal

The Federation maintains a centre of documentation and publishes a Bulletin which now comes out quarterly. The Council decides upon the production of other publications.

Members

The Federation Comprises: Honorary members, Ordinary members, Associate members and corresponding members.

Honorary membership is conferred by the General Assembly on the proposal of the Council on people who have rendered exceptional service to the Federation.

Ordinary members comprise:

1. National pharmaceutical associations legally constituted and representing in the fullest sense the pharmaceutical profession of their country.
2. Governments which subsidise the Federation
3. Pharmaceutical Federations which in the opinion of the Council represent in the fullest sense the national pharmaceutical associations of a continent. Associate members comprise persons and organisations who wish to contribute to the development of the Federation.

Corresponding members form the last category of members of the F.I.P. These are qualified pharmacists in those countries where there is no pharmaceutical organisation participating in the Federation. They are appointed by the General Assembly.

Organs

The organs of the Federation are the General Assembly, the Council, the Bureau and the Secretariat General.

The General Assembly which is composed of all the members of the Federation meets every other year, and is the supreme governing body of the Federation. Voting in the assembly is restricted to pharmacist representatives of governments subsidising the Federation, delegates representing ordinary members (national associations and continental federations) and members of the Bureau of the Federation. The number of delegates for each national association is determined by the number of pharmacists in that particular country.

The Council is composed:

1. for each country one member chosen by the national association
2. of one representative of each section of the federation
3. of the members of the Bureau
4. one representative of each continental federation which is an ordinary member of the Federation.

During Council meetings, normally held once a year, each of these persons is entitled to one vote. The President may summon the Council to meet whenever circumstances prevent the meeting of the General Assembly and at such meetings the Council may take decisions or act on behalf of the General Assembly.

The Bureau administers the affairs of the Federation in accordance with the decisions of the General Assembly and Council and also supervises the finances of the Federation. The Bureau is composed of the President, Vice-Presidents, Secretary-General and Scientific Secretary. As far as it is possible the composition of the Bureau is so arranged that one-half of its members are representatives of countries with a membership of more than 5,000 and one-half are representatives of the other countries and that it reflects the activities of the Federation.

Sections

Article 24 of the statutes empowers the General Assembly to set up specialised sections within the framework of the Federation. At present the established sections are Hospital, Industry, Press and Documentation, General Practice, Medicinal plants and Academic. Each section elects its members from among associate members.

Officers

The President and six Vice-Presidents are elected for four years by the General Assembly and may be re-elected. The Secretary-General and Scientific Secretary who also serve for four years are appointed by the General Assembly on the recommendation of the Council.

International Congress of Pharmaceutical Sciences

Every other year, in between meetings of the General Assembly, the F.I.P. organises a meeting at which the emphasis is primarily on the pharmaceutical sciences.

The next Congress of Pharmaceutical Sciences (39th) comes on this year from 3rd to 7th September, 1979 and the venue is Brighton, United Kingdom.

Every year during the gathering of the General Assembly or at the Scientific Congress, more than a thousand pharmacists from all over the world and every section of the profession have the opportunity to discuss topics of special interest, both professional and scientific, at the Sectional meetings. In addition, plenary sessions are held where all the sections come together to hear experts talk on subjects of common interest to pharmacists followed by discussions. Ghanaian pharmacists, like those from other parts of the world, will no doubt learn a lot at these international conferences. Therefore, we would like to see more Ghanaians as associate members of the F.I.P. so that they can take advantage of the opportunities offered by the Federation to keep abreast with the latest developments in the profession.

F.I.P. 1980

The 28th General Assembly and the 40th International Congress of Pharmaceutical Sciences of FIP takes place from Madrid, Spain, 1-5 September, 1980. The Congress will be held at the Melia Castilla Hotel, capitan 43, Madrid, Spain. The theme for the main Symposium is: Complexities in the Delivery of Medicines to Patients in the World Today. The speakers for the main symposium will include S.M. Peretz, Executive Vice-President of the International Federation of Pharmaceutical Manufacturers Association (IFPMA) (Switzerland), Prof. F. Mayor, Faculty of Pharmacy of Madrid and Assistant Director-General of UNESCO (Spain) and Prof. G. Levy, Professor at the New York University of Buffallo (U.S.A.). There will be the usual sectional meetings of Hospital Pharmacists, Military Pharmacists, the Medicinal plant Group, Press and Documentation Industrial Pharmacists, the General Practice and the Pharmacists engaged in clinical Analysis.

The Committee for Laboratories and Official Drug Control Services shall have a meeting the theme of which shall be Storage Problems under various conditions.

Other details of the congress are as following.

Congress dues:	FIP Member	DFI 375
Mail Members		DFI 425
Accompanying person.		DFI 250

THE CONGRESS SECRETARIAL.,
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FIP.
CONGRESS 1980.
ALEXANDERSTRAT, 11
2514 JL. THE HAGUE THE NETHERLAND.

DURING CONGRESS,
FIP. CONGRESS 1980 HOTEL MELIA CASTILLA
CAPITAN HAYA, 43,
MADRID 20 SPAIN.

THE ECONOMICS OF THE QUALITY FUNCTION

By Yaw Buadu B. Pharm., Ph.D., Dip. Quality Control.*

The concept of quality costs forms the basis of the economics of the quality function.

This concept was necessary to prove the fallacy of the dictum: "investment in quality control is a luxury." It turns out to be the opposite.

It is difficult to give a precise definition of the term "quality costs" because almost everything which the company does has something to do with quality costs. Some ready criteria can be established for what is to be included e.g. all costs which would disappear if there were no defects. The difficulty arises in attempting to define what should be excluded.

However, discussions of what to include in quality costs have resulted in a fairly standardized set of "core" categories.

Two of the categories of quality costs are:

(1) the cost of identifying defective items and separating them from conforming ones (Internal) Failure and

(2) the cost of replacing defective items with conforming items (External Failure).

Internal Failure costs embrace:

(a) **Scrap:** All scrap losses incurred in the course of meeting quality requirements. The term "scrap" as used by Q.C. people means products which are so defective as be beyond salvage and hence to be junked. However, the term as used by the accountant may refer to all material sold by weight to the junk man—these include lathe turnings, trim removed from coils and skeleton scrap from the press room. Care should be taken to separate such non-quality costs out of the totals so that attention will be directed to the main issue.

(b) **Re-work and Repair:** Cost incurred in meeting quality requirements where material can be made useable.

(c) **Trouble Shooting:** Costs as a result of time spent locating failure.

(d) **Reinspect, Retest:** Costs as a result of reinspection or retesting material which has previously failed.

(e) **Down-grading:** Price differential between normal selling price and reduced price due to non-conformance.

External Failure Costs: Some of the factors contributing to External failure costs are:

(a) **Complaints:** All expenditures for the adjustment of complaints.

(b) **Product or Customer Service** All charges directly attributable: to correcting imperfections, or special testing, not included in complaints.

(c) **Returned Material Proces-ing:** The costs of handling and accounting for returned material.

(d) **Warrantly Replacement:** The costs to replace failures within the warranty period.

(e) **Customer Goodwill Costs:** It is difficult to quantity the cost of customer displeasure, but it is considerable. There are complaints attributable to defective product or installation. But in addition to these there may be long term losses from loss of orders from the customer, his associates and even potential customers.

It must be emphasised that none of the actions whose costs are embraced by Internal and External quality costs are directed towards future improvement. This is a negative approach to quality control. Even the corrective action-investigation preceding re-work has the purpose of finding how best to re-work the already defective product. It is not concerned with improving the method of manufacture, so that, if the product is made again in the future, the same defects will not be produced and there will be no need for re-work.

Trying to improve the manufacturing quality control system so that in the future it works better than in the present, adds two further categories of quality costs to those discussed above:

(3) The costs of trying to prevent the production of defective items (Prevention): Factors to include here are:

(a) **Quality Planning:** Represents that portion of compensation and costs associated with planning the Quality System and translating product design and customer quality requirements into manufacturing quality controls or quality of materials, processes and products.

(b) **Processs Quality Control:** Represents that portion of compensation and costs associated with implementing the quality plans and procedures.

(c) Design and Development of Quality Measurement and Control Equipment.

(d) **Quality Training:** Represents the costs of developing, implenting, ope-

rating and maintaining formal quality training programmes.

(4) The cost of trying to improve the effectiveness or reduce the costs of identifying defective and seperating them from conforming items (Appraisal).
The elements to consider here are:

(a) **Receiving or Incoming Test and Inspection:**

Compensation to inspectors, testers, supervisors, samplers and clerical personnel working on incoming material. Include costs associated with inspection or tests performed at the supplier's facilities.

(b) **Laboratory Acceptance Testing:**

Costs related to tests to evaluate the quality of purchased materials—raw, semi-finished or finished.

(c) **Inspection and Test:**

Compensation to Inspection and Test personnel, including supervision and clerical support.

(d) **Checking Labour:**

Shop checkers (not necessarily inspectors) engaged in the in-process evaluation of product conformance to quality requirements. This includes shop sorting.

(e) **Set-up for Inspection and Test:**

The cost to set up equipment to inspect or perform functional testing.

(f) **Inspection and Test Material:** Material consumed in control of quality, such as those destroyed in tests and inspection, large usage of power and fuel, etc.

(g) **Quality Audits:**

Personnel expenses as a result of performing quality audits on in-process of finished product. include life-testing, environmental and reliability tests performed on production units.

(h) **Maintenance and calibration of Test and Inspection Equipment:**

Include personnel engaged in this activity.

(i) **Review of Test and Inspection Data:**

Include costs incurred for regulary reviewing inspection and test data prior to release of the product for shipment, to assure meeting customer requirements.

(j) **Evaluation of Field Stock:**

As a result of engineering change, time or suspected problems, the costs of evaluation, testing or inspection of field stock should be included. Categories 3 and 4 are not only concerned with quality cost reduction, they are closely related to attempts to reduce the quality costs of the first twc categories.

All these costs have been incoporated in a model which shows their inter-relation (See Diagram 1). From this picture it can be seen that there is an optimal situation different for each product and each process.

The curve of total quality costs is seen to have a minimum. This minimum is not merely a philosophical concept; the minimum has practical meaning and application.

Juran has divided the total quality cost curve into 3 regions (Diagram 2) and has given the meaning and significance of each region.

(1) **Quality Improvement Zone:**

Failure costs constitute over 70 per cent of the total quality costs, while prevention costs are under 10 per cent of the facturing company must plan total. In such cases, the manu- suitable break-through projects.

(2) **Perfectionism Zone:**

In this zone, appraisal costs exceed failure costs and undue costs of perfectionism must be removed. This may be done by programmes such as:

(a) studying the cost of detecting defects compare to the damage done if they are not detected.

(b) seeing if it is possible to reduce inspection through the use of process capability studies.

(3) **Indifference Zone:**

Optimum has been reached or approximated and hence the problem has become one of control-how to hold this optimum level.

Conclusion:

The production of goods is an economic activity and activities with respect to quality control can never be fruitful if not considered against this economic background, that is, on the basis of cost.

If this principle is applied, management will be easily convinced of the importance and profitability of quality control.

However, it is not applied at all, or it applied improperly, management might maintain, and rightly so. The mis-understanding that invest ment in quality control is a luxury.

Developing countries trace the problem of having to satisfy an abundancy of needs with very little means. Everything possible must therefore be done to avoid *scrap* and *rework* and the surest way to do this is by investing in *Prevention* and *Appraisal*.

Industry should always be mindful of the fact that "One dollar in prevention is worth 10 dollars in consequences."

Diagram 2 : OPTIMUM SEGMENT OF QUALITY COST MODEL

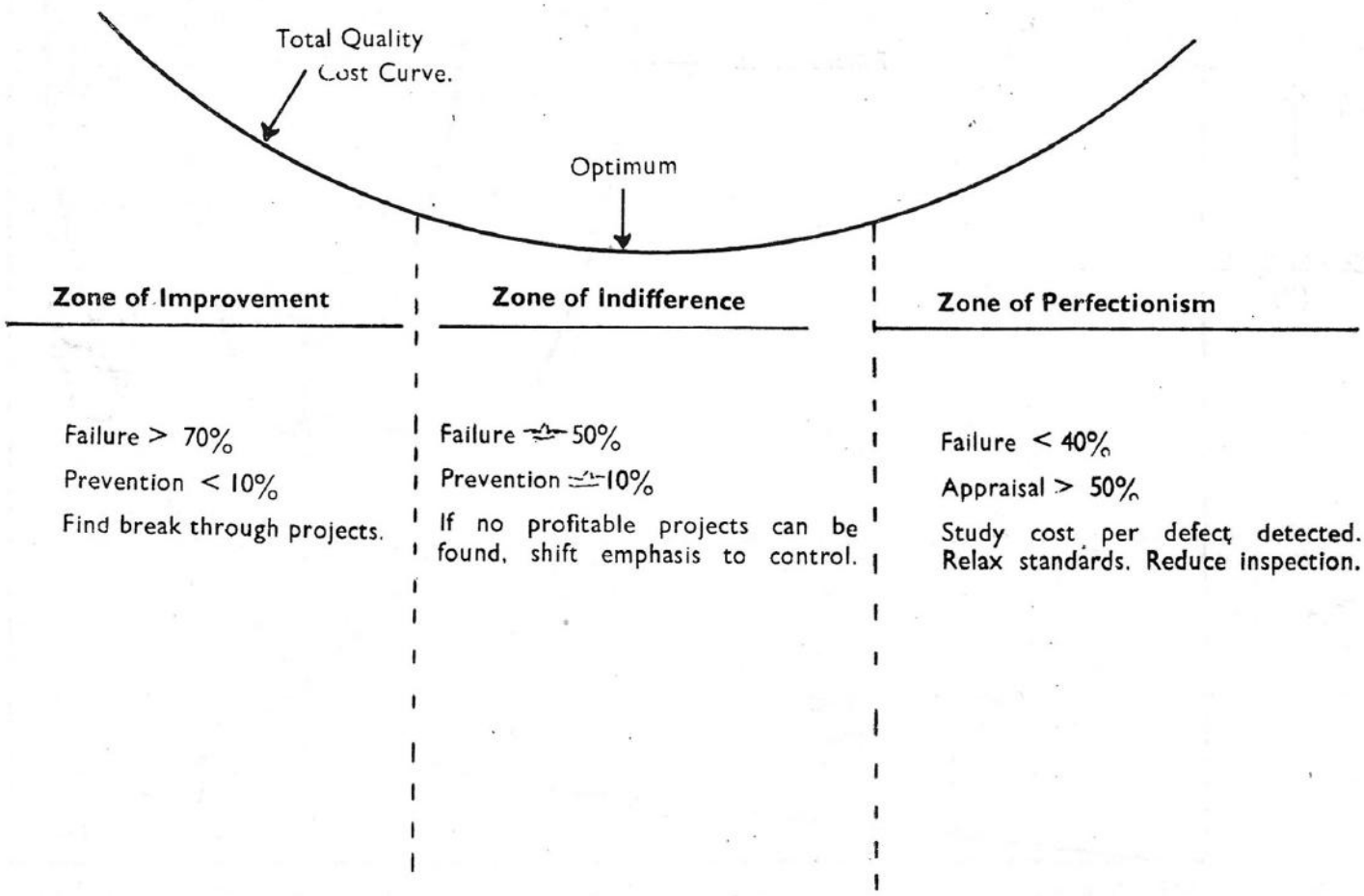
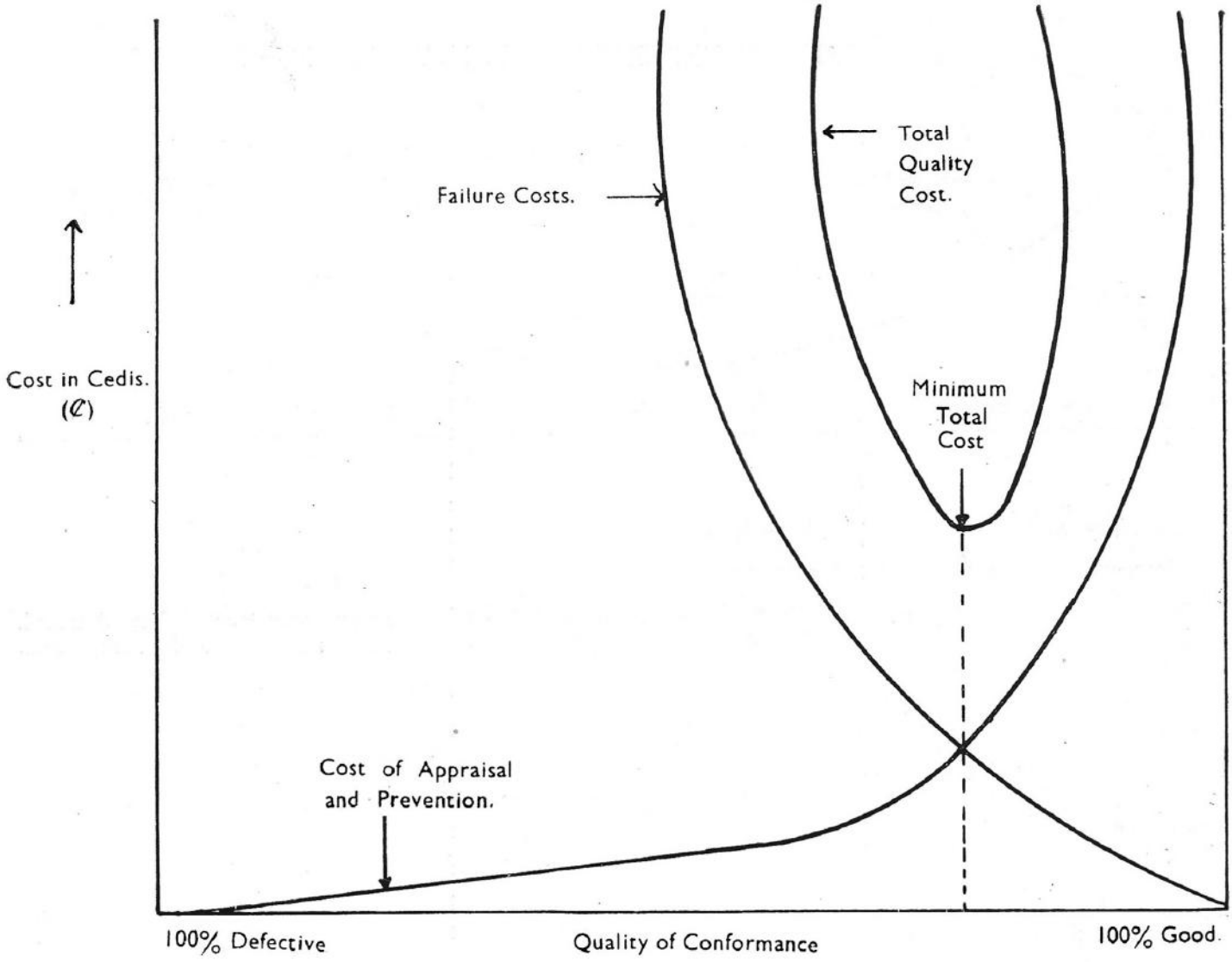


Diagram 1 : RATIOS FOR QUALITY COST CATEGORIES



ETHICAL CONSIDERATIONS IN THE PRACTICE OF PHARMACY

(By Mr L.L. Crabbe, B. Pharm., M.P.S.G., M.I. Pharm. M)

SUMMARY

Ethics of Pharmacy prescribes a pattern of conduct acceptable to members of the Association and protects the public against unscrupulous practitioners. Code of Ethics are not legal documents and so the defaulting pharmacist is not always liable.

Negligence, contributory negligence, and pharmacist's right to part-time practice have been mentioned. There is need to dispense upon prescription and for the pharmacist and physician to understand each other on cost of drugs before purchasing is effected. Non-pharmaceutical services within a pharmacy enterprise discouraged. Herbal medicine to be rejected because of lack of the requisite scientific basis. Some standard in Hospital, Laboratory and Industrial Pharmacy highlighted.

University Hospital,
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Ethics usually appears in the form of codes, or principles, of conduct written in the language appropriate for the professions, associations, or organisations for which they are intended. Ethics is regarded as being critical in that it prescribes a pattern of conduct that represents an acceptable standard or ideal. Burlage and others continued that it has to do with those constant elements in human nature as character, conduct and morals, especially as these elements apply to our professional and other social relationships. Since it has to do with human conduct, it projects itself into all our acts, whether social, professional, business or personal.

The professional codes are a safeguard and a protection for the public against unscrupulous practitioners. While the ethics codes indicate what ought or ought not to be done in certain instances, they are not dictatorial. If a person fragrantly violates the code of his profession, he may be regarded as being unethical. Since codes of ethics are not legal documents, violators may be reprimanded but not deprived of their right to continue in practice unless the said unethical act is contrary to Law. Ethics however, does go beyond the ought idea in some instances. For instance, if a pharmacist should suddenly open a clinic or hospital, manned by himself alone, public opinion will adversely go against him that he has no right to do that. Such a case would be more of a legal and an educational problem than a moral one. This may give the pharmacist up as unethical practitioner. If a pharmacist dispenses a gritty ointment when a smooth one is intended he is being unethical. It is wrong also for a pharmacist to dispense a Cream or Lotion which has been made with a natural colloid like Gum as the emulsifying agent for the purpose of applying to a very hairy skin. Nothing can however, be done about such malpractice unless or until one of the products dispensed proves to be harmful to the Customer and the injured person brings a suit.

If a pharmacist fails to put a "poison" or "For External Use Only" label on a poison or an application, and the purchaser mistakingly swallows the poison and is injured the pharmacist can be held for negligence. According to William Pettit the fact that a pharmacist is negligent does not necessarily mean he will be liable to damages. It may be that the party injured was himself negligent —"Contributory Negligence". This prevents the party from holding the pharmacist liable. Assume that a cough mixture prepared by a pharmacist contains broken glass. If a customer buys the medicine and, knowing of the broken glass, swallows the medicine, and is injured he cannot legally sue the Pharmacist based upon negligence. The Plaintiff may recover damages at Law however, if his injuries are due to the direct negligence of the Pharmacist. A Pharmacist may be negligent, but if the plaintiff suffers no damage; he recovers nothing. In negligent suits a plaintiff must be able to prove bodily injury or property damage.

Other Professional Activities

Burlage has said that on the basis of his professional training, interests,

and study along specialised lines, the pharmacist, if suitably located, should feel qualified to perform for compensation analysis and examinations of a scientific character when the opportunity offers and the request are of an ethical character.

Many smaller hospitals are without suitable pharmacies and, therefore without adequate pharmaceutical services for the patients. The enterprising pharmacist in the community where such a hospital exists can render professional service, for which he has been trained, and such service can be of great benefit to the patients, and mutually profitable to the hospital and the pharmacist.

If the pharmacist has been properly trained and possess the necessary equipment to carry on his professional duties satisfactorily, he should feel qualified and consider it ethical and a sound and profitable business practice to manufacture the medicinal preparations and other products of recognised therapeutic value on part-time basis whenever and wherever these services are required. These products include those recognised in the official compendia, namely the pharmacopoeia, the National Formularies, etc. Products prepared this way can replace many of the expensive and even unsound proprietaries and advertised brands of the local herb preparations whose actions have not been scientifically investigated. With the aid of recipe books such as the "Pharmaceutical Recipe Book" and other works containing tested formulae, he should feel capable of compounding improved professional products as side lines for the dental and veterinarian professions and for agriculturists and gardeners. He should be able to manufacture harmless yet worthwhile cosmetic products of various types.

The pharmacist could continue to do these extra-curricula services unless arrangements have been made by his official employer to adequately compensate him so as to discourage him from such private practice. He should however, avoid mixing official or employer's work with his unofficial private work. That is, private practice should be carried out outside the official premises and independent of the employer's materials.

This added dimension helps to reduce the number of quack and unqualified persons who engage illegally in pharmacy business and in producing such preparations and so pose a big danger to society, let alone usurping the singular right of the pharmacist to manufacture drugs and thus denying the pharmacist of a genuine source of revenue. If the extemporaneous preparations are not prepared by the pharmacist with increasing frequency the professional potential in their regard goes unnoticed.

At this point it will be recommended that all Schools of Pharmacy should make provision for every fresh graduate to be supplied with at least a pestle and mortar before he leaves the faculty for good. Arrangements should be made for this to be paid for well in advance before the graduation day. This forms a monument which constantly gives hope to the pharmacist and reminds him of:

1. The training and academic qualification he has obtained,
2. his professional potential as a member of the health team, both official and un-official hours,
4. the dignity and satisfaction he derives in the practice of pharmacy, and
5. the simplest tool with which he can manufacture a lot of medicines.

Professional Pharmacy and Commercialism

The pharmacist should take pride in manufacturing and selling meritorious products only rather than serving as the vendor of preparations that, as a result of his training, he knows to be basically worthless. He should consider offering his professional service first and foremost to the public, and placing the profit motive subordinate to the service—Burlage[1].

The Pharmacist should endeavour to promote sale of only pharmaceutical commodities. The Commonwealth report 13 recognises that the pharmacist in the practice of his profession "has to manage his business, to buy and sell, to advertise and display his merchandise, and to obtain profits sufficient to maintain his business and to secure the necessities, the comforts, and some of the luxuries of life". According to Burlage and others this permits the sale of legitimate side lines, which include the ever-increasing number of worthwhile mechanical appliances, rubber goods of all description, thermometers, sick-room supplies, first aid kits, infants, and health foods, cosmetic and purfumes, insecticides, and allows the making of stains and diagnostic reagents and analytical and microscopic examinations. Sales of commodities outside this scope opens up fields of uncalled for competition which is detriment to the profession. It is selfish for the pharmacists to desire to be recognised as professional men with all the right and privileges of this select group and yet wish to be protected from unfair competition and from inconveniences caused by trades of various types on whose fields of activity they have trespassed.

Competition among pharmacists should be discouraged. Rather the pharmacist should develop an attitude of helpfulness and friendliness towards his colleagues in his community. Shorter and rotational work schedules permit a proprietor and his assistants greater leisure. In this way the public is assured better service because of the increased opportunity afforded the pharmacist for study, personal involvement and relaxation. Co-operative attitudes should lead to uniform prescription fees, which should include a fair remuneration for the professional services rendered by the pharmacist.

As a proprietor or employer, the pharmacist should recognise the rights and privileges of his employees, especially those who have equal professional attainments that he possesses. Such employees have a right to his respect and confidence and to the degree of enjoyable living that he tries to maintain for himself. The employer also has a right to demand honesty, diligence, good habits, personal pride in dress and manners, loyalty and unquestionable ethics on the part of the employee.

The Pharmacist's Watchword

Pharmacists have to comport themselves for the public to accept them as honourable people to forestall any legal restrictive measures which might be introduced by the society. Pharmacists should be reasonable in pricing the drugs and aim at presenting uniform prices throughout. They should defend the high cost of drugs and pharmacy service as cost

of research work into the production of the drugs and the general inflationary trend in other commodities and services. The pharmacist should reject the idea that drugs manufactured by pharmacists are substand until the complainant can prove the allegation scientifically beyond all reasonable doubt.

R. C. Clark (2) has said that it is probable that the misunderstandings and many disputes revolving around the cost of drugs could have been prevented by the physician and the pharmacist involved, if the pharmacist had previously discussed the problem with the physician. It is advisable to develop an understanding in advance about the cost and value of a drug which upon first thought might seem to high-priced, or the cost of the pharmacist's service which may erroneously appear to be excessively profitable.

The public and the prescriber resent paying high price for drugs. The pharmacist has to explain the cause but not to contribute to spoil the good name of the pharmacist. The old, cheap and generic drugs are still available while the sophisticated, research-intensive, and so expensive drugs, are also available for the patient to choose from.

At the least opportunity the pharmacist should act officially or unofficially as a Counsellor of drugs to physicians, para-medical staff and patients. Pharmacy is a profession as well as a business just as medicine is a profession as well as business. Unlike ordinary commodities of commerce like timber, etc., a person has to be a qualified pharmacist before he can do pharmacy business. The pharmacist knows the value of drugs as well as the harm they can do if misused. He should not allow them to be handled by untrained personnel as if they are commodities of no professional value. With the exception of exempted drugs all other drugs should not be given out easily without prescription or a signed order from a qualified medical practitioner. The pharmacist should not entertain or encourage pilferage which invariably ends up in unqualified hands, and should not contaminate pharmacy services with things non-pharmaceutical.

In hospital pharmacy materials, like Liquid Paraffin, Glycerin and soft paraffin are raw materials and should be regarded as such. They should not be given out as cosmetics. Once this is done the purpose of hospital pharmacy service becomes defeated and more and more of such requests follow to the inconvenience of the pharmacist.

Besides administration majority of the non-pharmaceutical services lower the status and the public image of the pharmacist. Pharmacy shops which open at night often sell non-pharmaceutical items like torchlight, batteries, electric bulbs, matches, stamps, etc., with the reason that the appropriate shops which sell these items are not open at night so it is a kind of additional service the pharmacy offers the public. This reason is no longer acceptable because nowadays supermarkets and other general stores open late into the night so the public no longer appreciate this gesture from the pharmacist.

Pharmacists must stop belittling the profession with derogatory statements like talking about long hours and low income and try to create better impression by the use of more optimistic and truthful statements. A qualified professional gets his remuneration according to his qualification, experience and effort and not according to the number of hours he works in a day. It is with the supportive staff that the hours of work and the corresponding high salary matters.

It will be ethically unfair for the pharmacist to refuse to disclose the name of the drugs being dispensed to the patient on request. Let the patient get the full benefit of his money's worth. For psychological reason the physician may insist that a particular patient should not know the identity of his drugs. This is an isolated case. In the developing countries once an illeterate gets to know the name of his drugs he tends to look it up to buy for any other disease which might subsequently attack him. Most of the time he recommended the same drug indiscriminately to other people. This could be hazards to these other people. In circumstances like this the pharmacist has to exercise his discretion to withhold the name of the drug from the illiterate. More often many pharmacists in these countries are understaffed. The staff find themselves not disclosing the names of source the drugs in order to save time for the numerous other prescription who equally need prompt attention.

In the pharmaceutical industries or the laboratories the pharmacist analyst should be able to stand by the results of his drug analysis and should not falsify or alter analysis figures. He should not yield to unwarranted pressures to present favourable results all the time. He should rather impress upon the management the need for good reputation to be established in the company's products by guaranteeing the quality of the products through unbiased analytical report. If the quality of the product becomes questionable it is the company who stands to lose eventually. The extent of loss may be vast if we remember the case of the Thalidomide. It should be the professional duty of the pharmacist to identify other quality control areas which are outside his speciality, point them out to management, and suggest/recommend consultancy relationship with competent pharmacists who have specialised in those areas and who have the necessary equipment. Such suggestions bring to light the other aspects of pharmacy which have not hitherto been known by management, thus enhancing the versality of pharmacy and the esteem to which the public would hold the pharmacist. It must therefore be considered ethically wrong for the pharmacist to sit down unconcerned when other aspects outside his speciality are being trampled upon. This attitude retards the progress and the development of the pharmacy profession especially if one comes to learn that too many special branches of pharmacy are unknown to the public and nevertheless they need be brought to the benefit of the people.

The Pharmacist and the Herbalist

Up to the later part of the Nineteenth Century when practice of pharmacy and Western system of medicine were unknown, the activities of the local herbalist or the medicineman were paramount. These activities were valuable at the time in as much as the ultimate aim was to cure or treat a patient and to save life. The means through which this aim was achieved was not an issue. Herbs and various potions whose composition remained secret for many centuries were administered with

incantations and magic to give a supernatural look to the course of treatment. The medicineman diagnored disease and prescribed and dispensed his own medicines. It was only later that pharmacy has been recognised as a profession distinct from medicine which restricts itself to the diagnosis of disease and prescribing of medicine while pharmacy concerns itself with preparation, manufacture, storage and distribution of drugs to the patient. The age of the practice of the medicineman or the herbalist has passed and gone forever.

The practice of modern pharmacy has led to the progressive devaluation of herbal medicine practice. Modern techniques and refined processes through which the crude drug passes before arriving at the final product ensures reliability and safety of the drug in the treatment of the disease state. The former practice which used to be valuable left so much to be desired that it is now considered to be of negative value so long as it is unprofessional, unscientific and exposes patients to serious hazards instead of saving life. It is therefore unethical for a pharmacist to adopt for therapeutic use a crude drug or herb supplied say herbalist if he has no means of satisfying himself that the drug is of an acceptable standard; and also to recommend such a medicine to a frustrated patient.

Hazards due to the Medicineman

1. The Medicineman may be a witch-doctor whose activities would be in conflict with the religious faith of the patient.
2. The active components of the potion has generally not been isolated and identified. Potent ingredients may exhibit unpredictable pharmacological actions which may be fattal and appropriate antidote might be unknown.
3. The Medicine has not been Standardised and therefore subsequent doses cannot be assured to be constant.
4. The Medicine has variable composition which is reproducible.
5. Active constituents have not been identified and therefore interaction with other drugs which may be administered concomitantly cannot be predicted.
6. Potions may contain very potent elements which may be very poisonous to the body because the lethal dose has not been established.
7. The appearance of mixtures and the forms of the medicine are nauseating and unacceptable.

It is then clear that the medicineman is not only a menace to modern pharmacy but also a danger to society. All people who subscribe to the aspirations of the medicineman should not be entertained by physicians, pharmacists and the other paramedical staff until the medicineman agrees to submit his medicine for extraction, identification and analysis to assess the potency of the Constituents. The age-old place of the herbalist as one of the suppliers of crude drugs of plant origin is not sputed. He should however, keep is distance and not interfere or compete with the practice of modern pharmacy.

The continued use of Herbal Medicine without the necessary scientific investigation undermines the scientific basis of modern medicine and ridicules the whole academic process involved.

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AN APOLOGY

In the December 1974 issue of the Pharmaceutical Journal there appeared a statement on the resignation of Mr Victor Kofi Aidoo as the President of the Pharmaceutical Society of Ghana. Since then, some members, notably Prof. A.N. Tackie, Mr S.A. Allotey, Mr J.E.K. Djan, Mr V. K. Aidoo and the late Mr W. W. L. O. Addy have in various ways expressed the view that they were aggrieved by certain words in the statement which they considered to be harsh and unfair to them.

Council wishes to stress that in issuing that statement, its sole objective was to inform its members on the incident leading to the resignation and there was no intention whatsoever to injure the character or person of any individual member or group of members.

Any embarrassment which might have been caused to any individual member or group of members by the words complained of in the statement is very much regretted.

CLINICAL PHARMACY POSSIBILITIES IN THE DEVELOPING COUNTRIES

By N.I.Y. Fiagbe, B. Pharm. Ph. D. MPSG Department of Pharmaceutical Chemistry, Faculty of Pharmacy, University of Science and Technology, Kumasi Ghana.

Summary

The awareness of clinical pharmacy practice possibilities in the developing countries does exist.

This awareness being recognised early, in diverse forms, coupled with the existing background of pharmacy practice in these countries have already made an interesting impact; this impact is a welcome change to both pharmacy educators and students alike.

The transition from pharmacy practice to the practice of clinical pharmacy will be easy in some of the developing countries while in some it will be difficult and may take sometime depending upon few factors inherent in the individual systems.

To be able to see the full scope of clinical pharmacy practice possibilities one has to consider:

1. **The laws, legislations, statutes, etc. governing the practice of pharmacy.**
3. **The pharmacy set up to date in these countries.**
4. **The training of the clinical pharmacist and the environment where clinical pharmacy is to be practised by such a trained person.**

CLINICAL PHARMACY POSSIBILITIES IN THE DEVELOPING COUNTRIES

Pharmacy Practice

The developing countries inherited pharmacy practice from the countries with which they had a long and close association, at the same time others practice what might be regarded as a cross between two different pharmacy practices.

One can also trace from history "an indigenous" form of pharmacy practice before the advent of modern pharmacy. It is not surprising to note that the indigenous pharmacy practice still extists and may continue for some time when "clinical pharmacy practice in the rural areas will cause their natural death. I do not forsee this indigenous pharmacy practice wiping out the practice of pharmacy anyway.

Modern pharmacy practice in most of the developing countries might have started around late 1850 and early 1920. It is however difficult to put a date on the start of the indigenous pharmacy practice.

In Ghana the nucleus of pharmacy education was established in about 1926. This infant pharmacy school has been nursed till it became a full faculty of pharmacy of the University of Science and Technology, Kumasi in 1960.

This faculty has since been the source of the country's pharmacists not to mention other developing countries. It has offered courses in most of the pharmaceutical sciences, and will probably remain the only pharmacy school in Ghana for sometime. The ground is also prepared for introduction of clinical pharmacy soon.

Other countries have their own pharmacy schools at different stages of development, at the same time some of the developing countries have not been so fortunate, as such they have to rely on France, United Kingdom, United States of America, etc. for the education and training of their pharmacists. The present day scene has changed a lot in that most of the developing countries have some form of modern pharmacy practice, or some facilities to cater for the training programmes of her students in pharmacy education. *The modern pharmacy practice in the developing countries is the greatest and singular possibility, call it a ray of hope, towards the eventual practice of clinical pharmacy in these developing countries. One could therefore tackle the introduction of clinical pharmacy curriculum into these available institutions.*

Laws governing the pharmacy practice

With the advent of the modern pharmacy practice, in the developing countries, came into being laws, legislations, statutes, etc., to regulate the practice of pharmacy and to weed out the old traditional/indigenous form of practice of pharmacy and medicine in the open market. These laws were an attempt to give pharmacy and pharmacy practice its right status and the good image it deserves. In Ghana the popular pharmacy and drugs act, or Act 64 of 1961 regulates the education, training and practice of pharmacy. It states amongst other things, who should practise pharmacy, where it should be practised, how it should be practised, etc. This law has been amended many a time to bring it up-to-date as the pharmacy education and practice have also passed through many phases since it was introduced.

Within this, pharmacy and poison act as it was earlier known is a grave danger to the society, as I see it at the moment, part of this law recognises the setting up and licensing Chemical sellers and their shops as well as pharmacists and pharmacies. The chemical seller can handle items like acetylsalicylic acid, bicarbonate of soda and does not need a pharmacist to supervise the business. The pharmacies, however, handles all drugs and chemicals and need a licensed pharmacist on the premises. The inadequate number of pharmacists to practise in the rural areas of

the country opens these areas up for the chemical sellers shops and their owners to indulge in illegal storage of dangerous drugs and illegal practice of pharmacy. This situation is more serious due to inadequate Inspecting Pharmacists, who are to go round and to inspect these 'shops and their wares or stock of chemicals'.

You will therefore agree with me if I say that inherent in Act 64 and the chemical sellers' shops lie the challenge to the clinical pharmacist of tomorrow and the pharmacist of today in Ghana.

I shall develop this aspect later in my talk and make some suggestions as to how to stop these "*chemical destroyers*" and how they should die off in the presence of a clean face of clinical pharmacy practice.

This situation in Ghana with two types of 'shops' is common in most of the developing countries. In fact even the local '*medicine man*' who never went to school could easily dispense or sell codeine or codeine-like extracts without any supervision —Why? Simply because he is *known within the community as the "knowledgeable" person to deal with the health problem of the community above all he knows the people and their problems.*

Secondly there are no qualified pharmacists to practise pharmacy in the rural areas where the "medicine man" operates. So there is no immediate challenge to this "medicine man", until we move pharmacy pratice to the people.

Pharmacy Set up

We can easily identify three or four areas of pharmacy practice in Ghana and for that matter in most of the developing world:—

1. The Hospital Pharmacy practice
2. The General pharmacy practice
3. Pharmacy practice, existing illegally at the premises of private medical practitioners-illegal because pharmacists are supposed to supervise all pharmacy practices, but in these cases they are not allowed to do so.
4. The Pharmacy practice existing in places like:—
   (*a*) Rural Health Centres, Health Posts and Dressing Stations.
   (*b*) Private Maternity Homes.

In these areas though qualified persons might be in charge of the day to day operations, there are no practice of Pharmacy, nor to advise on the operations in pharmacy practice.

By far most Ghanaians, and for that matter people of the developing world attend hospitals either private or government, health centres and private maternity homes the very well-to-do however attend private clinics where they can afford the fee.

The doctor/patient ratio in these developing countries are high mostly about 1:10,000 and similarly the patient/pharmacist ratio is about 1:2,000 these could be higher in some countries.

Under such a situation the health service in these developing countries become burdened if not overburdened and everybody becomes either satisfied or dissatisfied with whatever one gets or does not get out of such a system.

Most of the people who attend these centers of medical health-care for treatment may have to travel some 5-20km for such services. Such a person will therefore be among the 2,000 patients a pharmacist in a hospital set up will rattle an instruction like this to:—

'Of the green tablets take one three times daily after meals, the yellow ones take only one tablet daily, now take your card to the injection room, etc.' Could you imagine the confusion into which such a patient has been thrown? Well here I have to confess that as a pharmacist in such a hospital I could hardly remember ten names a day and could hardly pick out 20 faces who had been at my counter the previous day, and I have been wondering whether with 2,000 different patients or more to talk to daily we really have come to know them let alone to identify ourselves with their drug habits and problems. *Here lies the potentialities of a clinical pharmacist working in the neighbourhood of such patients, dispensing their prescriptions, indexing their medication, meeting them at home and in the community set up. He will contribute a lot to the health of the community, help solve most of their drug and health problems.*

In the Private set-up of pharmacy practice, in Ghana, it is a shame to say that in most if not in all the developing countries these general pharmacies are concentrated within the main cities and towns and their hours of openings are more or less determined by that of the ordinary business houses around them. *By operating only in the big cities they leave the rural areas opened to gross drug abuse and for the untrained persons to exploit the situation to the disadvantage of the patient and to the shame of pharmacy and medical practices.*

These are ground enough to advocate for community pharmacy practice and for that matter clinical pharmacy practice in the community set-up.

Are these not possibilities? Or call it genuine grounds for clinical pharmacy practice? Do you know why the pharmacies are concentrated in the main cities and towns?

Well let me tell you, basically because it is assumed that "*the money*" is in the cities; "*the money*" therefore become "the patient." I could be wrong but the fact remains that the pharmacists are "*product and money conscious*" at the same time, instead of being "*patient*" *and* "*service*" *conscious.* In this regard again lies the challenges of clinical pharmacy. Yes! clinical pharmacy has as one of its important tenents of being patient conscious—the developing countries need good pharmaceutical services for the people in the rural areas because believe it or not the wealth of these nations depends on the health of the people living in the rural areas — 80 per cent of the population in these developing countries live in the rural areas.

Training of the suitable pharmacist

Before I deal with this topic could we just accept the fact that in *clinical pharmacy we are concerned with the pharmacist's responsible interaction with patient vis-a-vis the product.* Basically therefore clinical pharmacy is a concept or philosophy emphasizing the safe and appropriate use of drugs in patients. *It places the emphasis of drugs on the patient and not on the drug/product.*

The concept of clinical pharmacy is not exclusive of the hospital setting. True, in-hospital medicine is not an answer to all the health problems either. *As such we have to start to place emphasis on out-patient facilities and home patient care services and teams.*

Again if we could accept for once the fact that human beings during certain periods of life and during certain circumstances of living become temporarily, partially, and sometimes almost completely dependent upon others for help in sustaining themselves and in achieving goals, it does not matter whether those goals relate to optimal health, social justice, spiritual comfort, etc., human beings occasionally need assistance from others who are *sufficiently knowledgeable and skillful* to provide the necessary services.

In the field of clinical pharmacy practice therefore the chemical seller, the local herbalist, the untrained midwife, etc., have not the right education; the knowledge, and the skill to act for the clinical pharmacist.

The existing pharmacy institutions of learning in the developing countries and the trained pharmacists in the field of practice of pharmacy are the main sources/possibilities we have for genuine practice of clinical pharmacy. However there need to be some changes in training of that clinical pharmacist we are talking about, in some cases the changes will be drastic.

1. The existing pharmacy schools or for that matter pharmacy educators should learn to appreciate the need and the new dimensions the practice of clinical pharmacy adds to pharmacy practice and pharmacy education. Once s ch needs are realised the obvious reaction will be to include or stress the clinical pharmacy elements in the various pharmacy curricula. At this point I will advocate that the graduates of this new curriculum *which I will label sufficiently knowledgeable and skillful* —because they have acquired elements of clinical pharmacy, have added and learn to appreciate the harm and damage the orthodox pharmacy practice has done by being *product* and *money* conscious; they will have an immense impact on the rural health team and work and above all on the community.

2. The next question will be what about the pharmacists who had passed through the old system? True most of them might have been established in their various sectors and will find the change too much. My guess is that having become aware by then of the clinical pharmacy component of the course they underwent some years back the pharmacy educators should attach to them at regular intervals the students undergoing clinical pharmacy course thereby establishing a dialogue between "the old" and "the new". Once the dialogue is established the educators should invite the old pharmacists in small numbers about five to ten at a time for refresher courses on *the essential elements of clinical pharmacy*, and then they can go back to add this new dimension to their practices, thereby the harm done will be corrected gradually.

3. With the introduction of clinical pharmacy and its practice therefore there might be the need to re-look at the laws, legislations, etc., governing the practice of pharmacy, medicine and even nursing in these countries. To make the task of redoing some of the laws easy, I will suggest that during the training of the doctor, the clinical pharmacist and the nurse they should be brought together to learn to appreciate the uniqueness of *'the patient'* and what service each should contribute to the betterment of such patient. Once these professionals agree on their contribution to the patient then the changes in the respective laws governing the practices of these disciplines will not be a problem. We must however be aware of those old elements in these professions who for one reason or the other do not and never want any changes.

The young graduate clinical pharmacist

Under this heading I will touch upon one or two difficulties or the dilemma such a graduate will face if he were to practice a clean pharmacy.

The law at the moment stipulates that such a graduate should only register and practice pharmacy after being attached to a qualified pharmacist in practice or supervised by a pharmacy-superintendent also in practice. This then becomes both the test for the law and a challenge to the young graduate and the educators. This situation should not be a problem. I personally believe that we can organise some form of supervision of the new pharmacist in the rural areas either from the district or regional levels regularly and efficiently, at these levels we often have more pharmacists. The second major hurdle will be facilities in such areas for the young affluent graduate to enable him to carry out his profession efficiently. In this direction some various governmental or local agencies probably in conjunction with the ministry of health, the pharmacy school should be able to work out a reasonable system well in advance within the health care system in anticipation of the arrival of a person who is coming to be part of the community.

Not to encourage such graduates, by providing basic accommodation and a good working place, and above all, a welcome encouragement will be a failure and a great loss to the country, Why? I have the convinction that a healthy nation is a wealthy nation. I do not exclude the sacrificial contribution the graduate will make by accepting the challenge so that clinical pharmacy is made available to the community without extra cost.

In conclusion

There is no doubt that the possibilities of clinical pharmacy practice in the developing countries do exist.

To encourage and promote the education in and practice of clinical pharmacy the educators in this area will have to look to those of you who have been in the field already.

The educators should be encouraged to adapt the education and the practice to suite the indigenous environment.

Some of you here might be called upon to leave your present comfortable positions to help start clinical pharmacy course and practice in a developing country. My personal plea here will be to take it as a challenge as the new graduates in this field will accept the call to practice in the rural area as a challenge in the interest clinical pharmacy.

You might also be called upon to make facilities available at sometime for either a staff member or a student for a short time please be prepared to help as much as you can.

Once we can be assured of your moral support, we can also take as a challenge the possibilities we have at the present to prove to you that clinical pharmacy will fully go to the service of the people of the developing world.

To conclude

1. Schools pharmacy, which are the singular source of pharmacy education, in the developing countries should be encouraged to adopt the clinical pharmacy components in their curricula.

2. We should step up clinical pharmacy education and for that matter the education of the health service workers more towards 'a service and patient consciousness'.

3. The clinical pharmacist upon graduation should be encouraged by the state, the pharmacy educators, and other governmental organisations and local institutions and agencies to practice in severely neglected areas.

4. There should be a good and regular dialogue between the pharmacy schools in the developing countries and the developed countries — to enable sound exchange of ideas and personnel.

5. Only the trained and the qualified persons should be allowed to practice clinical pharmacy and for this to be effective.

(*a*) laws governing the practice of pharmacy should be changed or amended and should be rigorously enforced.

(*b*) the qualified clinical pharmacist should be encouraged to penetrate the rural and remote areas also.

(*c*) the existing gap between the other health workers and the clinical pharmacist should be narrowed up for a good and harmonious working relationship on behalf of the patient.

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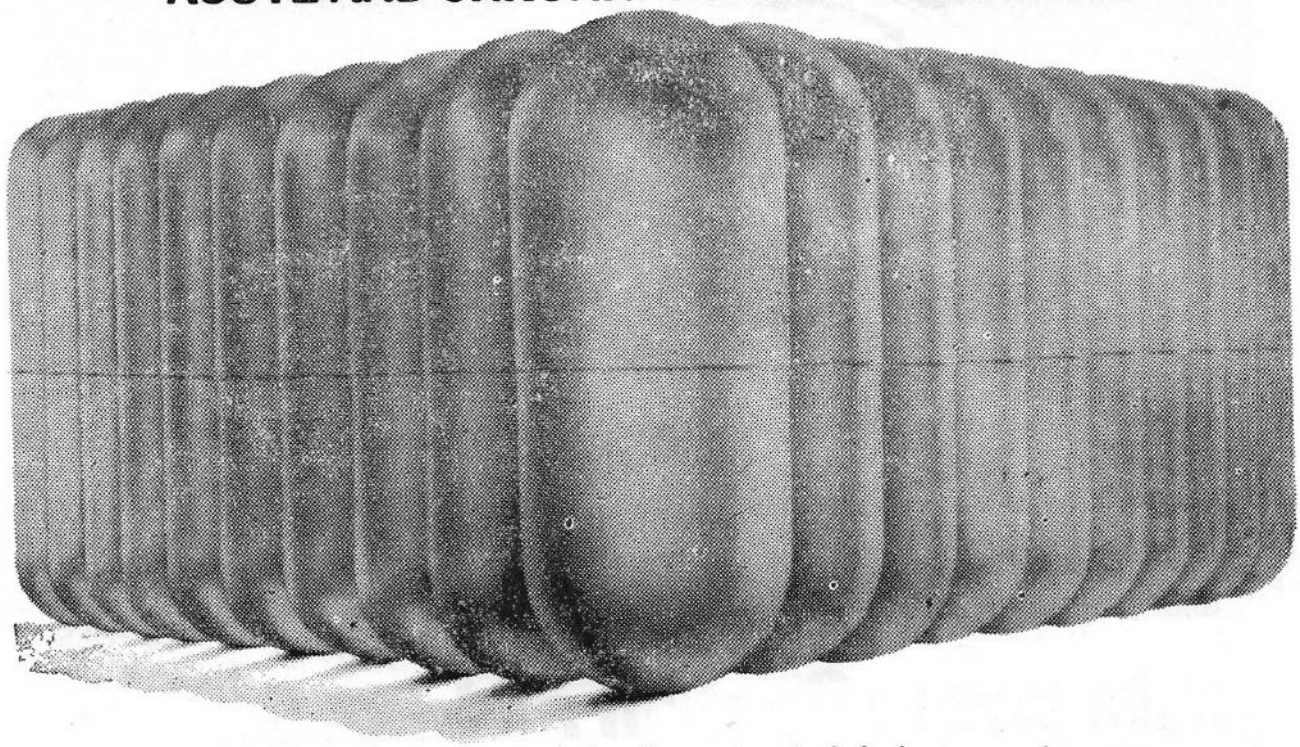

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HON. GENERAL SECRETARY'S REPORT ON THE ACTIVITIES OF THE SOCIETY FOR THE PERIOD – NOVEMBER 1977 TO NOVEMBER 1979

Presented to the 35th Conference of the Pharmaceutical Society of Ghana, held at the Kwame Nkrumah Conference Centre 29th November — 1st December, 1979

Introduction

Mr President, Fellow Pharmacists, we have gathered here this morning to take stock of the performance of the Present National Council which assumed office in November, 1977.

I am happy to have had the opportunity to present this report:

"Mr President, at a gathering like this, we are always full of sorrow when we remember that we have lost some of our members." These words were spoken at the Accra Community Centre on the 1st of December, 1978 to the Annual General Meeting of the Ghana Pharmaceutical Society. Little did Joseph Edward Akyirem (399) realise that he was going to add to the "sorrow." We have lost an energetic Secretary. A perfect gentleman with the same deep regret and profound sorrow, we report the death of the following illustrious colleagues:

	Name	*Regist. No.*
1.	Mr E.W.L. Addy	13
2.	Mr E.D. Adutwum	367
3.	Mr James Amarteifio	47
4.	Mr A. E. Inkumsah	55
5.	Mr J.K. Ollenu	238
6.	Mr E.A.C. Addoquaye	12
7.	Mr E.C.K. Agadzi	24
8.	Mr F.K. Koranteng	492
9.	Mr B.T.A. Ofori-Atta	230
10.	Mr E.K. Bortey	102

The Society sent a delegation to the funeral celebrations in each case and donations were made on behalf of the Society. Our condolences were also extended to the bereaved families.

Mr President, Fellow Pharmacists, may we now rise and observe a minute silence in memory of our departed colleagues.

May Their Souls Rest in Perfect Peace.

Post of Hon. General Secretary

As you may recall, Mr Abutiate was elected Hon. General Secretary of the Society in 1977 with Mr Akyirem as his assistant.

Mr Abutiate resigned his post in the early part of 1978 because he was transferred to East Africa by his employers.

Mr Akyirem therefore took over as General Secretary while Dr. Buadu was elected by council to be his assistant, in accordance with the constitution. On January 15, 1979 however, Mr Akyirem had to resign his post as General Secretary because he was due to attend a course in England. This caused Dr. Buadu, his assistant to become the Hon. General Secretary. Mr T.C. Corquaye was therefore elected by Council as the assistant Hon. General Secretary.

Dr. Buadu could not exercise the functions of this office because he had an assignment out of the country for the greater part of the year. Mr Corquaye therefore assumed the office of Hon. General Secretary with Dr. Buadu as his assistant.

The resignation of Mr Akyirem created a vacancy on the council and Mr F. Addai-Gyambrah was elected by council to fill that vacancy.

Membership of the Society

When we assumed office in November,1977, the membership of the Society stood at 508. The present membership stands at 570.

MEETINGS

(A) National Council Meetings

During the period under review, the National Council held 15 meetings on the following dates:—

3rd December, 1977
18th February, 1978
1st April 1978
21st April, 1978
10th June, 1978
8th July, 1978
12th August, 1978
4th November, 1978
30th November, 1978
18th December, 1978
13th January, 1979
7th April, 1979
7th July 1979
3rd November, 1979.

(B) Standing Executive Committee Meetings

Seven (7) Standing Executive Committee meetings were held on the dates given below:

26th January, 1978
31st January, 1978
20th July, 1978
10th October, 1978
14th October, 1978
8th May, 1979
25th October, 1979

The National Headquarters

The problem of finding suitable premises as the Society's headquarters continued to engage the attention of the National Council.

At the moment, the Society is using one room of the Pharmacy Board premises as its headquarters. This is most unsuitable for a noble and reputable organization like the Pharmaceutical Society of Ghana.

We advertised in the local papers for suitable premises to rent. We had two responses but both were found to be grossly unsuitable for our purposes.

Line of the Society

It is hoped that each of the three main wings of the society will present a report of its activities at this conference.

Government's Grant

In the 1977/78 Financial year, the Government approved of a grant of ₵30,200.00 to the Society. This figure was increased to ₵37,000.00 for the 1978/1979 financial year.

Drugs Importing Committee

In October, 1978, the Society received a letter from the Ministry of Health in connection with the formation of Drugs Importing Committee and the Society was invited to send a nominee to the Committee.

The Committee was set up to review the entire system of drug importation and make recommendations to ensure effective utilisation of the meagre foreign exchange available for drugs. This meant the cutting down of the number of importers to "a sizeable figure".

The idea of reducing the number of importers drew comments from some so-called "Druggists". and in the Daily Graphic of Saturday 16th December, 1978, one of them wrote, "it is these pharmacists who have swolled the number" of drug importers.

Council issued a Press statement which was given to the Ghana News Agency on 18th December, 1978.

To our utter dismay, the Press Statement never appeared in any of our local papers and since the writer has written to apologize to the Society that he was "misquoted", we will probably leave the issue there.

It is unfortunate that some members of the Society are under the erroneous impression that it was Council that distributed import licences to various pharmacies. The council has just one nominee on the Committee of about eigh. Mr M.S. Donkor is our representative on the Committee.

The Ghana Pharmaceutical Journal

Members will notice that the Pharmaceutical Journal has come out only once since this Council took office. Shortage of newsprint coupled with the fact that the Editorial Committee has not been receiving articles have contributed to this appalling situation. It is our fervent hope that the newsprint situation will improve and the Committee therefore appeals to all to make every effort to write articles for publication.

Since the journal serves as the official organ and news media for the Society, its quarterly publication will give is current news and activities of the Society.

The next edition of the Journal is in the press and will be distributed to members in due course.

Shooting Incident at Accra Railway Station

The Society donated ₵500.00 to the family of Mr Agyei-Barima — the student who was shot dead in the incident — through the Vice-Chancellor of the University of Ghana.

Association of Recognised Professional Bodies

The Society still plays a very active role in the deliberations of this Association.

The Association held a delegate conference on 18th May, 1973 and the Society was represented by:—

(1) The President
(2) The Vice-President
(3) The Secretary
(4) The Treasurer
(5) The Editor
(6) Mr T. Ofosu-Eck
(7) Mr J. Pearce-Biney
(8) Mr J.Y. Binka.

Council paid ₵1,200.00 to the Association as the Society's contribution towards the cost of holding the conference.

Centre for Scientific Research Into Plant Medicine

Dr. Larbi had been replaced on the organization by Dr. Sackeyfio.

Medical Research Co-ordination Committee

Council appointed Dr. Kwame Sarpong to represent the Society on the re-constituted Medical Research Co-ordinating Committee for a two-year term.

Ministry of Health Convention of Health Staff to Review Major Policy Matters

The Society was invited to a meeting convened by the Ministry of Health on career structure within the Ministry. The meeting took place on 22nd and 23rd January, 1979 at the Kwame Nkrumah Conference Centre.

Topics discussed at the Convention included:—

(1) Career structure for Health Personnel
(2) Financing the Health Services of Ghana
(3) Procurement of and indenting of Drugs
(4) Reorganization of the Health Services

The following members represented the Society: —

(1) Prof. A. N. Tackie
(2) Mr M. S. Donkor
(3) Mr F. Assai-Gyambrah
(4) Mr Ago Simmonds
(5) Mr K.A. Ohene-Manu
(6) Mr M. A. Akiwumi
(7) Dr. J. S. K. Ayim
(8) Mr T. C. Corquaye

Legal Adviser for the Society

Council has finally decided to engage the services of a lawyer as and when necessary.

Mr V. K. Aidoo vrs. The Society and Others

Members will recollect that at one of our conferences, the late Mr Quarshie and Mr Ofosu-Eck read a letter to the Conference. The impression created was that the case was going to be settled out of court. To date, the case has not been withdrawn from court because Mr Aidoo and his lawyers insist on a letter of apology before a withdrawal action was effected.

Council has written this letter of apology for publication in the next issue of the Pharmaceutical Journal.

Council of State

The Society takes this opportunity to congratulate Mr Ofosu-Eck of his appointment as a member of Council of State, as a representative of the Association of Recognised Professional Bodies, and nominated by the Pharmaceutical Society of Ghana.

Constituent Assembly

Honourable members still remember with anger the omission of the Pharmaceutical Society of Ghana from the list of identifiable bodies to be represented at the Constituent Assembly.

As a result of two protest notes sent by Council to the Deputy Secretary of the then Military Government on behalf of the Society, the Government added the Pharmaceutical Society of Ghana to the list of identifiable bodies.

Mr M.S. Donkor was elected to represent the Society. The election were presided over by Mr Frank Ekar of the Electoral Commission.

West African Pharmaceutical Federeation

The first Scientific Seminar of the West African Pharmaceutical Federation was successfully organised under the auspices of the Pharmaceutical Society of Ghana from 19th to 24th February, 1978. The theme for this Seminar was "Malaria."

The topics discussed at the Seminar included the following:—

(1) Socio-Economic Impact of Malaria in Africa.
(2) Epidemilogy and Chemoprophylaxis of Malaria
(3) Chemotherapy of Malaria — an up-to-date review
(4) Drug Selection and Drug interaction.

Some of the recommendations made at the end of the Seminar were:—

(1) A sub-continental antimalaria effect be initiated through the framework of the West African Health Community in close association with W. H. O.
(2) Selective mass drug administration for children and expetant mothers.
(3) WHO to be called upon to intensify its training programme.
(4) WHO to stimulate and sponsor research in all aspects of malariology.

The Federation held its Second General Assembly in Freetown, Sierra Leone from 21st to 25th February, 1979. The theme of this conference was "The Role of the Pharmacists in the service of the community."

Dr. A. C. Sackeyfio attended the Scientific Committee meeting of WAPF in Monrovia from 26th to 29th July , 1979.

The Quality Control Committee of WAPF organised a "workshop on the Quality Control of Pharmaceutical Preparations" in Accra from 12th to 16th November, 1979.

Topics discussed at the workshop included:—

(1) Proposals for the West African Regional Quality Control Centre.
(2) Legislation for Quality Control of Pharmaceutical Preparations.
(3) Quality Control Laboratories and Institutions.
(4) Good Practice in the Manufacture and Quality Control of Pharmaceuticals.

The 2nd Scientific Seminar of the WAPF is to be held in Monrovia from 7th to 9th February, 1980.

Federation Internationale Pharmaceutique (FIP)

The FIP held a conference in Cannes, France in September 1976. Dr. John Ocran and Mr John Opoku-Acquah represented the Society.

The theme for the main symposium was "Pharmakovigilance" with speakers discussing various aspects of the subject such as:—

(a) The influence of drug purity and formulation on stability and hazards of medication.
(b) Basic principles involved in medication hazards.
(c) The involvement of the pharmacist in protecting the patient.

Dr. Ocran again represented the Society at the 39th International Congress of the FIP held in Brighton, United Kingdom from 1st to 10th September, 1979.

The theme was "Towards better safety of drugs and Pharmaceutical Products."

Dr. Ocran has prepared very comprehensive reports on the two conferences and these will be appearing in future issues of the Ghana Pharmaceutical Journal.

Pharmacy Council

A draft decree on the formation of the Pharmacy Council was received from the Attorney-General's Department in June this year.

Council appointed a committee to discuss the draft. This committee has submitted its report and council has approved the report and sent it to the Attorney-General's Department for further action.

Conclusion

Mr President, fellow Pharmacists, this report is an account of the activities of the society for the year 1977-1979. There is no doubt that a lot has been achieved but a lot more remains to be done. In this connection I appeal to all members to help in the little way they can to make this Society really great.

I take this opportunity to wish you all a merry Christmas and a joyous New Year. THANK YOU.

RECOMMENDATIONS FROM THE WAPF WORKSHOP ON QUALITY CONTROL OF PHARMACEUTICALS— 12—16 NOV., 1979

Preamble

After careful consideration of the proposals and submissions made during the current Workshop, it is established that there is an urgent need to scrutinize the quality of drugs and pharmaceutical products imported into, manufactured in or exported from WAPF, member countries.

Furthermore, it is considered imperative that prompt action should be taken to check the dumping of sub-standard or poor quality drugs and pharmaceuticals in the West African subregion. In this regard the following recommendations are proposed:

1. Quality Control Centre

(a) Considering the fact that the West African subregion has become a dumping ground for substandard drugs and pharmaceuticals it is deemed urgent that a Quality Centre should be established to control the quality of drugs coming into the region.

(b) In the process of implementing 1 a) it is proposed that serious consideration be given to the appointment of the following full time personnel with *immediate effect:*

1. A Regional Co-ordinator.
2. National Co-ordinating officer for each member country.

The job discription for the qualifications of the remunerations and the conditions of service of the above offices will be determined by the Quality Control Committee of A.P.F.

2. Imported Pharmaceuticals

(a) In the importation of pharmaceuticals, the importing country should insist on the supply of Certificate of Analysis issued by the competent National Certification Body. Notwithstanding this provision, it is recommended that the W.H.O. proposal on the certification scheme on the quality of Pharmaceutical Products moving in International Commerce should be adhered to.

(b) On control at the Port of entry such drugs and pharmaceuticals should be cleared as quickly as possible to minimise rapid deterioration that would otherwise occur in our tropical climate. Where there are no special facilities for storage of drugs at Port of entry such drugs and pharmaceutical should be released under bond for proper storage by the importer.

3. Quality Control Personnel

It is recommended that member countries should ensure that the personnel employed in Quality Control Departments should be suitably qualified.

The key-Personnel must have a pharmaceutical background in addition to any other relevant qualification.

In countries where such personnel are not available a joint effort should be made by WAPF member countries to effect inter-state utilisation of personnel.

4. Budget

To ensure adequate financing of the above-activities the Quality Control Committee of WAPF should submit a detail budget to WAPF Council for consideration and approval at the Monrovia Meeting in February, 1980.

ADDRESS BY THE HON. M. P. ANSAH, THE MINISTER OF HEALTH, GHANA

At the Opening Ceremony of the first International Workshop on Quality Control of Pharmaceuticals at the Continental Hotel, Accra on the 12th November, 1979

Mr Chairman, the President of the Pharmaceutical Society of Ghana, Distinguished Guests, Ladies and Gentlemen.

It is with a great sense of pleasure and pride that I am here today to formally open the First International workshop on Quality Control of Pharmaceuticals by the West African Pharmaceutical Federation (WAPF). On my own behalf and on behalf of the Government and people of Ghana I welcome you to Ghana. It is our wish that your brief stay in Ghana would be pleasant and a memorable one.

I note with great interest that this is the second time within two years that your Federation is organising a scientific meeting in Ghana. We are very happly to have you here again and it is our wish that you continue to hold your meetings in Ghana.

Your first Scientific Seminar on Malaria Chemotherapy was held here in Accra in February, 1978. The present workshop is on Quality Control of Pharmaceuticals. The activities of the Federation up to date bare a good testimony that the Federation is actively implementing its aims and objectives as you declared in 1976; "that the Federation will pursue the development and advancement of all aspects of the profession of Pharmacy in the West African Region."

The area of Quality Control of Pharmaceuticals is of keen interest to both International and national bodies

The world Health Organisation (HO), to which the countries represented in this workshop are members, has provided a number of guidelines for the manufacture and control of pharmaceuticals. I am aware that some of your members are involved in the preparation of such guidelines; for example the WHO Expert Committee reports on Specifications for Pharmaceutical Preparations and the selection of Essential Drugs. The governments, especially from the developing countries, shall require the expert advice for specialists like you. You are from our area and you are aware of the problems of quality control of pharmaceuticals in our region. It is a challenge to you experts to evolve out pragmatic solutions to our problems.

In our times more than ever, many pharmaceutical Industries are springing up and thousands of new drugs are coming into the market. To monitor the quality of these drugs is not going to be an easy task.

It will require the concerted efforts of you the experts on quality control to tackle the problems, since your Federation is a recognised agent for the west African Health Community you can be assured of the support of the governments in the region.

You have just indicated to us that developing countries are being used as a dumping ground for poor quality drugs. This situation is unacceptable to us. We have to protect our people.

In Ghana, therefore, we are making sure that the public are supplied with drugs of proven quality and efficacy. In my Ministry we have instituted a Quality Control Unit to ensure that the drugs handled by the Ministry of Health Medical Stores and dispensers are of the required quality. We have national institutions which take care of the various aspects in the quality control of drugs which are imported or manufactured in the country. I am aware that similar developments are taking place in the member countries of your Federation. But we need to join hands in protecting the Health of our people and so the efforts of your Federation to establish a Regional Quality Control Centre is of great interest to us.

We wish that through the concerted efforts of your Federation you will come out with common drug regulations for the West African Region.

Mr Chairman, the President of the Pharmaceutical Society of Ghana, Ladies and Gentlemen, I now have the pleasure and the honour in declaring the First International workshop on Quality Control of Pharmaceutical formally open.

WEST AFRICAN PHARMACEUTICAL FEDERATION (WAPF) WORKSHOP ON QUALITY CONTROL OF PHARMACEUTICALS — 12—16 NOVEMBER, 1979 AT THE CONTINENTAL, ACCRA

Address by J. Y. Binka, Chairman, WAPF Quality Control Committee

Mr Chairman, Honourable Minister of Health, Distinguished Guests, Ladies and Gentlemen.
It is a singular pleasure to address this important gathering on Quality Control of Pharmaceuticals.

This workshop is organised under the auspices of the West African Pharmaceutical Federation. The Federation was formally inaugurated in October, 1976, in Monrovia and the Federation has succeeded in bringing together the pharmacists along the West coast of Africa, especially the English-speaking countries. At the inauguration of the Federation, announcement of the World Health Organisation that our region "is the dumping ground" for low quality drugs by some drug manufacturers was re-echoed. The concern of the Federation to arrest this unbearable situation was reflected in the resolution and recommendation made at the end of Inaugural Conference; and I quote, "In recognition of the fact that the West African Region has become a dumping ground for substandard drugs by certain unethical marketers and in view of the recent confirmation of the existence of this problem by the World Health Organisation.

Conference noted the necessity for the establishment of a Regional Quality Control Laboratory to serve as a monitoring unit for ascertaining the quality of drugs imported and/or sold in member countries of the region.

Conference therefore recommends that Governments of member countries pursue, as a matter of great urgency, the joint establishment of a West African Regional Quality Control Centre to assist in ascertaining drug quality in the region," unquote.

The Quality Control Committee of WAPF has been assigned the duty of implementing the above-mentioned resolution of the Federation. Thus the objective of the present workshop is to foster a working relationship among members of WAPF and other affiliates engaged in the Quality Control of Pharmaceuticals. During this workshop the participants from the various West African Countries will consider among other things, the proposals for the West African Regional Quality Centre for Pharmaceuticals. There are precedents of such centres in the Latin America and the South East Asian countries. We can learn from their mistakes and improve upon where they were successful. At this same workshop, we shall also consider models for legislations for Quality Control of Pharmaceuticals and Good Practices in the Manufacture and Control of Pharmaceuticals Analytical Procedures currently available in the control of Pharmaceuticals will also be treated.

Thus, we are making efforts to improve the quality control activities in our region. The journey has not been easy for the many experts in this our region. Previously the whole concept was played down both in the industries and the governmental agencies. Hence we had some pharmaceutical industries established in our area without or, with very little attention paid to the Quality Control Units. Some of us had to convince our top officials that drugs imported from foreign firms needed to be examined for their quality. We were told "Drugs from Europe did not require any further testing."

Thanks to the leadership offered in this area by International Organisations like the World Health Organisation, International Federation of Pharmaceutical Sciences (FIP) and International Federation of Pharmaceutical Manufacturers Association (IFPMA). Also, the thalidomide disaster has made many governments in our time very appreciative of the requirements of quality control in the health care of the people. Frequent reports from large organisations like Food Drug Administration of USA do tell us that the vigilance on the quality of drugs need be pursued on both big established drug firms and the small ones. We need all the support of our governments and industrial management to enable us give the required quality assurance on pharmaceutical preparations to our people. At this point I will like to take the opportunity to explain what Quality Control of Pharmaceuticals involves. Some people think Quality Control is limited to the testing of the finished products. With the Pharmaceuticals, the quality

control should be built into the whole development and manufacture of tne products. Modern advances in the pharmaceutical sciences have led to the development of complex drug formulation. There are at present a new family of pharmaceutical products described as therapeutic system — drug containing devices or dosage forms which provide precise control over the *rate* and *duration* of administration of a drug so that the safety and therapeutic efficacy of the drug are maximized.
Example of such devices are:

a. OCUSERT system which is inserted under the eyelid to deliver drugs to the eye at a constant rate for periods up to one week.
b. the PROGESTASERT system — an intrauterine contraceptive, programmed to deliver the drug progresterone to the unterine lumen at a constant rate (ca 65ug/day) for a period of one year.
c. OROS system — is another new form of drug formulation meant to deliver drugs to the gastrointestinal tract at a specified rate for a predetermined period measured in hours.

Thus these new techniques are bringing new challenges to the Quality Control expert.

It is now known that the same drug presented in a similar dosage form like tablets but prepared by different manufacturers may not give the same biological activity when administered to a patient. Such products are said to exhibit generic inequivalence. This poses some serious problems in the developing countries like ours. We normally go in for world-wide tender for pharmaceutical preparations in order to get lowest price on the market. Sometimes we may end up buying drugs which are of low quality. In fact there have been instances when half strength drugs were presented as full strength drugs so that the drug firm could quote a very low price. It is thus very important that the quality control person is involved when drug purchases are made. The activities of the quality control units in our modern times should also include the study of the availability of drugs when taken into the body — a study normally termed as bioavailability of drugs. Such studies should not normally form part of the routine tests in a quality control department, except in some few cases like the drug, digoxin.

Tropical countries like ours do have extra quality control problems. The high temperatures and humidity do put some stress on the stability of Pharmaceuticals in the region. Drugs like the tetracyclines and penicillins may decompose under these conditions to ineffective and sometimes toxic forms. For example, the epianhydrotetracycline from the tetracyclines). One other common example is the browning of certain tablet preparations, especially those with nitrogen atom in their molecule (e.g. codeine and paracetamol) when prepared with certain addictives. The formulation and packaging of such drugs do require special attention.

Genetic and ethnic background have also been known to affect the way a given drug may work in an individual. Very little or no work has been done in the black African to ascertain how far these factors affect our reaction to drugs.

In Europe it is estimated that up to about 20 per cent of the hospital patients suffer from ailments caused by drug taking, some with fatal consequences. What is the percentage in Nigeria, Togoland, Ghana or the Gambia? No one knows. The quality control departments are expected to follow the performance of a drug to the bedside of a patient. Some firms do, others do not bother. It is the requirement of modern concept of quality control of pharmaceuticals that adverse reactions of such preparations are monitored and documented.

Mr Chairman, Hon. Minister, Distinguished Guests, Ladies and Gentlemen, I have sought to illustrate how complex and involving are the activities of those engaged in the Quality Control of Pharmaceuticals. The management of firms need to appreciate this; government institutions are also required to do the same. We have to remember that we are spending substantial amount on pharmaceuticals from out limited national resources. We cannot afford to spend money on pharmamaceuticals of poor quality. If we do, patients may develop complications and we may end up by spending more on the health care of our people.

We need the support of our governments, firms and the general public to help safeguard the health of our people in this area. We on our part are determined to use the available facilities to ensure that only drugs of proven quality and efficacy circulate in our region. Thank You.

REPORT ON THE IST INTERNATIONAL WORKSHOP ON QUALITY CONTROL OF PHARMACEUTICALS FROM 12TH — 16TH NOVEMBER, 1979, AT ACCRA, GHANA

By Our Special Correspondent

INTRODUCTION

The Workshop on the Quality Control of Pharmaceuticals was first conceived at the 2nd General Assembly of the West African Pharmaceutical Federation (WAPF) in Freetown, February, 1979 and Ghana was chosen as the venue for the Workshop. The aim of the Workshop was to foster a working relationship among the members of WAPF and other affiliates engaged in the Quality Control of Pharmaceuticals.

The Workshop took place at the Continental Hotel, Accra from the 12th — 16th November, 1979 under the Chairmanship of Mr J. Y. Binka, Head of the Quality Control Unit of the Ministry of Health, Accra.

About 40 participants attended the Seminar but unfortunately, there were no delegations from the Gambia and Nigeria. Regrettably the Sierra Leone delegation had to go back home due to loss of baggage on arrival at Accra.

The Workshop was formally opened by the Minister of Health of Ghana, Hon. Mr M.P. Ansah.

The opening ceremony was chaired by the Director of the Pharmaceutical Services of Ghana.

The Minister of Health in his speech at the opening session lamented over the low Quality drug circulating in our region and assured the Federation of the Ghana Government support for the efforts being made by the West African Pharmaceutical Federation to improve the drug quality surveillance in our area.

Dr. De-Heer, the Executive Director of the West African Health Community was also present to address the participants and the invitees.

As an interim measure samples from the member countries without quality control facilities could be analysed at the laboratories of other member countries.

Participants endorsed the earlier decision of the Federation that a Quality Control Centre should be established in the Region for the implementation of this decision the participants held the view that full time personnel in the capacity as a Regional Co-ordinator be appointed.

Formats for the documentation on the quality control activities for the region, as drafted by the chairman of the quality control committee were also endorsed with some few modification.

The other items on the programme were well presented and keenly discussed. Five short communications were presented and they attracted lively discussion. Development of Quality Control Institutions in West Africa was treated under the following sub-titles:— Regional, National, Industrial and the Hospital Models. The various models were discussed having in mind the environmental background and the socio-economic situation in West Africa.

The much talked about topic in the present day pharmaceutical practice — the Good Practices in the Manufacture and Quality Control of Pharmaceuticals did attract lively discussion under the chairmanship of Dr. Blukoo Allotey, the General Manager, GIHOC Pharmaceutical Division, Accra. Mr Bediako Donkor of the Ghana Standards Board talked on the Good Plant Inspection Practice and Miss Gilbertson, GIHOC Pharmaceutical Division, Accra, also dealt with the topic: Good Laboratory Practice. A session was also devoted to the Analytical Procedures in the Quality Control of Pharmaceuticals. This session was chaired by Dr. Boakye-Yiadom of the Faculty of Pharmacy, University of Science and Technology, Kumasi.

The Workshop was closed with a Gala Dinner sponsored by the GIHOC Pharmaceutical Division Accra, Ghana. The Minister of Health was present at the Dinner together with other dignitaries in Ghana. The recommendations emanating from the workshop were read at the Dinner. Dr. Fred Gordon of John Kennedy Hospital, Monrovia, Liberia and a Council member of WAPF proposed the toast on behalf of the Federation.

The publicity support given by the Ghanaian newspapers, the radio and television was remarkable. It was no doubt the government and the public got the message on the essentials of quality control of Pharmaceuticals.

The torch lit by WAPF on quality control of Pharmaceuticals should not be allowed to go dim. Proposals accepted by the Federation must be seen implemented if we are to back our words with deeds.

The West African Pharmaceutical Federation will like to place on record their appreciation for the full support given by the local pharmaceutical firms, notably, GIHOC Pharmaceutical Division, Danafco (Ghana) Limited, Phemeco Limited and the West African Health Community.

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