A. U. B.

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The Apothecary

1957

THE EDITORIAL BOARD

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JUNE 1957

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Dedicated

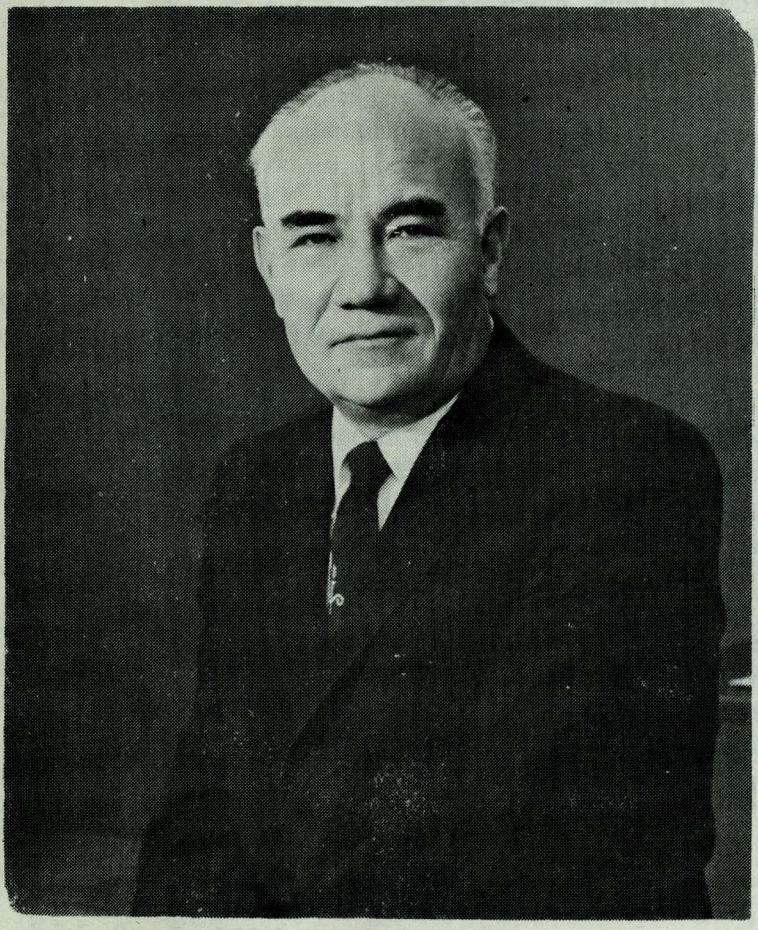
to

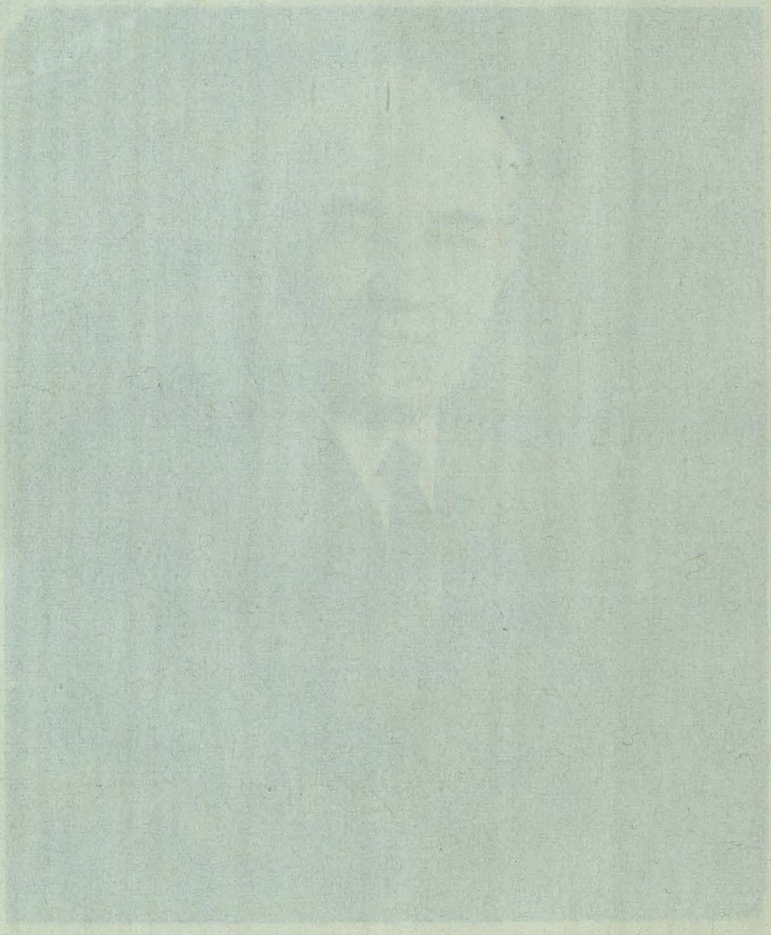
Dr. JOHN PAUL LEONARD

Fifth President

of

The American University of Beirut





Dr. John Paul Leonard will become, on July 1 st, 1957, the fifth permanent President in the 91 - year - history of the American University of Beirut, known at its founding and for 54 years thereafter as the Syrian Protestant College. His predecessors are: Dr. Daniel Bliss (the Founder), Dr. Howard Bliss, Dr. Bayard Dodge (now President Emeritus), and Dr. Stephen B. L. Penrose Jr. The post, vacant since the death of Dr. Penrose on December 9, 1954, has been filled on an interim basis for the past two and a half years by Dr. Costi K. Zurayk as Acting President. Vice President Archie S. Crawford also served as Acting President after the retirement of Dr. Dodge in 1947. Previously, the late Prof. Edward Nickoley was acting President in the period preceding the appointment and inauguration of Dr. Dodge in 1923.

American national attention was focused on San Francisco State College via a special program developed under Dr. Leonard's direction. Through a grant of $ 325,000 from the Ford Foundation's Fund For Advancement of Education, SFSC is conducting a research study of national importance on the use of television in college teaching.

That Dr. Leonard has been abreast of developments in general education is reflected also in many public and private appointments. He served as consultant for school authorities in many states and cities in the United States, including among them Los Angeles, Santa Barbara and Almeda County, all in California; also the states of Florida, Virginia, Mississippi and Texas.

Before assuming the presidency of SFSC in 1945, Dr. Leonard had served as associate professor, and then as professor, of education in Stanford University, from 1937. Prior to that year, he was associate professor in 1927 - 28 and then professor, of education, from 1929 to 1937 in the College of William and Mary.

Dr. Leonard holds several degrees, including his first : an A. B. from Drury College in Springfield, Missouri, from which he graduated in 1923. He received his M. A. degree from Columbia

University in 1927 and two years later his Ph. D. from the same university. In recognition of "his contribution to the education of youth of the U. S." he was awarded the L. H. D. degree by Columbia University at its bicentennial celebration in 1955.

Other signal honors have also been conferred on Dr. Leonard. In 1947 he received the "oak leaf" award from the California Congress of Parents and Teachers for service to the youth of California. In 1955 came two more tributes: from his alma mater, which gave him its distinguished alumnus award and from the Board of Supervisors of the City of San Francisco: its distinguished citizen award for "building and development of San Francisco State College and contributions to the cultural life of the city".

While these achievements are significant in themselves, taken as a whole they spring from a background of a lifetime devotion to the cause of education. After graduating from Drury College, Dr. Leonard served as a secondary school teacher in his alma mater's city for the next two years. He was also a teacher in New York City, 1927 - 28, and during that period worked on his Ph. D. degree at Columbia.

Since A. U. B. has a summer school, it is significant to note that Dr. Leonard's career also covered summer session teaching at Duke University and the Universities of Mississippi and Texas.

His influence in education has not been confined to the classroom or to administrative posts. He is also the author of several publications, among them the following:

Planning For Youth, 1945.

Developing the Secondary School Curriculum, 1946 (with Rachel Salisbury).

Thinking in English, Books I and II.

Considering the Meaning.

Language For Use.

Making Sense, Books I, II and III, 1933 - 39.

Secondary Education (with T. Briggs and J. Justman) 1950.

Also, editor with Alvin Eurich, An Evaluation of Modern Education, 1942.

Although his professional career is steeped in education, he has found time to serve in various civic capacities in several comm-

unity service projects. These include:

World Affairs Council of Northern California: member, Board of Directors.

Mills College: member, Board of Trustees.

Educational Television Station KQED: chairman, Board of Directors.

California State Accreditation Commission: its chairman.

Council For Economic Education of Northern California: member, Executive Committee.

National Association of Higher Education of U. S.: member, Executive Board.

Council For Advancement of Secondary Education in U. S.: member, Board of Governors.

Advisory Board of Metropolitan Life Insurance Co. of N. Y.

Western College Association: former president and chairman of its Accreditation Committee.

U. S. Naval Academy, Annapolis, Maryland: former member of its Board of Visitors.

Pacific Coast Committee of American Council of Education: former chairman.

Planning Committee For Survey of Higher Education, State of California: chairman.

He is also a member of the Commonwealth Club, one of the most important civic organizations in San Francisco, as well as the Rotary Club and the Phi Delta Kappa fraternity.

During World War II he served as an administrator in the Office of Price Administration in Washington, D. C. and was also a member of the Advisory Committee for Young Workers in the U. S. Department of Labor.

Dr. Leonard married Miss Johnnie Lucille Ferguson in 1927. They have two children: Mrs. Wilbur T. Ebersold, wife of a Harvard University research instructor in genetics, and David Ferguson Leonard, a junior in the College of California. Dr. Leonard was born in Lockwood, Missouri, the son of John L. and Myrtle (Murray) Leonard.

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THE APOTHECARY

SCHOOL OF PHARMACY

AMERICAN UNIVERSITY OF BEIRUT

BEIRUT, LEBANON

TWELFTH VOLUME

JUNE 1957

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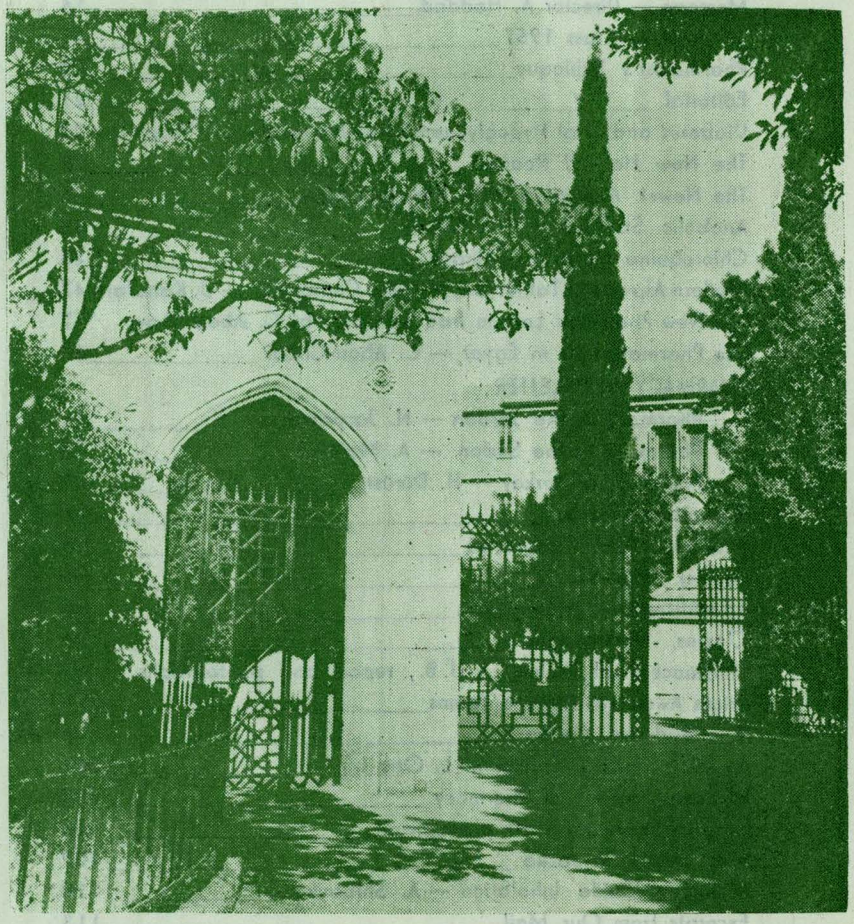
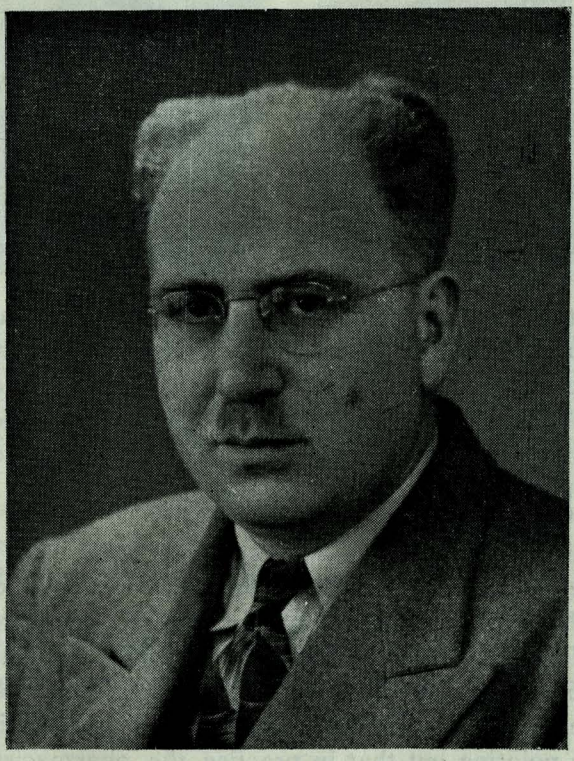




Dr. COSTI K. ZURAYK

ACTING PRESIDENT

• • • remain a credit to the profession • • •

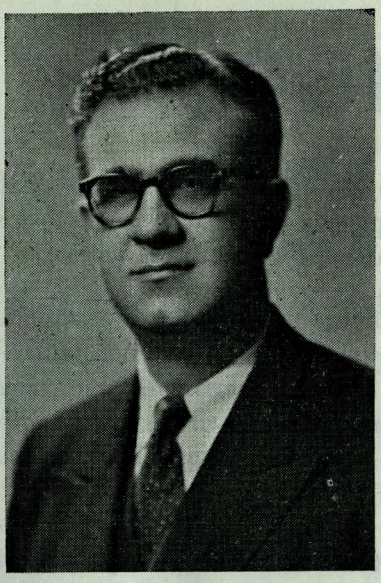
It is a pleasure to have an opportunity to address you again through the 1957 *Apothecary*.

The *Apothecary* has the longest history of any Yearbook published at the American University of Beirut. It has the added distinction of serving not only as an historical record of the arduous and happy years spent by students in acquiring their professional degree, but also as a scientific journal wherein many of the latest developments in the field of pharmaceutical practice can be brought to the attention of alumni and preserved as a ready reference for students.

The name *Apothecary* is an apt one, since it is the ancient Greek title for the modern day pharmacist. It reminds us of the common evolution, and the continued interdependence of pharmacy and medicine upon one another. This interdependence has been evident to the students who have completed many courses which are required of both physicians and pharmacists, but it is also worth pointing out that in practice the pharmacist as well as the physician are committed to follow common standards of high ethical practice and to cooperate fully with one another toward the achievement of better health for the people they serve.

My wish to each new graduate is that he or she will always remain a credit to the profession and enjoy the fruits of long years of preparation.

Joseph J. McDonald, M.D.
Dean of the Faculty of Medical Sciences



• • • inspire confidence • • •

It has become my privilege and pleasure at the end of each academic year to address a message to the graduating class as they are about to leave their Alma Mater to enter the greater school of life and take their place in established society.

Four years ago you joined the School of Pharmacy full of zeal and desire to learn and acquire knowledge in the pharmaceutical and allied sciences in preparation for a professional career. During these four years you have acquired, through your personal endeavour and hard work as well as through the guidance of your teachers, a basic scientific knowledge and professional training which I believe is of the best quality. Your education, however, will have been incomplete had you not complemented it with the acquisition and development of the virtues and traits on which are built our codes of professional ethics and the fundamental principles of good citizenship — those virtues and traits which make for true success in life.

Your major work in the future will be to guarantee a complete and safe supply af drugs whenever and wherever they are needed. In order to fulfill this duty to the best interest of your community you will be required to equip your pharmacy with adequate stocks of drugs and medicines of the best grade, to establish a laboratory and prescription department of the latest type and to

possess an extensive and up - to - date library. These physical facilities, though most essential for proper pharmaceutical service, are not in themselves the sole assurance of dependable service.

As pharmacists you will be brought into more frequent and intimate contacts with the daily affairs of your community than any member of society. These daily contacts with the needs of the people will give you rare opportunities to inspire confidence and show your cultural ability in tackling problems concerning health, hygiene, politics, finance, etc. People will soon call upon you as their advisers if not even their father confessors. Therefore, as representatives of the intellectual world most easily available to the people at large you will be expected to assume a place of responsibility in the cultural, social and spiritual life of your society.

Consequently, so that you may be able to accomplish efficiently your diverse professional duties and to meet your manifold responsibilities to your society you should ardently endeavour to continue your education and development after graduation towards maintaining a high professional stature, a scientific competence and a dignified service.

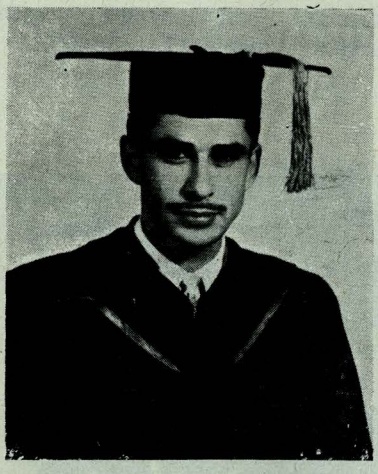
The professional degree you are receiving is a symbol of our confidence in you and a recognition of the potentialities, the courage, the ability and the qualifications you possess for great achievements in the future. May your future accomplishments bring honour to your profession and to your School. As your teachers and I extend to you our sincere congratulations on the memorable occasion of your graduation, we wish you great success, happiness and continuous prosperity in your future career.

Amin F. Haddad
Director, School of Pharmacy

Graduating Class

Bachelors of Science in Pharmacy, B. Sc. (Pharm.)

1957



ARTIN HAGOP MALAKIAN
Lebanon

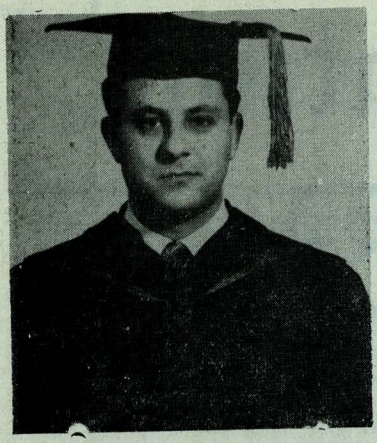
Likes : chess, football, tennis.

Motto : do unto others what you wish done unto you.

Speaks : Arab., Arm., Eng., Fr., Turk.
Societies : Pharm. Soc., 1st Vice President, 1956-57.

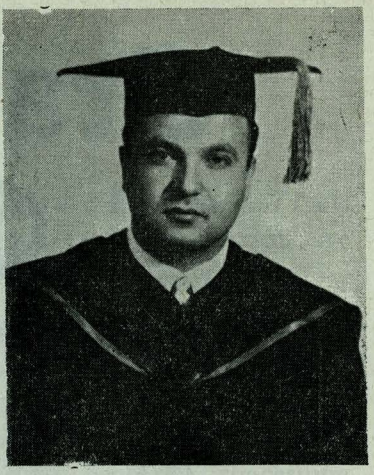
EBTIHAJ JAWDAT KAZ'UN
Lebanon

Likes : dress designing, tennis.
Motto : be a good citizen.
Plays : piano.
Speaks : Arab., Eng., Fr.
Societies : Music Club, Secretary, 1953-55; Pharm. Soc., Treasurer, 1954-55, 2nd Vice President, 1955-56.



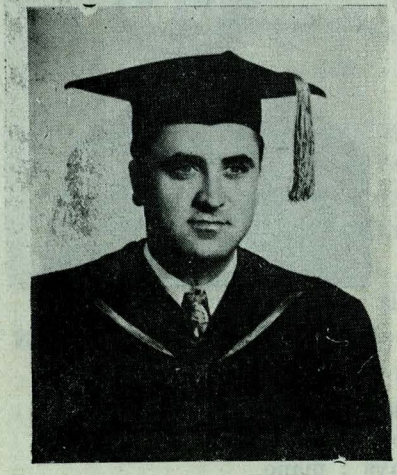
ANTOINE CESAR CHALHOUB
Lebanon

Likes : driving, dancing, hunting.
Speaks : Arab., Eng., Fr.



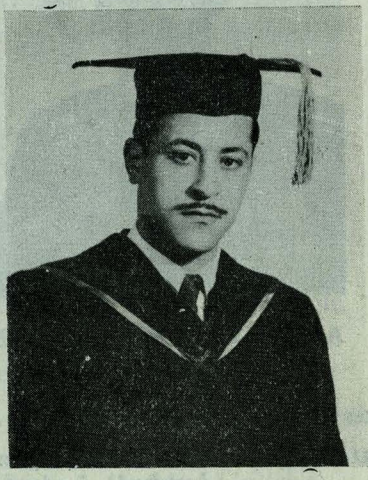
RIAD JAWDAT KAZ'UN
Lebanon

Likes : hunting, swimming.
Speaks : Arab., Eng.



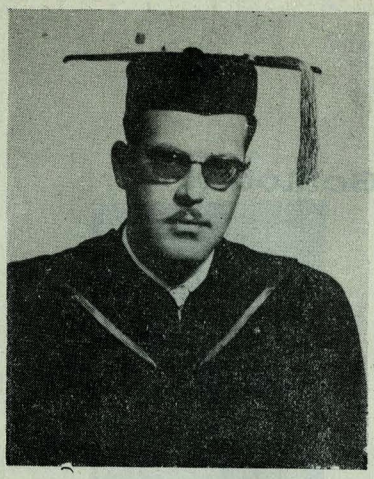
TAWFIC HABIB KARAM
Lebanon

Likes : hunting.
Speaks : Arab., Eng.



HAIG KEROPE GOURDIKIAN
Lebanon

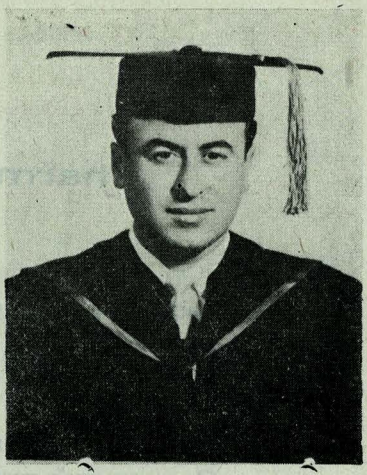
Likes : swimming. Plays accordion.
Speaks : Arab., Arm., Eng., Turk.
Societies : Soc. Arm. Studies, Treasurer, 1954-55.



FAYSAL FADL KANJ

Jordan

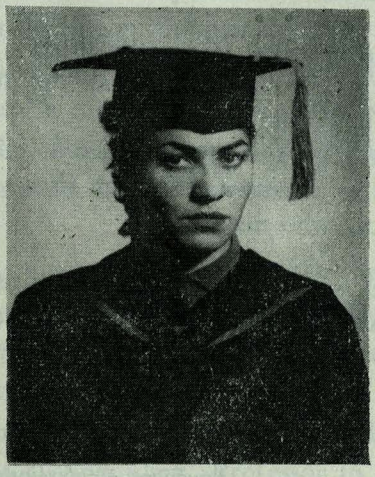
Likes : Arab. poetry, sports.
Motto : Keep a clear conscience.
Speaks : Arab., Eng.
Societies : Pharm. Soc., Treasurer, 1953-54, President, resigned, 1956-57.



ABDEL-KADER ABDEL-RAHMAN MUKADDEM

Lebanon

Likes : hunting, swimming, javelin throwing.
Motto : be nice to everybody.
Speaks : Arab., Eng.



MARY ISRAEL PILIGIAN

Iraq

Likes : ping pong, tennis.
Motto : be faithful to country and help the needy.
Plays : piano, accordion.
Speaks : Arab., Arm., Eng.

Pharmacist's Soliloquy

There is a peace of mind
And heart which comes of
Day's work done —
Well done.
To know of one new name to post
On memory's roster of a host
Of friends.

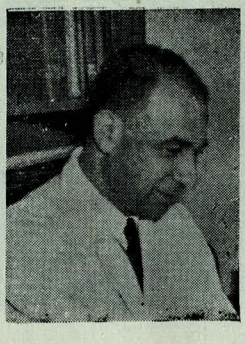
"You are so kind," says he
Confused and struggling in a sea
Of pain and doubt and unfamiliarity ;
Yet I but quoted from the page,
Not of textbook nor the sage,
But from life's vast volume of the lay
Unfortunates who have passed my way.

There can be those of us who thirst
To serve a Greater Master than the purse
Of hateful greed.
Lucrative sales and profit prizes
Both fail to sate an urge which rises :
Serve those who need !

"O Lord, suffer me to be thy servant
And minister unto thy sick and afflicted !"

Charles A. Graham, Ph. G.

American Professional Pharmacist,
21, 810 (1955).



Editorial

The publication of this, the twelfth annual volume of *The Apothecary*, coincides with the inauguration of the fifth president of the American University of Beirut. Dr. J. Paul Leonard is welcome indeed not only to the University but to Lebanon and the Middle East. Present to welcome him at the inauguration is a countryman of his who served this country and this area for a very long time, so long and so well that he earned the love, affection and respect of every one. Dr. Bayard Dodge, our President Emeritus, is our best interpreter to Dr. Leonard.

For two and a half years at the helm, after the passing away of President Penrose, Dr. Costi Zurayk did his best to steer the ship as safely as possible in spite of turbulent waters. *The Apothecary* wishes Dr. Zurayk a very pleasant furlough, a year of academic dedication, and a happy return as Distinguished Professor to the Campus he loves so much and the University he is so devoted to.

Dr. McDonald, in his message to the Graduating Class, stated simply and well the purpose of *The Apothecary*, and what should be the relations between pharmacists and physicians. Alumni, graduates and students will do well to ponder his words.

The tools of the pharmacist are many and various, and are both abstract and material, like the services he renders. Professor Haddad gives a good account of these in his message to those who shall call themselves pharmacists.

May the good Lord guide our footsteps.

Charles Abou-Chaar

DIABETES AND ORAL HYPOGLYCAEMIC SULPHONAMIDES

By **Prof. Edward Vorperian**

Ever since the original report by Banting and Best with regard to the specific value of insulin in diabetes, search has continued for drugs that would be effective when given by mouth. In recent years considerable interest has been aroused by the experimental use of certain sulphonamides as oral hypoglycaemic agents, making it possible to many diabetics to dispense with insulin injections.

Although some of the biochemical functions of insulin are still not definitely established, yet the sequence of the physiological changes resulting from an insulin deficiency may be summarized as follows: most tissues of the body require insulin for the normal utilization of carbohydrates and are unable to perform properly this metabolic function in its absence. As a result of this, glucose accumulates in the blood and the chain of events characterizing diabetes mellitus takes place: hyperglycaemia, acidosis, ketonemia, glycosuria, coma and eventually death. In an effort to meet the metabolic requirements of the tissues, there is an increased breakdown of proteins and an accelerated oxidation of fats. As a result of the latter process, ketonic substances are formed primarily in the liver at a rate that exceeds the capacity of normal mechanisms concerned with their destruction and utilization, and ketonemia and ketonuria occur. The loss of fixed base which serves to neutralize the keto acids resulting from fat oxidation and the anions from protein catabolism, cause a depletion of the alkaline reserve at first reflected by a decrease in the carbon dioxide combining power and eventually by a decrease in the pH of the blood. The glycosuria, loss of sodium, and the vomiting stimulated by acidosis cause a reduction of the extracellular fluids, the circulating blood volume, and finally of the intracellular fluid and its electrolyte content. This dehydration mechanically and reflexly results in a decreased cardiac output and restriction of the peripheral blood flow. The mechanisms by which the body utilizes or removes the ketonic substances and corrects for alterations in pH are greatly impaired by the shunting of blood away from the muscles and kidneys, although this shunting appears

to be necessary to maintain the viability of the heart and the central nervous system.

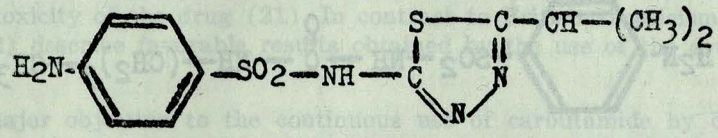
All tissues apparently possess an intrinsic capacity to metabolize carbohydrates when not inhibited by certain catalytic hormones. The metabolism of a few structures only, e.g. brain and retina, which depend almost exclusively upon carbohydrates as their source of energy, is not influenced, however, by the catalytic effect of insulin or other hormones (1). But, in tissues possessing the capacity to metabolize fats as well as carbohydrates, the rate of carbohydrate utilization is the net result of metabolic acceleration, chiefly by insulin, and metabolic inhibition resulting from the diabetogenic activity of various hormones of the anterior pituitary, adrenal cortex and thyroid (2, 3). Thus an imbalance in the proportion of these hormones may result in diabetes regardless of normal production of insulin by the pancreas. Similar situations would be encountered in the hypothetical cases, where there is an excessive peripheral inactivation of insulin either by tissue or blood antibodies, or by the overproduction of various insulin antagonists such as insulinase (4, 5) and glucagon (6). In some other instances the lack of, or the inhibition of the activity of various local enzyme systems concerned with the utilization of carbohydrates may partly be the cause of the symptoms of diabetes (7). Therefore, it can be stated that the abnormal metabolic state known as diabetes mellitus, may be due to an absolute or relative deficiency of insulin, having a number of possible causes as mentioned above.

From the preceding, it can clearly be seen that diabetes may exist inspite of a high or normal blood insulin concentration and would clinically be identical to that caused by an absolute insulin deficiency. If there were available methods for the determination of the blood insulin concentration, the information so obtained would be useful only in the differentiation of the type of diabetes rather than the detection of the metabolic disturbance itself. In the absence of a reliable technique for the assay of insulin concentration in the blood, the physician is limited to the recognition of diabetes mellitus by its manifestations rather than by its causes.

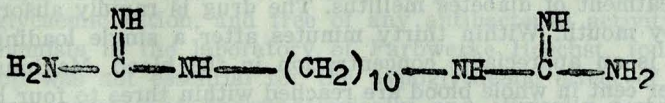
Insulin can not be given by mouth. Being a polypeptide, it will rapidly be destroyed by the proteolytic enzymes of the gastrointestinal tract. There are many excellent insulin products on the market, some with fairly rapid effect and others with a prolonged action. All however, must be injected. Many patients object to this procedure, because no injection technique is as simple or as acceptable as the swallowing of a tablet or capsule.

During the last thirty years or so, a score of products have been advocated as potential oral substitutes for insulin. Many of these substances, which have given a transient promise of being orally effective, have later been found to be liver poisons. Best (8) reported the fatty necrotic liver which *Synthalin,* decamethylenediguanidine, and myrtillin, galactoside from *Vaccinium myrtillus,* produced in depancreatized dogs. Earlier, in 1952, Davis (9) had observed that the administration of synthalin, developed in 1927, induced degenerative changes in the alpha cells of the pancreatic islets in normal rabbits.

In 1942, Janbon (10) and his colleagues, in the course of treating some typhoid fever patients with p-aminobenzenesulphonamido-*iso*-propylthiodiazole, I.P.T.D., P.A.S.I.T., 2254 RP., VK 57, observed the development of fatal hypoglycaemic symptoms in the majority of cases under treatment. Loubatieres (11), was able to follow up the pharmacology of this interesting chemical by subjecting it to extensive laboratory experiments. He found that the administration of the drug by oral or by intravenous means induced substantial hypo-



I. P. T. D.



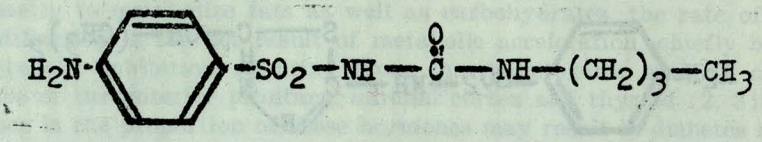
Synthalin

glycaemia in numerous species of animals, under fasting conditions, and in animals from which the pituitary gland, the adrenal glands, or the thyroid plus the parathyroid gland together with the gonads have been removed. Nevertheless, he clearly stated that the complete removal of the pancreas prevented the hypoglycaemic action of I.P.T.D., although the drug was capable of augmenting the utilization of glucose in the partially depancreatized dogs. On the basis of these and other experiments he concluded that the drug may have a dual action on the islets, namely: stimulating the secretion of insulin by the beta cells and depressing the secretion of glucagon by the alpha cells, thus exerting a destructive toxic symptom on the latter.

Soon after the publication of Janbon's observation, other workers in Europe and the U.S.A. proposed a long list of p-aminosulphamido-alkyl thiodiazols, possessing hypoglycaemic effect. The n-butyl, iso-butyl and amyl derivatives were found to be even more active. Chen and Anderson (12) studied the cyclopropyl derivatives, which they claimed to be the most active in this group of oral hypoglycaemics; but when these were tried on experimental animals, almost in every instance, the capacity of lowering the blood sugar was found to bear a direct proportion to the toxicity of the drug used.

Although the oral hypoglycaemic action of sulphonamide derivatives was originally described and investigated in France, the first detailed report on the use of a newer candidate, *BZ 55,* was published in a group of German papers (13). This compound is *Carbutamide,* N_1-Sulphanilyl-N_2-n-Butyl Carbamide, also known as *Invenol* (Hoechst), *Nadisan* (Boeringer), etc. *BZ 55* is the code number used by Boehringer in Mannheim (14). After a preliminary study of

the drug on experimental animals, the original investigators tried it on themselves. they noticed the classical signs and symptoms of hypoglycaemia: fatigue, hunger, perspiration and trembling. Extensive clinical trials on diabetic patients, were carried out at Neumunster and Hamburg hospitals. Additional clinical data has since then been obtained from various investigators, and the results are brought up to date by Boulin (15), Leibel (16), Ridolfo (17) and others (18).



Carbutamide

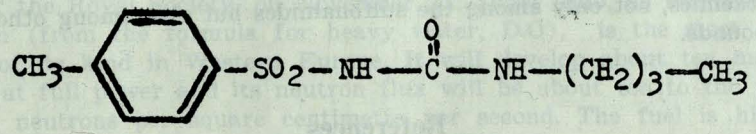
The following are some of the highlights, describing the use of carbutamide in the treatment of diabetes mellitus. The drug is rapidly absorbed when administered by mouth. Within thirty minutes after a single loading dose of 2.5 gm., there is an appreciable concentration in the blood. Maximum values of 10-15 mg. per cent in whole blood are reached within three to four hours and gradually fall after six to seven hours. Within two hours after ingestion of the dose, a definite lowering of blood sugar level occurs. Excretion is relatively slow. The drug is found in the urine with approximately 66 per cent in the free form and 33 per cent as the acetylated form. The substance does not have an action equivalent to the injected insulin. To be effective, some insulin either endogenous or exogenous should be present in the body. Loubatieres (11) had already shown the drug to be without effect on the depancreatized dog.

Satisfactory responses were achieved with an average loading dose of 2.5 gm. the first day, 1.5 gm. the second day and one gram thereafter. Attempts were made to maintain a level of 10 mg. per 100 ml. of whole blood. These trials showed that carbutamide will effectively lower the blood sugar level in many patients with 'stable diabetes'. 'Stable', in this context, meaning middle age, obese patients with mild or moderately severe diabetes who had never developed ketosis in the past. In some cases, the treatment enabled the patients to dispense completely with insulin injection. The drug, however, cannot be used in emergency treatment of diabetics with a history of acidosis, nor is it satisfactory in young or juvenile patients with 'unstable' diabetes. In this respect the drug is not an insulin substitute. Those responding favorably to treatment are patients who have developed diabetes at maturity, are obese and have not required an excessive dose of insulin for maintenance.

The most disturbing feature encountered in the majority of British reports is the incidence of sulphonamide rash, reported in some cases as high as 9 per cent (18). The skin condition, however invariably cleared in all cases as soon as the drug was withdrawn. More serious are the alterations in the blood picture. The original German reports stated specifically that there were no changes in the blood count (18). However, there have been reports of severe leucopenia (17), neutropenia (19), and thrombocytopenia (20). As a result of these ob-

servations, a resolution was passed by the British Medical Journal symposium (21) to publish the following warning note: "In view of a recent report from America and of a small number of cases of severe agranulocytosis and also several cases of thrombocytopenia in this country, it is the considered opinion of the authors of the papers on BZ 55 appearing in this issue of the British Medical Journal that the drug in question should at present be used only under careful hospital supervision." Some of the authors would even go further and recommend the discontinuation of the trials of *BZ 55,* until more is known about the toxicity of the drug (21). In contrast to British skepticism, French reports (22) describe favorable results obtained by the use of the drug.

One major objection to the continuous use of carbutamide by diabetics, is the fact that the drug besides being a hypoglycaemic agent is also closely related chemically and pharmacologically to the sulphonamides. This fact warrants some concern over the possibility of long term chronic toxicity. This is a challenge to the synthetic chemist to produce a compound possessing only hypoglycaemic action, and free of any antibacterial activity. A team of research chemists in the laboratory of Farbwerke Hoechst, found that the amino group was not essential for the hypoglycaemic effect of carbutamide. From a large number of pharmacologically and clinically tested compounds only one was selected to be the most promising. The closely related new compound is Tolbutamide, N^1-p-tolysulphonyl-N^3-n-butylcarbamide, also known as *D 860, U 2043, Orinase* (Upjohn), *Rastinon* (Hoechst), *Artosin,* (Boeringer) etc.



Tolbutamide

Experimental and clinical studies with tolbutamide on animals, diabetics and normal individuals, have brought about a better understanding of the action of these hypoglycaemic substances. Toxicologically, tolbutamide possesses a wider margin of safety and is better tolerated than carbutamide. Tolbutamide labeled with S^{35} has been studied in animals, and was found that it had not accumulated in any specific organ. Kidney and liver functions, the cardiovascular system and bone marrow were found experimentally not to have been impaired. After pancreatomy the drug was found to be ineffective in reducing or eliminating the resulting hyperglycaemia and glycosuria. The pancreas of normal rabbits, under treatment with the drug, showed no significant histological changes, nor did the alpha or beta cells. Histochemical examination of the quantity of zinc in the islets of Langerhans, ruled out the probability of any increase in insulin production or stimulation of beta cells. Also, studies on surviving liver slices and on liver cell homogenates, showed a decrease in the lactic acid content and an increase of glycogen. This very probably points to the influence of the drug on the enzyme metabolism within

the liver. However, there is yet no conclusive evidence, that either carbutamide or tolbutamide inhibits the insulin destruction in the liver by Mirsky's insulinase.

Apart from the blood sugar lowering, no other pharmacological effects have been observed with tolbutamide. The hypoglycaemia produced is identical to that induced by original drug used, carbutamide. The drug does not cure the illness. However, long lasting improvements have been observed after the withdrawal of the drug. In some cases, (12) the drug was discontinued after ten days of treatment with no relapse ensuing for three months, providing the diet was controlled. Clarke (23) and Wrenshall (24), using tolbulamide, in the same dosage as carbulamide, reported encouraging results with the advantage of the absence of any side effects. The conclusion drawn in their papers, provides some positive support to the hypothesis that tolbutamide as well as carbutamide are effective in returning the blood and urine sugar levels to normal only in those diabetic patients who possess a source or a supply of appreciable amounts of endogenous insulin. The unsatisfactory results were obtained in young patients having 'unstable' diabetes and in those with severe diabetes requiring emergency treatment. Both drugs were clinically tried in Iraq (25) on 86 diabetics and good results were reported in 90 per cent of the elderly 'stable' cases.

Whether these oral hypoglycaemics will succeed in establishing themselves in medical practice is at present uncertain. Success, however, may probably be achieved with closely related compounds. Meanwhile, the discovery of these compounds has given a new impetus to the search for oral hypoglycaemics, not only among the sulfonamides but also among other classes of compounds.

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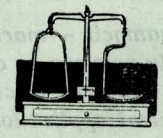

What a reactor costs ....

THE NEW HARWELL REACTOR

The new research reactor at Harwell, England, which has taken two and a half years to construct was declared open by Sir Cyril Hinshelwood, President of the Royal Society, on November 21, 1956. Dido, as the new reactor is known (from the formula for heavy water, D_2O), is the most powerful reactor of its kind in Western Europe. It will develop about ten megawatts of heat at full power and its neutron flux will be about ten to the power of fourteen neutrons per square centimetre per second. The fuel is highly enriched uranium and the moderator is heavy water.

Specially designed experimental holes have been built into the reactor to meet particular experimental requirements. In some of these holes it is possible, for example, to control sample irradiation times very precisely, or to permit the emergence of defined neutron beams. Some holes are to be used to manufacture cobalt-60 at high activity levels for hospital and industrial use in quantities equivalent to about 30 kilograms of radium per annum.

The cost of the reactor was £ 1,500,000, apart from the cost of the fuel and the heavy water. Each charge of 2.5 kg. of fuel. which lasts about six weeks, costs £ 60,000 and the heavy water, which comes from America, costs £ 20,000 a ton; the reactor requires 10 tons.

Excerpt from : Pharm. J., *177,* 420 (1956). *For further details see the Journal.*

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MARK OF TRUE BROAD-SCOPE SYNERGISM

The Significance of Synergism in Antibiotic Therapy

The recent discovery of Sigmamycin — marked by true broad-scope synergism — has ushered in a wholly new era in anti-infective therapy. The first era of antibiosis was that of narrow-spectrum therapy. The second era was realized with the full clinical application of the broad-spectrum tetracyclines.

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THE NEWER ANTIBIOTICS

By **Levon M. Karamanukian B.A, Ph. C.**

Introduction

In screening for new antibiotic-producing microorganisms, many new antibiotics are continually being isolated. Many of these, however have a limited antimicrobial activity. Pharmaceutical firms are continuously investigating to find an ideal antibiotic, or a combination of antibiotics, which will have the following desirable properties : 1. Low toxicity and little or no side-effects; 2. Effective against all bacterial infections, chiefly the cocci; 3. Possess bactericidal action at low concentrations; 4. Able to prevent development of resistant strains of microorganisms; 5. Effective against existing antibiotic-resistant strains of microorganisms. Some of the newer antibiotics show part of these properties, and the search for an ideal antibiotic must go on.

This article in no way claims to cover the whole field of the newer antibiotics that have been clinically tried. But it rather gives a bird's eyeview of the antibiotics recently placed on the market. Additional and complementary information about some of these antibiotics appears in the *Lebanese Pharmaceutical Journal,* Vol. V, No. 1, 1957 (In Press).

Before discussing the individual antiobitics, it will be appropriate to discuss briefly the present trends and difficulties in antibiotic therapy.

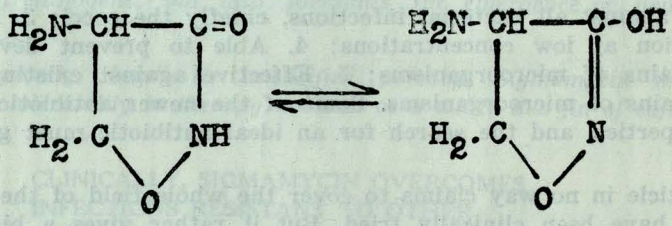
Resistant Microorganisms

Upon prolonged contact with a given antibiotic, originally sensitive bacteria often develop a resistance to it. Already, the emergence of resistant strains of bacteria, especially staphylococci, was a challenge to the medical profession, as shown by the address of Dowling at the first Antibiotic Symposium, 1953 (1). A voluminous literature on this problem can now be found in medical journals (2, 3, 4, 5).

The normal flora of the intestines inhibit the growth of staphylococci. Whenever this flora is removed or greatly reduced by antibiotics, especially broad-spectrum antibiotics such as the tetracylclines, staphylococci will grow unchecked in great numbers. This is particularly serious, if the staphylococci belong to the type resistant to currently used antibiotics, a type often acquired in hospitals. Hospital personnel, however, are thought to be immune carriers of the organisms.

The use of antibiotic combinations in individual patients has helped to delay occurrence of resistance, but has not eliminated it. Many antibiotic combinations have been tried, and a few have been recently introduced. Besides suppressing the appearance of resistant forms of staphylococci, these combinations of antibiotics serve the purpose of obtaining a broad spectrum action and sometimes show synergism (6). The use of antibiotic combinations has been challenged by authorities in the field, who state that in rare instances are combinations of antibiotics of greater advantage than single antibiotic treatment. Further studies in this field seem to be needed. However, two combinations of newer antibiotics can be mentioned here: *Sigmamycin* (Pfizer), a combination containing 67 per cent tetracycline and 33 per cent cleandomycin, seems to show a real synergistic action; and *Cathocillin** (Merck S & D), *Alba-Penicillin* (Upjohn) are combinations of potassium penicillin G and novobiocin.

Cycloserine



Cycloserine

Seromycin (Lilly), *Oxamycin* (Merck S & D).

Cycloserine is a new antibiotic with a wide antibacterial spectrum. It was independently isolated by Harned *et al.* of C.S.C. (7) from *Streptomyces orchidaceus* and by Harris *et al.* of Merck S & D (8) from *Streptomyces garyphalus.*

It is a white crystalline powder soluble in water to the extent of 100 mg.

* *Known as Cathopen in England.*

per ml. It is somewhat unstable in acidic and neutral solutions, but stable and more soluble in alkalies.

It is non-irritating on parenteral administration and has a pleasant taste when administered orally in solution. It is absorbed readily after ingestion, showing up in the plasma within an hour (9). It appears also in the sputum and lung tissue. It is excreted largely by the kidneys, and very high concentrations are attained in the urine.

Cycloserine is active against gram-positive and gram-negative bacteria, and is efficacious against rickettsial infections and certain protozoa.

Clinically it has proved to be an effective antitubercular agent in the treatment of pulmonary, laryngeal and glandular tuberculosis. This antitubercular activity is moreover of great importance, in that pulmonary tuberculosis, resistant to the commonly used antitubercular agents, respond well to cycloserine. Besides, it has been used with success in the treatment of stubborn urinary infections of the upper and lower urinary tract, and of infections of the prostate and the bladder (10, 11). It has no significant value in the treatment of gonococcic infections or in lymphogranuloma venereum, but appears to be effective in the treatment of donovanosis (12).

Toxic manifestations are few, though convulsive seizures in patients and psychotic attacks have been observed, when peak blood levels of the drug are reached.

As an initial dose 250 mg. are given, followed every 12 hours by 250 mg. for a period of two weeks. Manifestations of toxic symptoms stop when the drug is withdrawn.

Framycetin

Soframycine (Roussel).

Framycetin is an antibiotic obtained from *Streptomyces lavendulae, Streptomyces T. 59, Streptomyces Decaris* R. 2103. Chemical analysis of the base has shown it to contain carbon 46.6 %, hydrogen 7.5 %, nitrogen 12.8 % and oxygen 33.1 %. It has a molecular weight of approximately 600. Upon hydrolysis it was shown to contain three groups at least: an amine-containing group similar to neamine, a diamino-hexose, and a pentose (13). The salt used is the sulfate. It is a white odorless powder, soluble in water, insoluble in the usual organic solvents such as alcohol and acetone (14). Due to its basic characteristics, it forms salts with strong acids as sulfuric and hydrochloric and complex crystallizable salts with picric acid. Its salts are stable in powder and in aqueous solutions at ordinary temperatures.

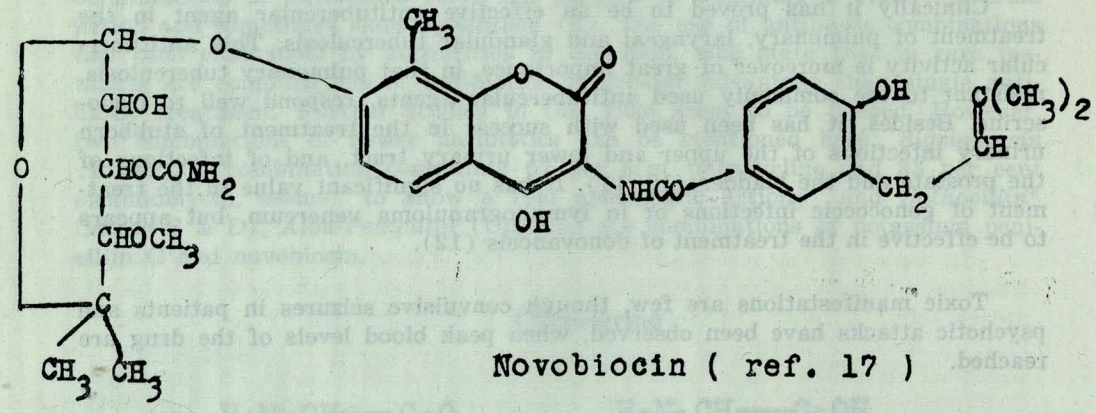
Framycetin has antimicrobial activity, but no fungicidal activity. It is effective against a variety of organisms especially staphylococci and the gram-negative group, including *Proteus* and *Pseudomonas*.

From its activity, this antibiotic is believed to have a place in the treatment of bacterial infections of the intestinal tract, especially in the pre-surgical preparation of the large bowl. It has been successfully used in cutaneous and mucous infections, pulmonary abscesses, bronchial and tubercular asthma.

A total dose of 1 gm. is administered for a treatment, divided over a period of 8 to 10 days.

No evidence of undesirable side effects or allergy has been demonstrated.

Novobiocin



Novobiocin (ref. 17)

Albamycin (Upjohn), *Biotexin* (Glaxo), *Cardelmycin* (Pfizer), *Cathomycin* (Merck S & D), was also known as *streptonivicin* and *cathocin.*

This antibiotic was independently isolated by three pharmaceutical firms Upjohn, Merck S & D, and Pfizer, from different species of *Streptomyces (Str. niveus, Str. spheroides).* Finland (15), and Welch *et al.* (16), demonstrated through studies of the chemical and physical properties of these three antibiotic substances, that they are identical.

The structure of novobiocin has been elucidated by Shunk *et al.* of Merck S & D (17), and Hoeksema *et al.* of Upjohn (18).

Novobiocin is a crystalline acid, having a very light-yellow, to white color, depending on the state of subdivision. It is polymorphic. One form melts at 152-156°C and the other at 174-178°C. It is insoluble in water, but soluble in aqueous solutions of pH 7.5 or above. In its acid-form it is soluble in the commonly employed organic solvents as ethyl and methyl alcohols, acetone, amyl acetate, etc. (19). The dry acid form is stable at ordinary temperatures. But in form of solution, the stability decreases with increase of pH from 2 upwards.

Numerous salts of novobiocin are possible, as the mono- and disodium salts, and the calcium and calcium acid salts. These salts are all crystalline, white and soluble in water.

The bacteria inhibited by novobiocin include strains of *Micrococcus, Streptococcus, Diplococcus, Neisseria, Corynebacterium, Pasteurella, Erysipelothrix* and *Proteus* (20). Among the gram-positive cocci, the staphylococci are the most sensitive. It is not effective against fungi, rickettsiae and the viruses. Many strains of staphylococci, resistant to penicillin, streptomycin and the tetracyclines, are fully susceptible to novobiocin. In vivo novobiocin has been shown to have synergistic bactericidal action (21) when combined with other antibiotics, for example, such preparations as *Alba-Penicillin, Cathocillin,* etc. (see above).

Clinically it has been used effectively for cellulitis, carbuncles, skin abscesses, wounds, varicose ulcers, etc.

It has a low order of toxicity, such as slight gastric disorders and coloring of the plasma and the sclera yellow as if jaundiced.

While it can be given parenterally, it is rapidly absorbed from the gastrointestinal tract, producing high and prolonged blood levels. It is administered orally in doses of 1 gm. initially, followed by 250 mg. every six hours.

Albamycin (Upjohn) should not be confused with *Albomycin.* The latter is obtained from cultures of *Actinomyces subtropicus* and manufactured by the U.S.S.R. pharmaceutical industry; its antibiotic range is mainly against gram-positive bacteria, particularly pneumococci and staphylococci (22).

Oleandomycin

Matromycin (Pfizer), *Romicil* (Roche).

Oleandomycin is a basic antibiotic obtained from the culture media of *Streptomyces antibioticus.* The anhydrous hydrochloride has a melting point of 125-128°C. The analytical data approximate the empirical formula $C_{37}H_{67}NO_{13}$. HCl (23).

A dihydrate of the antibiotic is stable at room temperature, and aqueous solutions of the base do not show loss of antibiotic activity after standing for 24 hours at room temperature at pH 2.2, 5, 7 and 9.

It has a spectrum similar to erythromycin. In vitro tests show that it is effective principally against gram-positive bacteria, as well as against gram-negative bacteria. Many resistant strains of staphylococci are very sensitive to this antibiotic.

No cross resistance has been reported with penicillin, streptomycin, and the tetracyclines.

Clinically it is used for respiratory infections, including pneumonia, lung abscesses, and bronchitis; sinus infections and infections of the skin. Combined with tetracycline, it seems to exert a real synergistic action as in *Sigmamycin* (See above).

Oleandomycin is administered in doses of 250 mg. every six hours.

Spiramycin

Rovamycine (Specia).

Spiramycin is a broad spectrum antibiotic obtained from *Streptomyces ambofaciens*. It is an amorphous base, optically active, with limited aqueous solubility. It is thought to be (24) a mixture of at least three basic organic compounds, with the empirical formula of C22-24 H34-44 O7-8N. The true formula seems to be a multiple of the above approximate formula. The base of this antibiotic is a yellowish, bitter powder, with a slight odor. It is very soluble in methyl and ethyl alcohols, chloroform and benzene, but insoluble in cyclohexane and petroleum ether. Its sulfate and hydrochloride are soluble in water.

Spiramycin is effective against gram-positive organisms and Neisseria. Staphylococci do not show resistance to it.

It is used successfully in cutaneous infections, infected wounds, furunculosis, acute cases of tonsilitis, etc. (25,26).

It is active orally, and does not irritate the gastro-intestinal tract. It is characterised by its lack of side reactions and non-toxicity.

The usual active dose is about 2 gm. per day.

Vancomycin

Vancocin (Lilly).

Vancomycin is an antibiotic obtained from *Streptomyces orientalis*. It is an amphoteric compound soluble in dilute acidic solutions and relatively insoluble in lower alcohols and other common organic solvents. It has several ionizable groups, as carboxyl, amino, and possibly phenolic functions (27). The average molecular weight is in the range of 3500 plus or minus 200. It contains about 7 per cent of nitrogen and 16 - 17 per cent of carbohydrate.

Vancomycin hydrochloride is a white solid, very soluble in water, moderately soluble in aqueous methanol, and insoluble in higher alcohols, acetone or ether. The base can be precipitated from the hydrochloride or other salts, by the addition of sodium hydroxide solution but this tends to discolor the product.

Vancomycin is bactericidal in nature. It is particularly effective against gram-positive organisms and spirochetes.

Vancomycin has virtually no toxicity, and microorganisms develop less resistance to it. The pH of the medium, and the presence of a variety of salts, amino-acids, reducing agents, vitamins, etc. do not alter its activity (28).

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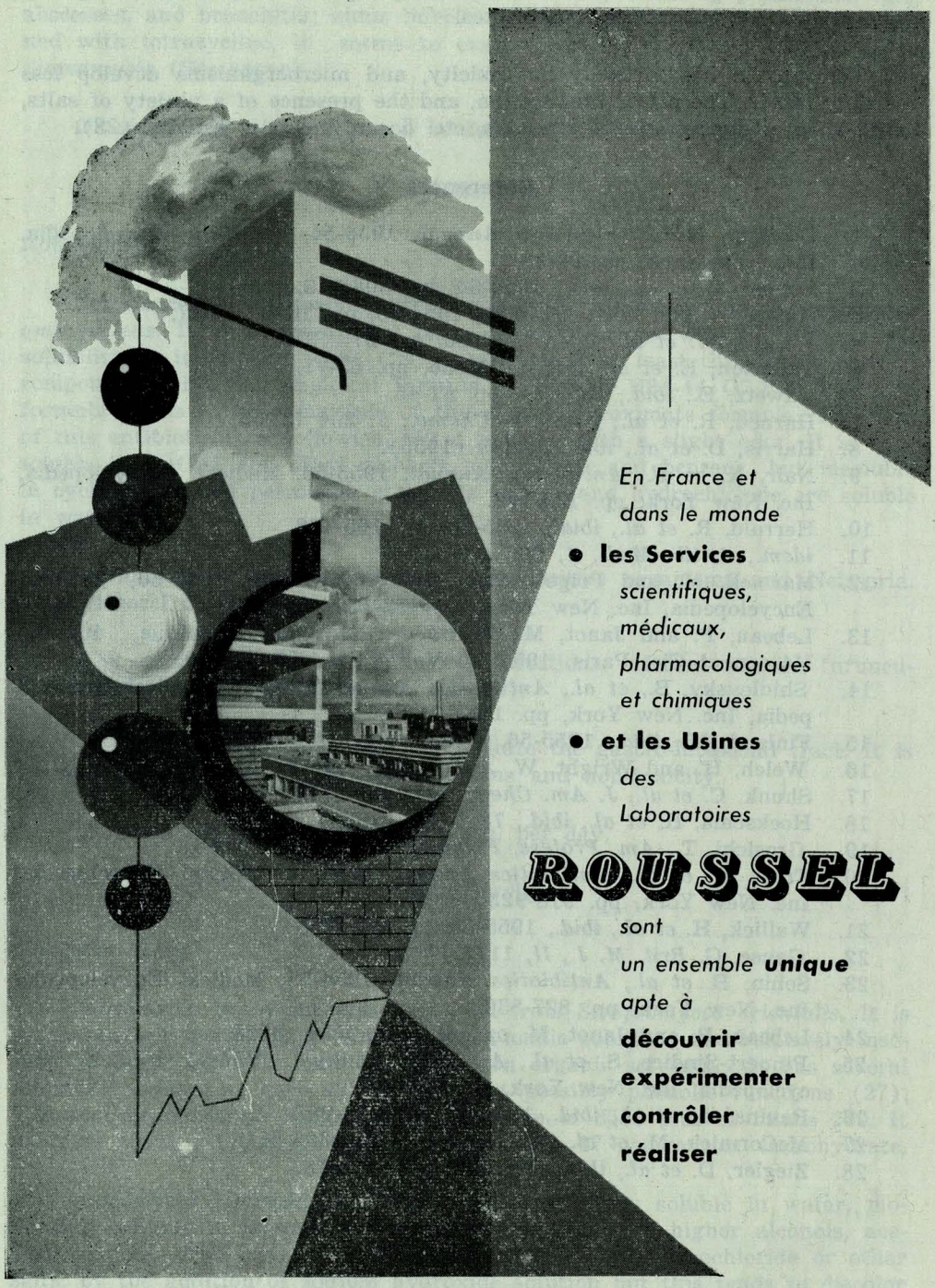

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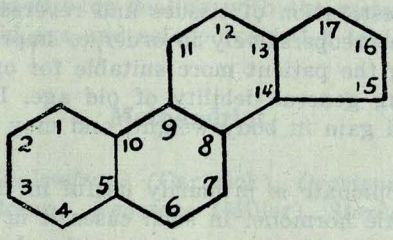
ANABOLIC STEROIDS

By **Shibli Issa Bayyuk B.Sc. (Pharm)**

It is well known that most plant and animal fats contain an unsaponifiable portion consisting of hydrocarbons and solid alcohols. The solid alcohols are called sterols (stereos = solid; ol = signifying an alcohol). Sterols of animal origin are called zoosterols, those from plants phytosterols and those from fungi and yeast mycosterols. Bile acids, antirachitic vitamins, sex and certain adrenal hormones, cardiac aglycones and some sapogenins are characterized by having a structure similar to sterols and hence are called steroids. The term *sterids* includes both sterols and steroids. All of those compounds are considered to be derivatives of the parent hydrocarbon cyclopentanoperhydrophenanthrene.



Cyclopentanoperhydro-phenanthrene

New anabolic drugs, which belong to this group of compounds and which enhance the building of human tissues in many wasting diseases and surgical conditions, have been synthesized. The problem of combating tissue wasting in certain diseases and surgical conditions has not been solved yet. The new synthetic anabolic steroids, however, mark a great progress in the solution of this problem.

The ability of the body to build tissues is quite complex and not well understood. It consists chiefly of the building of muscle tissues from food proteins, as these tissues are destroyed by the normal body activity. A normal healthy body on a normal diet has the capacity of replacing such tissues; in fact the amount of proteins ingested is more than what is required for anabolic purposes. However, in serious diseases and in major or surgical conditions the body is under unusual demands in regards to its protein synthesis. Under such conditions the body loses more proteins than it replaces from diet, resulting in

a negative protein balance. Moreover the poor appetite of such patients makes conditions still worse. Any drug that reverses this nagative protein balance will effect a better and quicker recovery. Therapy with such anabolic drugs should be accompanied by a well balanced diet.

Testosterone Propionate

Andronate (Central), *Masenate* (Schieffelin), *Neo-Hombreol* (Organon), *Orchisterone*-P (Frosst), *Oreton* (Schering), *Pantestin* (Richter), *Perandren* (Ciba), *Sterandryl* (Roussel), *Synandrol* (Pfizer), *Synerone* (Pitman-Moore), *Testodet* (Merck S & D), *Testoviron* (British Schering).

Testosterone propionate is the propionate of 4-androsten-17 *beta*-ol-3-one. It consists of odorless, white or creamy white crystals. It is soluble in alcohol but insoluble in water, stable in air but sensitive to light. Testosterone is the male hormone occurring naturally in the human testes; it is also synthesized from cholesterol.

In addition to other clinical uses, testosterone propionate is sometimes employed for its somatic effects. Protein losses following severe injury, acute illness, and major surgery may be so extensive as to delay the patient's recovery. Administration of adequate amounts of proteins and testosterone propionate favours quick restoration of tissues and reversal of negative protein balance. It is also given preoperatively in order to improve the synthesis of body proteins thus making the patient more suitable for operation. The drug is also valuable in combating general debility of old age. In such cases it promotes protein synthesis and gain in body weight, and may delay the natural decline.

Testosterone propionate is primarily useful in the treatment of deficiency or absence of the male hormone. In such cases it is beneficial as long as it is used. In hypogonadism and after castration the drug acts as a replacement therapy; added to this is its great importance in treating cryptorchism (1). It is also useful for controlling menorrhagia, metrorrhagia, postpartum inhibition of lactation, and as a palliative in the management of metastatic breast cancer.

Therapy with testosterone is not devoid of shortcomings such as hypercalcemia, edema, virilizing effects. Consequently, patients should be watched carefully.

The dose varies from 10 mg., 2-6 times weekly to 300 mg. weekly, depending upon the condition to be treated. The drug is available in the form of 10 ml. vials containing 25 and 50 mg. per ml. and in 1 ml. I.M. injections containing 10 and 25 mg. per ampul.

Methyltestosterone

Glosso-Sterandryl (Roussel), *Metandren* (Ciba), *Neo-Hombreol M* (Organon), *Oraviron* (British Schering), *Orchisterone-M* (Frosst), *Oreton-M* (Schering).

Chemically, methyl testosterone is 17-*alpha*-methyl-4-androsten-17 *beta*-ol-3-one. It consists of odourless, white or creamy white crystals, soluble in alcohol but insoluble in water, stable in air but sensitive to light. It has the same properties and uses as those of testosterone, but has the advantage over the latter of being effective upon oral administration. It can be used for the treatment of any of the conditions for which testosterone propionate is indicated (2). In brief, it has the same qualitative effects of testosterone propionate and is used to exert anabolic and androgenic activities. When immature infants are given this drug they regain their birth weight more rapidly. The usual dose is 5 mg. orally, but may vary according to the purpose for which it is to be used.

Economy in the dosage of methyltestosterone is effected by sublingual administration because it is absorbed directly into the blood stream. Dosage by this route is half that of the oral one.

Methyltestosterone is available in sublingual tablets containing 5 and 10 mg. each, and in oral tablets containing 10 and 25 mg. each.

Orchisterone-M Compound (Frosst) consists of tablets each containing 10 mg. methyltestosterone, brewer's yeast concentrate, thiamine hydrochloride, riboflavin, niacinamide, pyridoxine hydrochloride, calcium d-pantothenate, vitamin D and ascorbic acid. The combination of the B complex factors enable the liver to maintain its capacity for dealing with the metabolism of this steroid. In treating debility of old age and osteoporosis, 1-3 tablets are given daily.

Methandriol

Androdiol (Carnrick), *Diolandrone* (Carnrick), *Drostene* (Ascher), *Methostan* (Schering), *Nabadial* (Breon), *Neostene* (Miller), *Stenediol* (Organon).

Chemically methandriol is 17 *alpha*-methyl-5:6-androsten-3 *beta*, 17 *beta*-diol. This synthetic steroid possesses the protein anabolic action of the androgens with little virilizing effect. On administration it causes retention of nitrogen and deposition of body proteins. This drug proved to be of great value in the treatment of nutritional dwarfism where it stimulates growth in children who are below average in weight and height. Methandriol is also used in diseases accompanied by protein loss, negative nitrogen balance, or failure to build body proteins (3).

Methandriol is given to produce palliation in inoperable cases of breast cancer where an agent is required to possess the activity of testosterone and estrogens but without their virilizing and other toxic effects. Methandriol has a moderate protein anabolic action. It produces a sense of well-being. It does not bring about undesirable biochemical changes that accompany testosterone therapy (4). The euphoria it produces is less than that of testosterone (5).

The drug is administered in doses that vary with the purpose for which it is to be used. The anabolic dose ranges from 12.5-25 mg. daily, and can be

administered orally or intramuscularly. Methandriol is available in aqueous suspension and as oral tablets. The suspension consists of fine crystals of the steroid in an aqueous vehicle rendered isotonic with dextrose and contains 0.45 per cent of phenol as a preservative. It is available in 10 ml. vials containing 25 and 50 mg. per ml., in 10 and 25 mg. sublingual tablets and in 10 and 25 mg. oral tablets.

Covisten (Organon) consists of tablets each containing 5 mg. methandriol, vitamins A, B complex, B12, C, D3, niacinamide, folic acid, iron, calcium, manganese, magnesium, and phosphorus. It is a useful supplement as an anabolic tool. The adult dose is 1-2 tablets once or twice daily; for children half this dose is adequate.

Norethandrolone

Nilevar (Searle).

Norethandrolone is 17 *alpha*-ethyl-17-*beta* hydroxy-19-norandrosterone. It is the first practical steroid for promoting protein anabolism. It is primarily anabolic for the biosynthesis of proteins. It has an anabolic activity at least equal to that of testosterone and has one sixteenth the androgenic effect of that hormone. It is effective orally. It acts by promoting a positive balance of nitrogen, potassium, phosphorus, and other electrolytes in the ratio required for the synthesis of body proteins. Norethandrolone may possess a central action which is neither narcotic nor tranquilizing (6).

When given norethandrolone, patients show prompt reversal of negative protein balance and great improvement in appetite and sense of well-being, thus effecting protein anabolism. This drug proved to be useful clinically and is indicated in the following cases:

a. in surgical, traumatic, and other disease states in which protein anabolism is needed for quick recovery.

b. in preparing patients for major surgery when they are not in a satisfactory condition to undergo such operations.

c. in hastening recovery after major surgery and acute illness such as pneumonia, poliomyelitis, burns, and the like.

d. in improving the nutritional state of patients suffering from debilitating diseases such as cancer, leukemia, tuberculosis, etc.

e. in assisting in the development of premature infants.

Although norethandrolone produces a sharp improvement in appetite and sense of well-being in debilitating diseases yet it is devoid of any direct effect on the primary disease. It only helps the body to do what it normally would without adding any stress (6). Given preoperatively as well as during the recovery stage, norethandrolone makes it possible to avoid the catabolic phase which is a factor in surgery complications and in slow recovery. It has very

minor undesirable side effects and rarely it produces masculinization effects. The cause of the edema, which sometimes develops, is not known: either it is due to the drug or due to the nutritional state of the patient (6).

Norethandrolone is contraindicated in cases of prostatic cancer, and since it possesses some androgenic action it should be used with caution in cases where androgens are contraindicated. Because it stimulates the protein metabolic activity of the liver it should be used with care in severe hepatic damage or hepatic metastases.

The drug is available in uncoated unscored tablets containing 10 mg. each.

Stanolone

Androlone (National Drugs), *Neodrol* (Pfizer).

Stanolone is androstane-17 *beta*-ol-3-one. It is the dihydro derivative of testosterone. It consists of white, odorless, crystalline powder, soluble in alcohol but insoluble in water.

Stanolone was found to possess anabolic and antitumor effects comparable to those of testosterone but with much less androgenic action. This steroid is used clinically for its anabolic effect and to exert palliation and tumor suppressing action in inoperable cases of breast cancer. It has less virilizing effects than testosterone. It is also used postoperatively in cases of metastatic breast cancer. Stanolone is of great value in treating patients debilitated by acute or chronic diseases. Although stanolone proved to be equal to if not superior to testosterone in producing objective and subjective improvement with less virilizing effect, yet stanolone is not as good as testosterone in the management of metastatic mammary cancer. Its use must be weighed against its virilizing and metabolic effects and should be subject to the precautions and contraindications of other androgenic compounds (7).

Stanolone is administered intramuscularly. Like free testosterone, an aqueous suspension of microcrystalline stanolone should be expected to produce a less intense and more prolonged activity than an equivalent oil solution of its propionic acid ester. Stanolone is given intramuscularly in doses of 100 mg. in cases of breast cancer. This dose is continued as long as the patient shows improvement or until unable to tolerate androgenic therapy. Lower doses are better tolerated but are less effective (8).

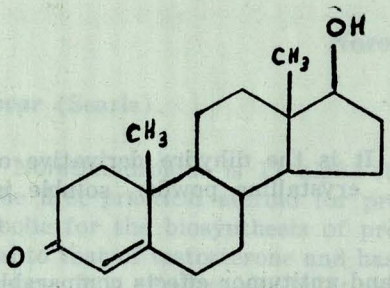
Stanolone is available in 10 ml. vials containing 50 mg. per ml. and consisting of crystalline steroid suspended in isotonic sodium chloride, and preserved with methyl and propyl paraben.

Halotestin

Chemically, halotestin is 11 *beta*-17 *beta*-dihydroxy-9 *alpha*-fluoro-17 *alpha*-methyl-4-androstene-3-one.

It is an oral testosterone substitute which is ten times as potent as testosterone in androgenic activity and twenty times in anabolic action. It is still under investigation by the Upjohn Co. (9).

This and another related steroid were found to equal methyltestosterone in androgenic effect and to be three times as potent in stimulation of muscle growth. The two new steroids were produced by chemical-microbiological synthesis by a team of workers at the Upjohn Company (10). If these tests materialize to something significant halotestin will be used for the treatment of male hormone deficiency and as an anabolic drug.



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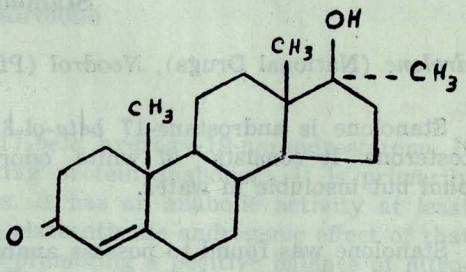

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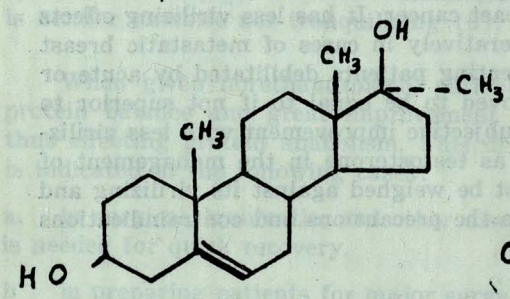
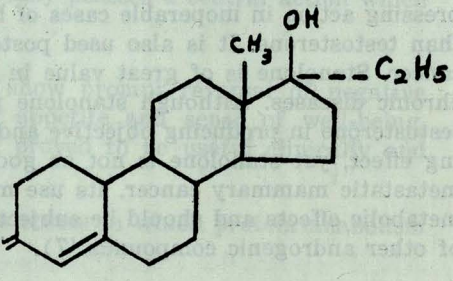
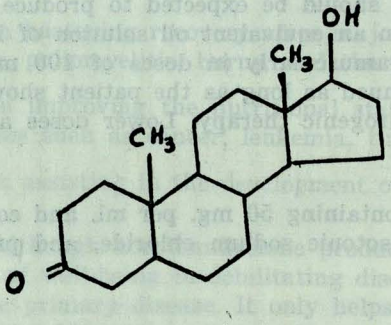


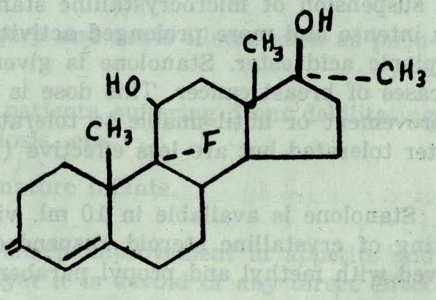
Methandriol



Norethandrolone



Stanolone



Halotestin

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Chloroquine as a hair bleach

«Bleached Hair appears to be one of the side effects of treatment with chloroquine. Widely used in skin diseases — particularly for the treatment of chronic discoid lupus erythematosus, because it appears to be at least as effective as mepacrine without discolouring the skin — chloroquine has been recorded as considerably lightening the hair of many patients, especially blondes.

Fortunately many of the bleached patients seem to be highly satisfied with their new appearance. The attitude of one 30-year-old lady who was being treated with chloroquine for rheumatoid arthritis was changed from bitter resentment to cheerfulness and optimism, according to Dr. H. Fuld, in a letter to the *British Medical Journal.* Her hair had been universally bleached, including the eyebrows, and she considered it to be a great improvement. Another woman, «a dark blonde,» was converted into a very fair one within five months of commencing chloroquine. She was so pleased with her apparent rejuvenation that she was disappointed when the drug was cut down.

However, not everybody likes the albino type of depigmented hair, and this side effect of chloroquine should be borne in mind. Is it possible or desirable, we wonder, to produce a harmless drug which would produce systemically the effect of the conventional hair bleach ?»

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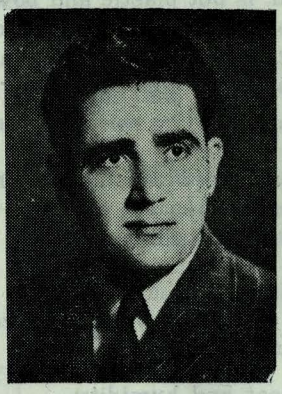

MODERN ASPECTS OF TABLET COATING AND COMPRESSION

By **Uthman Kanafani Ph. C.**

Sugar Pan Coating

The very slow and tiresome process of coating tablets in a revolving pan has been experienced for several years. Attempts to cut short the time that is required for pan coating began towards the end of the last century. Pan coating requires skill and much experience. It can be briefly described as adding a sugar solution to the tablets, allowing them to rotate in a pan until dry, adding another coat, allowing it to dry, and so on until sufficient coating has been built up. The coating is usually started with a thick syrup after which a dilute one is applied. This produces a dull sugar coating, and so the tablets are transferred to another pan for a polishing process.

Disadvantages of Pan Coating

Whitehouse (1) reviews the following disadvantages of pan coating :

1. It is relatively expensive because of the length of the process and the skill that is required.

2. If the tablets contain substances that are affected by moisture, they must be protected against the moisture of the coating solution, e.g. by being first coated with a varnish or a heavy gelatin solution before the sugar coat is applied. This protective coat frequently delays disintegration of the finished tablets.

3. Tablets intended for pan coating are usually pressed comparatively hard since they have to withstand fairly vigorous rolling and tumbling in the coating pan. This hard pressing may also tend to delay disintegration.

Polyethylene Glycol in Tablet Coating

It was found out that the lengthy operational time needed for pan coating is due to the fact that sugar, the basic material used, is not plastic and powders upon abrasion. Thus the smoothing process is prolonged. If a material could be selected which is plastic enough, even when dry, to spread over the tablets without being roughened, the tablets would be easier to coat uniformly and elegantly.

In addition, a material to be used in tablet coating (2) should preferably be :

1. relatively non-toxic,

2. white or colorless, so as to allow the use of a wide variety of colors common to all tablets,

3. a solid, stable to the effects of air, light, heat and humidity,

4. easily applied to the tablets without an unusually complicated apparatus or involved techniques,

5. chemically non-reactive to avoid any possible incompatibility,

6. rapidly soluble in the gastrointestinal tract,

7. soluble in volatile solvents such as alcohol, to reduce the drying time of the coating and to prevent attack upon the water-soluble components or the disintegrating agents commonly found in tablets,

8. cheap, so that its use could be economically feasible,

9. practically odorless and tasteless.

Gans and Chavkin (2) experimented with polyethylene glycol as an alternative coating material. With this new material, tablet coatings are produced which are stable, durable, soluble and as evenly colored as sugar coatings. The time required for the application of this coating is less than half that spent in sugar coating, and since no water is used in the coating solutions, the need for protective coatings is eliminated. The tablets do not lose their luster when handled as do the ordinary sugar-coated tablets.

Carbowax 6000* (polyethylene glycol 6000) proved to be non-hygroscopic, relatively non-toxic, and its solubility in a variety of common solvents makes the new process flexible. A warm 25 per cent alcoholic solution of the carbowax, applied so as to just cover the tablets, deposited a thin, translucent, adhesive film which did not chip or crack off. In building up the tablet coat, a warm 50 per cent alcoholic solution of the carbowax gave the best results. The use of a warm 40 per cent colored alcoholic solution resulted in the deposition of a smooth, evenly distributed color coat. Brittleness of the finished coat

* *Trademark of the Carbide and Carbon Chemicals Corp., New York.*

was eliminated by placing the tablets in an oven at 50-55°C. for three or more hours and subsequently allowing the tablets to cool to room temperature. This process can be applied to standard concave as well as deep concave compressed tablets.

The coating was carried out with laboratory size, bench type, copper coating pans. The final step of polishing the tablets was accomplished in the usual manner, by two or three applications of a wax solution composed of :

White Wax	14 Gm.
Carnauba Wax	28 Gm.
Carbon Tetrachloride q.s. ad	1000 ml.

This solution was applied warm to the tablets placed in a canvas-lined pan.

Tests for solubility, mechanical strength, and resistance to humidity were performed on such tablets and satisfactory results were obtained in all cases.

Cellulosic Tablet Coating

Doerr *et al.* (3) tried hydroxyethyl cellulose and sodium carboxymethylcellulose as alternatives to sugar coating. These cellulose derivatives were used in 5 per cent solutions in alcohol (50 per cent) after a preliminary protective coating of shellac was applied. It was claimed that this coating technique reduces the processing time, that no changes in the traditional equipment are required, that the product is smooth and polished and has almost the original tablet size, shape and weight-variation. The polishing solution consisted of white wax and carnauba wax in carbon tetrachloride. Disintegration of the tablets was found to be prompt. The cellulosic coatings were superior to sugar coatings under controlled conditions of temperature and high humidity. Ageing tests indicated a good shelf life and the coatings withstood infra-red heat and a durability test better than any of the commercial coatings compared with them.

Zein Tablet Coating

Previous work using hydroxyethyl cellulose and sodium carboxymethylcellulose had indicated that most of the reasons for coating tablets could be satisfied with a very thin film, and that the use of a thin film offered many advantages over the traditional sugar coating.

Zein, the alcohol-soluble protein of corn, is considered to be non-toxic and suitable for use in tablet coating (4). It is also resistant to microbial attack.

In a typical experiment Winters and Deardorff (5) used a coating fluid which consisted of 15 per cent zein, 3 per cent polyoxyethylene sorbitan monolaurate, and 82 per cent of isopropanol (91 per cent v/v). A total of 5 coats were applied. There was no need for a protective coating, dusting powder, or syrup. The tablets and coating fluid needed no warming before treatment.

Tests were carried out comparing tablets so treated with a variety of uncoated and sugar-coated tablets. The following results were obtained : When compared with several coated tablets, the zein-coated tablets seemed to exhibit greater resistance to abrasion, high humidity and high temperatures. There was also a decrease in disintegration time. When compared with uncoated tablets, the zein-coated tablets showed good masking of unpleasant odor and of unpleasant taste (Zein-coated aspirin can usually be held in the mouth for 2 minutes before the taste of aspirin is noted) ; they also showed an increase in luster, greater resistance to abrasion, and a slight increase in disintegration time.

These zein-coated tablets also retained their original appearance, and the grooves and emblems initially present on them. There was very little change in weight and size, and this made them easy to swallow.

Considering other factors, there was also a reduction in coating time, cost and equipment. Such zein-coated tablets can easily be colored and polished in the usual manner.

Press Coating of Tablets

To overcome the disadvantages of the long, conventional method of pan coating, it was thought of coating tablets by compression. This is a process in which a suitable coating is pressed dry on a ready formed tablet, and hence is sometimes referred to as *dry coating.*

According to Whitehouse (1), the first attempts at press coating started in the last century. In 1896 a British patent was granted to Noyes of U.S.A. for a tablet machine that was intended to carry out mechanically the process of tablet coating by sandwiching a tablet between two layers of dry sugar and compressing to produce a capsule of sugar encasing the tablet. The machine resembled somewhat a rotary tablet press of the present time, having a revolving head containing upper and lower punches, and a die plate situated between them. A small hopper (6) feeds sugar into the concave end of the lower punch positioned just below the die plate. As th die table revolves, the lower punch is carried adjacent to a slope where it stops. At this point a tablet is allowed to drop on to the sugar by falling down the slope, the movement of the tablet being controlled by a reciprocating finger. As the die table revolves, the lower punch is allowed to drop sufficiently to allow for more sugar to be added through a second small hopper. Compression (1) is effected, however, by a hammer that hits the upper punch thereby pressing a skin of sugar around the ready-formed tablet.

In 1955 another British patent (1) described the idea of pressing a coating consisting of sugar, glucose, flavors and colors on to chewing gum. Mention was made of the fact that although the core tablet should be fairly centrally placed on the lower layer of sugar before being covered by the upper layer, that was not very important, provided the core tablet was convex, since as

the core was relatively thick in the center and thinner towards the edges, a good centering of the disc occurred automatically during the compression step. The punches used for compression were concave. The claim was limited to the production of chewing gum; no special claim was made for medicinal tablets.

Some press coated tablets have not been a commercial success because of the difficulty encountered in centering the core tablets. In 1937, Kilian of Germany obtained a British patent (1) that was directly concerned with coating tablets by compression. « Kilian, however, emphasized particularly the importance of the exact centering of the cores relative to the coating, disagreeing with the theory of automatic centering. The tablets produced by his process were not conventional in appearance. On one side of the faces of the core tablet there was a small circular depression, extending for about one third of the thickness of the tablet, which served two purposes. First, it was utilized in the coating process, a core rod in the upper punch engaging the depression to center the core tablet; and second, it served to fix the coating to the core tablet. Unfortunately the depression persisted in the coated tablet and produced an unusual looking tablet. »

As an alternative to this, a centering device has been designed later that takes over after the core tablet has been fed into the machine and centers it, before a second layer of coating granules is placed on top of the core tablet.

Messrs. Evans Medical Supplies Ltd., in whose factory the principles of the *Prescoter* machine were elaborated (6), claim that an interval between the preparation of the cores and coating them is desirable and often necessary for the following reasons :

1. Some core tablets need to be « seasoned » for a day or two to attain dimentional stability before being coated,

2. Certain tablets for export to tropical countries require a sub-coat of varnish before being coated,

3. Analytical control of the cores can be undertaken before coating, and thereby possible loss of material can be avoided,

4. Greater scope is offered for experimentation with new methods and techniques of pharmaceutical presentation,

5. There is no significant sacrifice of speed of production to offset these advantages.

The *Prescoating* technique (7) of coating tablets, devised by Evans Medical, has been applied to produce *Ferrous Sulfate Compound Tablets* B.P.C. with a virtually tasteless white coat, under the name *Presfersul.* The tablets have a maximum disintegration time of 15 minutes.

The *DryCota* machine, manufactured by Manesty Machines Ltd., serves two purposes at the same time, namely tablet making and coating. In this

method of coating (6), the core and coated tablet are made in one cycle of operations. As each core tablet is made, it is collected by a « transfer unit » and placed into a second die where the coating process is carried out. The makers point out that this process has the advantage of avoiding contamination and of allowing soft cores to be used.

The *DryCota* consists essentially of two rotary machines coupled together and driven by one single motor. The first part of the operation cycle is to make the core tablets. It is a normal tablet-making process except that as each finished tablet rises in the die, it enters an inverted cup, instead of being ejected out. The cup is held above the die, and once in the cup, the tablet stays there until it is deposited inside a second die which is previously fed with a predetermined amount of sugar or other coating material. As each tablet is carried to the second die, it passes over a suction device which removes any loose powder that may have adhered to it. A second filling of the coating material is fed into the second die, and then the contents of the die are compressed by punches, and the coated tablets are ejected. In the event of a core tablet not being picked up by the transfer unit, it would be scrapped off the die table into a small container. Any finished tablets that do not contain a core tablet are automatically rejected.

Advantages of Dry Coating

The advantages of dry coating may be summarized as follows (1, 8, 9) :

1. immediate production of small batches,

2. general production : up to 50 per cent saving in time production as against panning,

3. materials affected by moisture can be satisfactorily coated, such as aspirin, penicillin, etc,

4. materials other than sugar can be used for coating, such as chalk and saccharin with talc, gum and stearates,

5. disintegration can be better controlled,

6. skilled labor is not necessary,

7. handling is reduced considerably,

8. coloring is a simple matter; it can be applied in one operation, and not in several stages as in pan coating,

9. polishing is not required,

10. product can be marked with name and strength of medicament, or with supplier's name or trademark,

11. enteric coating can be applied on the core tablets, with accurate control over the thickness of this coating and the amount of dosage to be put in it,

12. additional coatings containing active drugs may be provided to present otherwise incompatible substances in a single tablet.

The use of the *DryCota* (8) for enteric coating seems to show promise, and the use of less hygroscopic materials than sugar will assist in making tablets more suitable for use in tropical countries where ordinary sugar-coated tablets frequently fail.

Multiple Compressed Tablets

Multiple compressed tablets (10) to make possible the combination of pharmaceutically incompatible ingredients in a single dosage form have been introduced by Sharp and Dohme, Division of Merck and Co., in such products as *Co-Deltra* and *Co-Hydeltra.* These products contain prednisone and prednisolone, respectively, in the cores of the tablets, and are surrounded with an outer coating, containing aluminum hydroxide gel and magnesium trisilicate. The purpose of the combination is to coat the intestines with the antacids before the main therapeutic agent is released so that the hyperacidity which would be caused by the application of either prednisone or prednisolone alone, does not develop. The single dosage form for both types of ingredients makes for greater efficacy and convenience of administration as well as the masking of an unpleasant taste.

Antrenyl Duplex tablets, Ciba, are also multiple compressed but for a totally different reason. Antrenyl Duplex is based on the principle of the "two-stage" action, namely a rapid onset of effect, and a more prolonged duration of action. This is accomplished by having an inner core containing 5 mg. Antrenyl which is coated with an acid-resistant lacquer membrane, and an outer layer containing a second dose of 5 mg. Antrenyl. The outer layer dissolves at once in the stomach, and the first dose is rapidly absorbed, while the acid-resistant membrane, on the other hand, is not broken down. Hence the contents of the inner core are only released several hours later in the intestine. This insures both rapid onset and prolonged duration of action.

Lentérules de Gardenal, Specia, is a new pharmaceutical form of phenobarbital tablets designed to lengthen the active period of orally ingested phenobarbital. The *Lentérule* is a tablet made of several dissimilar granules whose active ingredients are covered with a synthetic coating of varying thickness for each granule. The thickness of this coating has been planned to insure a more or less rapid dissociation of the granules when submitted to the action of the digestive juices. The active ingredients of the granules are thus released very gradually into the body.

Another form of medication that is designed to produce immediate as well as prolonged action is the *Spansule.* The *Spansule* is a capsule in which the drug is distributed among many tiny pellets with varying disintegration times. By this means a smooth, uniform and sustained therapeutic effect is achieved over a period of ten to twelve hours with just one oral dose. The first drug to be presented in *Spansule* form was phenobarbital. That was done by Menley and James, Ltd. for Smith, Kline and French International Co., owner of the trademark *Spansule.* Dexedrine Spansules were later manufactured by the same firm.

Other trade-marked forms of tablets are the *Extentabs,* Robins. These are extended action tablets which release the equivalent of one dose immediately, and gradually and uniformly release additional medication over 8 to 10 hours.

The *Repetabs* of Schering are double-layered tablets with an outside layer providing immediate release of the medication and an inner core coated for delayed release of medication.

The *Filmtabs* of Abbott, however, are tablets with a tissue-thin film coating that permits rapid disintegration in the stomach.

Multi-Layer Tablets

Multi-layer tablets (9) are usually made with two or three layers of material. Pharmaceutical firms are now developing several new products utilizing the special capabilities of the new multi-layer tablet presses.

Multi-layer tablets are also useful for incompatible ingredients and can be made by two basic methods. The first is the single-compression method where the die of the rotary press is filled with different materials in successive layers, one on top of the other, and the multi-layer tablet is formed by pressing all the layers together with one single compression. With this method the weights of each layer can be held to a variation of about 2 per cent and the separation lines between the layers tend to be a little irregular. This method is satisfactory only where very accurate weight control and clean layer-separation are not too essential.

The newer method is called the individual layer-compression method, where each layer of material is filled and pressed separately. Another layer is pressed over it and so on. The advantages of this method are:

1. clean straight-line separation of each layer of material,

2. more accurate weight control of each layer down to a variation of 1 per cent or less,

3. a quality control check can be performed on each individual layer.

Hence, this individual layer-compression method is very useful for multi-layer tablets where extreme accuracy and good quality control are essential.

While the individual layer-compression machine is in operation, control checks can be easily made. By pressing a lever, the first layer in the die, or the first two layers in the case of three layer tablets, can be automatically ejected so that the weight can be checked. The weight of the final layer can easily be obtained by subtracting the weight of the first layer, or the first two layers, from the weight of the finished multi-layer tablets.

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.... a common ailment ....

... «Even today, 'private' prescriptions are being supplied at less than cost — not through any intentional benevolence on the part of the pharmacist, but because, traditionally, he has priced on an empirical basis, instead of taking into account each of the factors, including a carefully determined amount to cover overheads, that go to make up the total value of a bottle of medicine or other preparation ....»

Editorial — December The First
Pharm. J., *123,* 419 (1956).

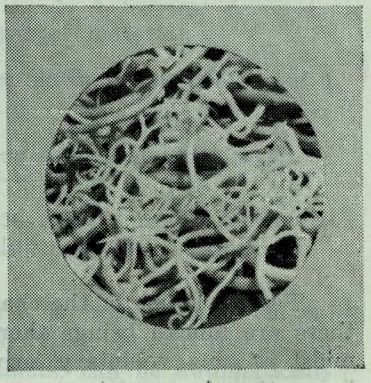
Service is one of the chains by which society is bound together. Wherever there are human beings there are opportunities for service .... And in the midst of this voluntary service to the community, deep in every activity, looms the pharmacist.

R. A. Kuever,
Am. J. Pharm. Ed., *5,* 605 (1941)

Children like *it*– worms don't

One dose of 'Antepar', the pleasant tasting elixir of piperazine citrate, is usually sufficient to eradicate *roundworms*, a week's treatment to clear *threadworms*. Effective without fasting, purging or supporting measures, 'Antepar' acts by paralysing the worms—they are then expelled by normal peristalsis.

'Antepar' Elixir is supplied in bottles of 1 fl. oz., 4 fl. oz. and 20 fl. oz.



'ANTEPAR' BRAND ELIXIR

BURROUGHS WELLCOME & CO. *(THE WELLCOME FOUNDATION LTD.)* **LONDON**

Agents for Lebanon: ABELA FRÈRES, B.P.45, BEYROUTH

THE NEW PHARMACY LAW IN IRAQ*

Iraqi Act. No. 86 / 1956, June 21, 1956, Regulating the Practice of Pharmacy and the Commerce in Drugs and Poisons **

Article I. Definitions.

The following expressions, as used in this Act, denote the meaning given opposite each :

The *Minister* is the Minister of Health.

The *Association* is the Medical Professions Association.

The *Health Authority* is the Minister of Health or his authorized delegate.

The *Inspector* is any physician or pharmacist appointed to check on the implementation of this act.

The *Profession of Pharmacy* is the art or practice of preparing and preserving drugs, and of compounding and dispensing medicines for oral, parenteral or external use or for use as an enema, in the treatment of man or animal or their protection from disease, and of making available any other material possessing the function of a drug.

The *Pharmacy* is the place where prescriptions are filled and where drugs, chemicals, poisons and ready-made preparations are prepared and dispensed in retail.

The *Proprietaries* are drugs or preparations which contain or are described to contain one or more substances possessing medicinal properties for the cure, alleviation or prevention of diseases of man or animal or are used for any other medicinal purpose; and which have been previously prepared and packaged to be sold or offered for sale to the public for oral, parenteral or external use or use by enema; provided such drugs or preparations are not official in any of the recognized pharmacopœias in Iraq.

The *Pharmacopœial Preparations* are drugs and preparations official in the recognized pharmacopœias in Iraq.

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* *Translated from Arabic by* Prof. Charles Abou-Chaar, *Amer. Univ. Beirut.*

** *Journal of the Iraqi Medical Professions, 4,* pp, 89 — 102 *(Arabic section),* Sept. 1956.

The *Poisons* are the substances listed in the First Schedule appended to this Act.

The *Narcotics* are the substances listed in the First Schedule appended to the text of the Act on Dangerous Drugs, Narcotics and Their Preparations.

The *Director* is the registered pharmacist who is the manager of a pharmacy, of a drug store, or of a manufacturing drug firm, and is legally responsible for the establishment.

The *Dispenser* (Preparer) is the person previously licensed to practice pharmacy according to the provisions of the Pharmacy Act No. 2/1932 but is not licensed to perform analytical work.

The *Establishment* is the pharmacy, drug store or manufacturing drug laboratory.

The *Pharmacist's Assistant* is the person who fulfills the provisions of Article X of this Act.

Art. II.

A. To practice the Profession of Pharmacy, one should be :

1. an Iraqi.
2. a holder of a diploma from an officially recognized college of pharmacy.
3. or a holder of a certificate from the old Iraqi school of pharmacy.
4. or holder of the title of Dispenser, provided he was practicing pharmacy prior to the Pharmacy Act No. 33/1951, and provided he passes a special examination to be given by the Ministry of Health within six months of the beginning of the implementation of the present Act.
5. a member of the Association and holder of its annual permit for the practice of the Profession; exception made of the Dispenser (Art. II, A. 4) who must obtain his permit from the Ministry of Health after paying the annual dues of five Iraqi dinars.

B. A foreigner may practice the pharmacy profession only on basis of reciprocity.

Art. III.

1. No pharmacist can open more than one pharmacy in any one city.
2. The Minister may, in the public interest, prevent a pharmacist who is a government official, from practicing his profession after office hours, whether by opening a pharmacy or managing a pharmacy or a drug store. In such cases, however, the pharmacist-official shall be accorded an extra remuneration which, however, shall not exceed 25 per cent of his regular salary.
3. Pharmacists may not practice, along with their profession, neither medicine nor dentistry. However, what the pharmacist performs as a first aid in emergency resulting from unforseen sudden accidents, shall not be considered as an illegal practice of medicine.

Art. IV.

A. The Association shall be the authority charged with issuing permits for the opening of pharmacies to pharmacists who fulfill the provisions of Art. II.

B. The Ministry of Health shall be the authority charged with issuing permits for opening a pharmacy to the holder of the title 'Dispenser' mentioned in Art. II, A. 4.

Art. V.

Shall be declared nul and void all permits granted under Art. IV if the pharmacy is not opened within six months of the date of the permit.

Art. VI.

Should the owner of a pharmacy, who is himself a registered pharmacist, die, and his heirs are not registered pharmacists, the heirs have the right to exploit the pharmacy through a responsible director.

Art. VII.

A pharmacist may assign the management of his pharmacy to a Director who knows the local language if Iraqi and who knows both Arabic and the local language if a foreigner. The same conditions apply if the owner of the pharmacy is himself the Director.

Art. VIII.

A Pharmaceutical Chemist may, after obtaining a permit from the Association, perform pharmaceutical, chemical and biochemical analyses, in a special establishment which shall fulfill the specifications laid down by the Association. He shall not, however, be responsible for the management of any other establishment.

Art. IX.

A pharmacist may not be a director of more than one establishment.

Art. X.

A. A pharmacist's assistant must fulfill the following requirements :
   1. he should obtain a medical certificate which testifies to his physical fitness and freedom from infectious disease.
   2. he should be holder of the Intermediate Certificate.
   3. he should be holder of the certificate of the examination in pharmacy administered by a committee appointed by the Minister.
   4. he shall be at least 18 years old.
   5. he must have apprenticed for at least two years under the supervision of a registered pharmacist, in a pharmacy.

B. A graduate of the School of Sanitary Functionaries, or a holder of the title 'Dispenser' may work as a Pharmacist's Assistant without taking an examination. At all times, however, the Sanitary Functionary shall keep his right to his original title.

Art. XI.

A. An establishment, closed down as a result of the departure of its Director, shall remain closed until another Director shall have been appointed.

B. A Pharmacist may not absent himself from his pharmacy unless he entrusts its management to a registered pharmacist during his absence.

C. Should the Director leave an establishment in which he works or absents himself from it, he should inform the Health Authority and the Association, by writing; and should deliver all narcotics in his keep to the person who will replace him and both should sign for all quantities delivered and received, in the Narcotics' Register.

D. A Director may absent himself from the drug store or manufacturing laboratory for a period not exceeding 15 days, provided he informs the Health Authority by writing and provided that such periods of absence do not exceed three in a calendar year.

Art. XII.

A. Owners of establishments licensed according to the provisions of this Act shall inform the Ministry of Health and the Association of the names of Pharmacists, Pharmacist's Assistants, and students who train at their establishments, at the time they join these establishments and at the time they terminate thir period of training.

B. It is not permitted for other than the Director, the Pharmacist's Assistants and students of the College of Pharmacy who are doing their training, to interfere in the preparation of medicines, in putting them into containers, in the writing and sticking of labels on the containers or in recording prescriptions in the prescription book. Also, the Director may not permit others to do any of these things.

Art. XIII.

The Director shall see to it that the Pharmacy is provided with the following :

1. balances, measures and apparatus listed in the Second Schedule appended to this Act.
2. one or more refrigerators or refrigerated rooms of sufficient capacity for holding all articles requiring refrigeration; such equipment must be in working condition.
3. locked cupboards for keeping poisons and narcotics; the keys to such closets should be kept at all times with the Director only.
4. an up-to-date official list of names of registered members of the Medical Professions Association from among the physicians, veterinarians and dentists.
5. copies of the latest editions of officially recognized pharmacopœias agreed to by the Association and a list of which is issued by the Ministry of Health.*

Art. XIV.

A Pharmacist may not :

1. dispense any prescription unless it is issued by a physician, veterinarian or dentist licensed to practice his profession in Iraq; the pharmacist should ascertain its authenticity before dispensing it.
2. refuse to dispense any prescription issued by persons mentioned in paragraph 1, unless it does not satisfy the provisions of this Act.
3. alter the quantities of substances indicated in the prescription or exchange one of them by another which is not pharmacopœial or of a different kind or by the original substance but of a different trademark from the one indicated in the prescription, or exchange one Proprietary by another, except on the written approval of the prescriber.
4. dispense antibiotics indicated by the Ministry of Health, and poisons.
5. dispense any medicine which contains dangerous drugs except within

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* *These are the Iraqi and British Pharmacopœias, J. Iraqi Med. Professions, 4,* 116 *(Arabic section),* Sept. 1956.

the provisions of the Act No. 44/1938 on Dangerous Drugs, Narcotics and Their Preparations, and its revisions; and on special prescription forms assigned by the Minister.

6. dispense a prescription expressed in terms and symbols unknown in the art of pharmacy.

Art. XV.

A Pharmacist may dispense or prepare without a prescription certain medicines designated by the Association on a list issued by it.

Art. XVI.

Should a Pharmacist find a pharmaceutical incompatibility in a prescription or an amount of drug in excess of the quantity indicated by the pharmacopœia, he should bring this to the attention of the prescriber and ask him to correct it or reapprove it with signature if he insists that the prescription is correct as it stands.

Art. XVII.

A. Every medicine prepared by the Pharmacist should bear a label carrying the following information:
   1. name and address of the pharmacy.
   2. name of the patient who will use the medicine.
   3. name of the prescribing physician.
   4. date of filling the prescription.
   5. serial number of the filled prescription taken from the prescription book.
   6. directions for use as indicated on the prescription.
   7. cost of the medicine.
   8. other information requested by the Association as need arise.

B. If the medicine dispensed was not prepared on the basis of a prescription, then the label must bear the name of the medicine and its composition, in addition to other information requested under paragraph A except the name of the physician.

C. If the medicine is a proprietary, the label should bear the name of the pharmacy, the directions for use and the cost of the medicine.

Art. XVIII.

Labels pasted on containers of compounded medicines should have the following colors :

1. white for medications for oral use.
2. white with a green label below it bearing the legend 'Do not exceed the dose', in Arabic, for all medications containing a narcotic or a poison.
3. red for preparations for external use bearing the legend 'For external use' to which must be added the word 'Poison' for preparations containing caustic or poisonous substances.
4. yellow for medicines for veterinary use, whether for oral or external use and bearing the legend 'For veterinary use'.

Art. XIX.

A. Every Pharmacy should keep a prescription book. Its pages should be serially numbered and stamped with the seal of the Health Authority. In it the following information should be recorded :
   1. every medication prepared in the pharmacy.
   2. the serial number assigned to it.

3. the entire prescription.
4. the directions of use.
5. the name of the patient taking the medication.
6. the cost of the medication.
7. the name of the prescribing physician.
8. the date the prescription was filled.
9. the date on the prescription.

B. A Pharmacist shall keep all invoices of imports or purchases for at least one year.

C. Records should be entered in the prescription book during the week in which the prescriptions were filled. The records should be clear and no space or lines should be left between the words. Erasures, and special terms and symbols unknown to the art of pharmacy, should not appear in the prescription book.

Art. XX.

A. Should the patient wish to keep the prescription, the Pharmacist must return it to him after stamping it with the seal of the pharmacy and appending his signature. The prescription should equally bear the serial number given to it in the prescription book and the date on which it was filled. The Pharmacist shall keep a copy of the prescription.

B. Should the patient or the physician request a copy of a certain prescription, the Pharmacist must supply such, duly stamped with the pharmacy seal and free of charge.

C. The Pharmacist shall keep all prescriptions or their copies for one year from the date of preparation.

Art. XXI.

A. The non-governmental health institutions may dispense drugs to their patients provided they obtain a permit to do so from the Ministry of Health and appoint a responsible pharmacist.

B. The Pharmacies of the non-governmental health institutions are subject to the same regulations which apply to public pharmacies according to the provisions of this Act. The director of the health institution shall carry the full responsibilities which devolve on the Director of public pharmacies.

Art. XXII.

A. The Minister may permit the Sanitary Functionaries or the Pharmacist's Assistants who are not government officials or any citizen who reads and writes to open stores for the dispensing of simple remedies in localities where no pharmacy exists; the permit for such a store shall be revoked as soon as a public pharmacy is established in that same locality, in which case the store owner shall liquidate his store and close it within a month after the date of opening of the pharmacy.

B. Special lists shall be issued by the Ministry of Health, after consultation with the Association, designating drugs which may be handled by owners of stores of simple remedies.

C. Drugs and articles sold in stores of simple remedies, shall be properly stored; ready-packed medicines shall be sold in their original containers and shall not be repacked in smaller dosage units.

Art. XXIII.

A physician or a veterinarian, who is not a government official and practices his profession in a town where no pharmacy exists, may keep and dispense remedies in his clinic to his patients only, and shall abide by the provisions of this Act. He shall cease all dispensing within 90 days after the opening of a public pharmacy in the town.

Art. XXIV.

The permit for the opening of a drug store shall be granted by the Minister, upon the payment of 20 dinars. The holder of the permit shall request its renewal annually during the month of January and pay a fee of 5 dinars.

Art. XXV.

A. An Iraqi Director shall be appointed to each drug store.

B. The drug store shall be subject to the provisions of paragraphs 2 and 3 of Art. XIII of this Act.

Art. XXVI.

Drug stores and drug firms shall sell all articles they deal in, in their original containers as they arrive from their source or from the manufacturing laboratory, to pharmacies, professional establishments, factories, government departments, physicians licensed to sell drugs to their patients in towns without a pharmacy, owners of stores of simple remedies or laboratories, and they shall not sell these articles to other than those mentioned above or alter the trade-marked names of these articles.

Art. XXVII.

A. Every drug store shall keep a register properly stamped with the seal of the Health Authority and in which the following information shall be recorded :

1. all incoming and outgoing articles, their kind and quantity.
2. the date of purchase or of receipt at the drug store and the date of sale of these articles.
3. the cost and selling price of these articles.
4. the names of seller and purchaser and their addresses.

B. The minister shall request, by announcement in the official gazette, that drug stores keep additional registers, if doing so is in the public interest.

Art. XXVIII.

A. Drugs and Proprietaries shall not be imported except by licensed drug stores or government departments and after they have been registered with the Ministry of Health and an official certificate obtained to that effect.

B. No imported proprietaries shall be registered unless the demand for such registration comes from a physician, a veterinarian, a dentist, a pharmacist, an owner of a drug manufacturing firm or his agent.

Art. XXIX.

1. The manufacture of drugs and medicinal preparations in Iraq is subject to a permit to be obtained from the Minister for opening a manufacturing laboratory.
2. Such permit will not be granted except to a physician, a veterinarian, a dentist, a pharmacist, an owner of a drug manufacturing firm or his agent.

3. Drugs and medicinal preparations shall be registered with the Ministry of Health prior to manufacturing them.
4. These drug manufacturing laboratories shall be subject to the same articles of this Act which apply to drug stores in regard to dues, registers to be kept and the Director responsible for them.
5. The Minister shall issue special directives as to the requirements that must be fulfilled in the manufacturing laboratory.

Art. XXX.

The Ministry of Health shall set up an Expert Committee of 5 members, two of whom shall be chosen by the Association, for examining the Proprietaries from both the medical and pharmaceutical viewpoints. The Committee shall present its recommendations to the Minister who shall immediately prohibit the use of unsuitable preparations and order their destruction.

Art. XXXI.

The Minister may appoint a Committee of Appeal composed of three members, one of whom shall be a member of the Association, to reconsider the recommendations of the Expert Committee. Should the Committee of Appeal recommend the acceptance of the preparation, the Ministry shall order its registration and grant the owner an official certificate bearing the number under which the preparation was registered.

Art. XXXII.

Pharmacopœial Preparations prepared in Iraq or imported from outside shall be exempt from registration requirements if prepared according to the provisions of this Act and the approval of the Ministry is obtained.

Art. XXXIII.

A. Should analysis reveal that preparations made in Iraq do not entirely correspond with the requirements and descriptions given in the pharmacopœia according to which they were prepared, the Minister shall then order the confiscation and destruction of such preparations.

B. Should analysis reveal that imported preparations do not entirely correspond with the requirements and descriptions given in the pharmacopœia according to which they were prepared, the Minister shall then order the confiscation and destruction of such preparations or their shipping back to their original source at the expense of the importer, if it is possible to ship them without incurring any liability.

C. The Minister may forbid the importation of drugs and medicines from any manufacturing firm whose products were shown by chemical analysis not to correspond to pharmacopœial requirements, or who lacks the necessary qualifications.

Art. XXXIV.

No one shall import, offer for sale or hold a preparation unless :

1. it is registered with the Ministry and is a Proprietary.
2. it is in sterile containers of neutral glass which fulfills pharmacopœial requirements, if intended for parenteral use.
3. it is kept in well closed containers and properly packaged for sale.
4. it is used in the country of origin, attested to this by a government certificate from the said country, approved by the proper authorities.

Art. XXXV.

The Minister may, after consultation with the Expert Committee set up according to Art. XXX, forbid the importation of any medicinal substance into Iraq if it does not agree with its description or is not suitable for medicinal use.

Art. XXXVI.

The Custom authorities shall keep all imported drugs, medicinal substances and chemicals containing or consisting of poisons or narcotics and preparations containing any of them in isolated storage; and shall not deliver them except to persons or establishments licensed to deal in them, provided such materials were imported in their names and on their own account, and a permission secured from the Ministry for their delivery.

Art. XXXVII.

Information given on the labels of imported or locally made medicinal preparations or in printed leaflets or advertisements must reveal the place of manufacture and indicate correctly the ingredients of the preparation and be accurate with regard to therapeutic claims and uses of the preparations and shall not contain misleading statements to the public. The prior approval by the Minister of the text of the printed leaflets and advertisements before they are printed, is required.

Art. XXXVIII.

A. Chemicals and their preparations intended for use in industry, agriculture and the home, may be imported. The Minister shall publish a list of chemicals and their preparations intended for industry, agricultural use or home use which shall be handled in commerce only by licensed pharmacists or chemists.

B. These materials and their preparations cannot be imported into Iraq unless they are kept in sturdy suitable containers properly labeled to indicate the name of the manufacturing firm, the quantity in the container, the percentage composition and the purpose for which the material is intended. These materials and their preparations shall not be used or sold for medicinal use.

C. Persons dealing in these materials may not sell them except to licensed dealers, or to farmers who hold special permits from the Ministry of Agriculture, or to industrialists holding special permits from the Ministry of Health.

Art. XXXIX.

Arsenic and its compounds shall not be sold except by a permit from the Ministry of Health. The seller shall keep such permit and shall be ready to present it when requested by the Health Authority.

Art. XL.

Drugs and medicinal substances shall be properly stored according to scientific and professional requirements. The Health Authority may see fit to issue pertinent instructions.

Art. XLI.

Samples of drugs and preparations manufactured and distributed for publicity should bear the legend 'Sample For Free Distribution' on the inner label and on the outer packing. Such samples may not be sold.

Art. XLII.

A record should be kept of all entries and exits of drugs and preparations

in the special registers required by Art. XXVII of this Act. The Health Authority may disregard any loss in weight because of volatilization, evaporation, efflorescence, crystallization or deliquescence, provided the drugs are still kept in their original containers.

Art. XLIII.

Directors of licensed establishments and the pharmacists responsible for them must always be ready to give, in writing, full and accurate information in all declarations they are requested to make to the Health Authority or to the Association.

Art. XLIV.

Directors of licensed establishments must keep all registers required by this Act for a period of not less than 5 years. Directors of drug stores and manufacturing laboratories shall keep their registers for the same length of time. They shall be ready to present these registers to the Inspector or to the representative of the Association whenever requested to do so.

Art. XLV.

A. To check on the proper execution of the provisions of this Act, an Inspector may inspect at any time : drug stores, manufacturing laboratories, pharmacies, government and non-government depots; he may also inspect the attarines, herbalists and stores of simple remedies. Owners of these establishments and persons responsible for them must supply accurate information to the Inspector and give him all assistance during his inspection.

B. Should the Inspector find any material which arouses his doubts, he may take samples of it for analysis, against which samples he will deliver a receipt. The suspected material shall be locked up in a closet or in a special room of the establishment which is then sealed, in which case the owner and the Director of the establishment shall be responsible for the safety of the seal. The Minister may issue necessary instructions.

Art. XLVI.

The Minister may decide to grant whosoever finds or helps in locating medicinal substances in the possession of persons not licensed to deal in them, a reward equivalent to 50 per cent of the cost of these substances.

Art. XLVII.

The Minister, after consultation with the Association, may add to or remove any of the substances which appear in the Schedules appended to this Act, by a decree to be published in the official gazette. Such a decree shall not come into effect until 30 days shall have passed since its publication.

Art. XLVIII.

A. A special committee of five members shall be appointed in the Ministry of Health to be known as the Drug Pricing Committee; two of its members shall be chosen by the Association, and the other three by the Minister from among the higher physician and pharmacist officials of the Ministry.

B. The Committee shall determine the prices of drugs and medicinal preparations according to schedules previously prepared by the Committee.

C. The importer shall apply a special price label on every medication, indicating the retail selling price of the article. The labels shall conform to specifications laid down by the Minister.

D. Owners and responsible Directors of licensed establishments shall sell the drugs and medicinal preparations at the prices fixed for them.

Art. XLIX.

Shall be convicted to pay a sum not exceeding 300 dinars or to imprisonment for a period not exceeding 3 years or to both penalties :

1. whosoever shall have adulterated or imitated medicinal preparations, drugs or chemicals and whosoever shall have sold adulterated or imitated products which he knows to be so.
2. whosoever shall have sold or offered for sale a medicinal prepartion, a drug, a chemical or a medicinal plant, which was spoiled or deteriorated and he knew this to be the case.

Art. L.

Whosoever shall have imported, sold, or offered for sale a medicinal preparation, a drug, or a chemical mentioned in Art. 38, paragraph A, without possessing a license to do so in accordance with the provisions of this Act, shall be convicted to pay a sum not exceeding 100 dinars or to imprisonment not exceeding one year or by both penalties.

Art. LI.

Whosoever contravenes the tenets of this Act in other than the cases indicated under articles 49 and 50, shall be convicted to pay a sum not exceeding 100 dinars. If he commits another contravention within 3 years of the first, he shall then be convicted to pay a penalty not exceeding 200 dinars.

Art. LII.

The court may order the confiscation or destruction of apparatus, drugs and preparations and other articles caught at the time the contravention was committed.

Art. LIII.

Shall be referred to the Disciplinary Committee of the Association every pharmacist who shall practice his profession according to his own whims, contrary to the tenets of this Act, whether or not he was brought before court.

Art. LIV.

The Association shall organize a night service by rotation among the public pharmacies and shall publish circulars to that effect.

Art. LV.

Certain regulations may be instituted for facilitating the implementation of this Act.

Art. LVI.

Shall be declared nul and void the Law Regulating the Practice of the Profession of Pharmacy and the Commerce in Drugs and Poisons, Act No. 33/1951 and all decrees and regulations which pertain to it, and all paragraphs in other laws which are not in conformity with the present Act.

Art. LVII.

This law shall go into effect from the date of its publication in the of-

ficial gazette.

Art. LVIII.

The cabinet ministers shall see to it that the clauses of this Act are implemented. signed :

SCHEDULE I

Poisons

Are all substances whose single maximum dose is less than half a gram, according to any of the pharmacopœias officially recognized in Iraq.

SCHEDULE II

Weights, Measures and Apparatus that must be available in every pharmacy

1. a sensitive balance, enclosed in a glass cover, for weighing in milligrams.
2. a sensitive balance for weighing quantities in centigrams and grams.
3. a balance for weighing quantities in kilograms.
4. metric weights ranging from 1 milligram to 5 kilograms.
5. apothecary weights ranging from 1/2 grain to 1 pound.
6. glass measures graduated according to the metric and apothecary systems, of at least three different capacities.
7. filter paper.
8. funnels of various sizes (metallic and glass).
9. infusion pot.
10. kettle for boiling water.
11. a cooking vessel of average size.
12. litmus paper.
13. mortars of different sizes.
14. ointment marble slab.
15. spatulas of different sizes (in bone and in metal).
16. a pair of scissors.
17. shellac.
18. alcohol lamp.
19. glass and bone stirrers.
20. suppository mold.
21. ovule mold.
22. glass test tubes.
23. thermometer.

SCHEDULE III

Poisons which the pharmacist can prepare without a medical prescription

1. all ointments official in the pharmacopœias recognized in Iraq.
2. all collyria official in the pharmacopœias recognized in Iraq, except the collyria of atropine, pilocarpine, cocaine and eserine.
3. iodine solution.
4. boric acid solution.
5. the various disinfectant and antiseptic solutions.
6. hydrogen dioxide solution.
7. denatured alcohol.

THE PHARMACY LAW IN EGYPT*

The main provisions of the Egyptian Pharmacy Law, Act No. 127/1955 were published in *The Apothecary* 1955, pp. 30-37. Since then, three Acts have appeared by which some of the articles of the Law were slightly amended. These are : Act No. 253/1955 (May 11, 1955), Act No. 7/1956 (Jan. 25, 1956), and Act No. 360/1956 (Oct. 14, 1956).

Of the amendments brought by the new acts, the following are of particular interest. The full texts of articles XXX and LX, as they now stand, are given below :

Article XXX. (From Chapter Two, Part III).

No permit for opening a Pharmacy shall be granted except to a licensed Pharmacist. At least one year shall have elapsed since his graduation, and that year must have been spent in the practice of the Profession either in a governmental or a non-governmental establishment. However, a heir or a legatee shall be dispensed from the requirement of the year of professional practice. The Pharmacist may not own or be a partner in more than two pharmacies or be a government official.

The distance between the Pharmacy to be established and any other already established Pharmacy shall not be less than hundred meters.

Article LX. (From Chapter Three).

No Proprietary Preparation shall be registered (by the Ministry of Public Health) until it has been approved and its registration accepted by the Technical Committee For the Control of Drugs which shall be appointed by a decree issued by the Ministry of Public Health. The Committee shall consist of a president and nine members chosen as follows :

The Director (Undersecretary) of the Ministry of Public Health or his representative, President.

1. A Professor-Pharmacist from one of the College of Pharmacy.
2. A Professor-Physician from one of the Colleges of Medicine.
3. A government Pharmacist representing the Ministry of Public Health.
4. Director of the Research Institute for Tropical Medicine of the Ministry of Public Health or his representative.
5. A non-government Pharmacist designated by the Syndicate of Pharmacists.
6. A non-government Physician designated by the Syndicate of Physicians.
7. A representative from the Permanent Commission of the Pharmacopœia.
8. A government Pharmacist specialized in drug analysis.
9. A government Physician specialized in biological analysis.

The Committee shall establish its bylaws and rules of procedure which shall be promulgated by a decree issued by the Minister of Public Health. The decisions of the Committee shall be final. The sessions of the Committee shall be valid if the President and at least seven members are present. The Committee may ask a non-Committee member to attend its meetings as a consultant.

* *Translated from Arabic by Prof. Charles Abou-Chaar, A.U.B.*

THROUGHOUT THE WORLD

I.C.I. is known for the invaluable contributions which its research workers have made to scientific progress. Especially noteworthy are its successes in the Pharmaceutical field resulting in the introduction and manufacture of new drugs and chemotherapeutic agents which have proved outstanding in medical practice. The present comprehensive range of products issued by the Pharmaceuticals Division of I.C.I. Ltd. includes many well known drugs which have received world-wide recognition for their value in the fight against disease.

IMPERIAL CHEMICAL INDUSTRIES LIMITED, Pharmaceuticals Division, Wilmslow, Cheshire

Pharmacy Newsletter

I. PHARMACY IN JORDAN

By **Nizar Jardanah Ph. C.***

After many years of working for an organized and unified pharmacy in the Hashemite Kingdom of the Jordan, the pharmacists of Jordan are now happy that their dream has been realized. In the Official Gazette of March 17, 1957, which I am mailing to you, you will find the text of the law creating an *Order of the Pharmacists of the Hashemite Kingdom of the Jordan,* Act No. 10/1957. The law became effective on May 17, 1957. The law grants the Jordanian pharmacists many rights, and the Order a wide authority. Of the 63 articles of the Law, the following provisions are of particular interest :

a. All pharmacists in Jordan should become members of the Order.

b. Of the different functions of the Order, one may mention : the establishment of a pension reserve for retired, ill and needy pharmacists; the maintenance of proper standards of employment for pharmacists in government and private institutions; and the application of disciplinary measures against pharmacists who trespass against the ethics of pharmacy and the decisions of the Order.

c. The Council of the Order shall fix the prices of drugs and the cost of filling prescriptions, subject to the approval of the Minister of Health; they shall limit the number of pharmacies which shall be opened in each town and village according to the size of the population and shall establish the distance to be observed between one pharmacy and another and the minimum area for each pharmacy; such, however, shall not have a retroactive effect; and the Council shall take care of all necessary organization which is in the interest of the profession, again subject to the approval of the Minister of Health.

d. No one shall sell or prepare drugs, wholesale or in retail, in any kind of establishment, unless he is a pharmacist, except for some simple remedies which the attarines are allowed to sell.

e. A pharmacist shall not be responsible for the direction of more than one pharmaceutical establishment or any other work in addition to the one pharmaceutical establishment. The Minister of Health, after consultation with the

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* *Mr. Nizar Jardanah, Ph.C.'48, Jordan Drug Store, Amman, Jordan, is one of our most active alumni who played a very large part in the realization of the dreams of Jordan pharmacists.*

Order, shall determine the length of the transition period in regard to pharmacists who at present are responsible for more than one establishment.

f. A pharmacist shall abide under all circumstances by the decisions of the Council in regard to the unified prices and professional fees which pharmacists have the right to charge for the sale and compounding of drugs sold in the pharmacy.

g. A pharmacist shall not enter into any agreement with a physician, a dentist, a veterinarian, a midwife or a nurse or any other person, for a sharing in profits accruing from sale of drugs in the pharmacy. A pharmacist shall not attempt to direct clients to his pharmacy through his employees or brokers or others.

h. A Disciplinary Committee is set up for the trial of pharmacist members who contravene the Law, disobey the directives of the Order, break the code of ethics whether in their professional or private lives or neglect their duty thus hurting the prestige of the profession. The Disciplinary Committee consists of the president of the Order or the Vice-president, two pharmacists appointed by the Council, and two members : one appointed by the Minister of Health and represents the Ministry, and the other from the members of the Order.

i. The Council of the Order consists of a president and six members. Of the first Council to be elected according to the new law, the following are alumni : Farid Koussos, Ph.C.'50, secretary; Hanna Araj, Ph.C.'48, Noubar Arsenian, Ph.C'35, and Daoud Shakhshir, Ph.C.'45, members.

II. PHARMACY IN THE SUDAN

By **Adel Maksad Ph. C.***

It was in 1906 when the first pioneer pharmacist, a Lebanese young man 28 years old, established the first pharmacy in Sudan, in its capital Khartoum. George N. Morhig (Jurjus Ni'man Murhij) from Shwayr, Lebanon, obtained his Ph.M. degree from the American University of Beirut, then called the Syrian Protestant College, in 1897. Morhig had planned everything for his new pharmacy; he went to England to get all the drugs and fixtures he needed. His pharmacy was well equipped and furnished. In 1908 he introduced a photography and a portrait studio department; and in 1910 he enlarged his phar-

* *Mr. Adel Maksad, Ph.C.'51, is from Brummana, Lebanon. He joined government service in the Sudan after his graduation. He is at present a responsible pharmacist at the Khartoum Civil Hospital, a position he returns to after serving for a year in southern Sudan. He is a very active alumnus and very devoted to his work, to his colleagues and to the Sudanese whom he loves and respects.*

macy and added to it a soda-fountain similar to that in American drugstores. Mr. Morhig is still the proud proprietor of one of the best pharmacies in Khartoum today.

Very few pharmacies existed in the Sudan in the early years of the century. Few pharmacists came from Egypt, Lebanon and Syria to work with the government and the army; and it was only in the past twenty years that pharmacy in Sudan began to attract pharmacists. The three-town capital, Khartoum, now has twenty pharmacies, a number quite adequate at present. In the other main towns of Sudan one finds at present two pharmacies in Atbara, two in Port Sudan, three in Madani and two in El-Obeid. There are, however, many remote towns where no pharmacies exist and government hospital dispensaries are the only source of drugs. In big towns, however, their supplies often do not meet the need. In addition to Sudanese pharmacists, one finds pharmacists of the following nationalities : ten Greeks, three Egyptians, two Lebanese, two Armenians, one Syrian and one German.

There is no pharmacy school yet in the Sudan, although one is projected. Because of shortage of pharmacists at present, the Ministry of Health is planning to reopen the School of Dispensers and I have been asked to take charge of it and work up a program for it. It is interesting to note that in Sudan to-day there are nine graduates of the School of Pharmacy of our alma mater, the American University of Beirut.

Many of the big drug firms are represented in the Sudan. There are about twenty wholesale drugstores in Khartoum and one of them has thirteen different agencies for drugs and chemicals. The main firms represented in the Sudan are British; but during the last few years Dutch, Egyptian, French, German, Italian and Swiss firms became represented also. It is interesting to note, that inspite of the large number of the proprietaries on the market, doctors still write prescriptions of 5 or 6 ingredients to be filled in the pharmacy.

The British Pharmacopœia is the official pharmacopœia in the Sudan. Other important reference books are : the British Pharmaceutical Codex and the Extra Pharmacopœia — Martindale. Actually, the Extra Pharmacopœia is the best reference guide for all of us here, pharmacists, doctors, dentists and nurses. Measures and weights are used in the English system all over the Sudan. We rarely come across a prescription written in the metric system. Here is a very common prescription : Pot. Iodide gr. iii, Ephedrine Hydrochloride gr. 1/4, Tr. Lobelia m x, Tr. Stramonium m xv, Aq. Chloroformi q.s. ad one drachm; Mitte four ounces; sig. one drachm t.i.d.

The present pharmacy law in the Sudan is not as complete or as strict as the new pharmacy laws in Egypt, Lebanon or Syria. The Sudan Pharmaceutical Association is a little more than one year old. Notwithstanding, the Association has been very active in carrying talks and discussions, for the amendment of the existing law, with the Province Medical Officer of Health who is a very active person. Together they have studied the pharmacy laws of Egypt, Lebanon

and Syria and are trying to formulate and write up a pharmacy law which would be appropriate for the Sudan.

The resolutions adopted at the closing session of the First Middle East Pharmaceutical Conference held in Beirut last year were very helpful and of genuine importance to us. After careful study and thorough discussion the Sudan Pharmaceutical Association presented seven of the resolutions to the Director of the Ministry of Health for action. The Ministry approved these resolutions and recommended them to the Public Health Committee. The resolutions are the following :

1. The preparation, distribution and importation of drugs shall be the sole right of the pharmacist.

2. The government shall establish proper laboratories for the examination and control of drugs.

3. The government shall refuse registration and sale of drugs not accepted in their country of origin.

4. The government shall accept for registration only essential drugs whose therapeutic value has been established.

5. The government shall not allow the importation of proprietary preparations which can be prepared in the pharmacy.

6. The government shall discourage the registration of similarly compounded preparations which are protected by different trade marks.

7. The government shall not allow pharmacopœial drugs to be protected by trade marks.

The Republic of the Sudan is only two years old. So many reforms, amendments and changes have to be brought to existing laws and regulations. The Sudan Pharmaceutical Association does not expect that all these resolutions will be accepted and implemented at once. The Association, however, is concentrating on one request : that every wholesale drugstore have a qualified pharmacist responsible for it.

I may add, as a record, that the Sudan Pharmaceutical Association was founded in December 1955. Its first Council, which is still in office at the writing of these lines, is composed as follows : Ibrahim Gassem Mukhayyar, Ph.G.'37, President; Adel Maksad, Ph.C.'51, Secretary; John Katsaras, Treasurer; Yusuf Bedri, Ph.G.'37, Omar Taha Gabbani, and Saleh Sulayman, members.

III. PHARMACY IN TURKEY

By **Hamdi Dürüst Ph. C.***

A law regulating the organization of pharmaceutical associations in Turkey came into effect last September. Known as the *Law on the Association of the Pharmacists of Turkey,* it sets up *Chambers of Pharmacists.* The aims of the Association, as it operates through its Chambers, set up in the different provinces, may be summarized as follows : a. to preserve and develop the traditions of the profession of pharmacy entrusted with the public's health and the care of the sick; b. to defend the rights and privileges of its members and to interpret these rights and privileges in the best possible way within those of the public and of the nation; c. to help in the proper enforcement of the pharmacy laws; to establish libraries, publish periodicals, organize conferences and congresses, and to organize and standardize the practical-experience requirements of pharmacy students; all for the purpose of helping its members attain higher cultural and professional standards; e. to establish tariffs and price lists and see that these are complied with after they have been approved by the government; f. to protect public health, to seek and find fields of work for its members which would eventually provide them with improved standards of living and to protect the interests of its members in the light of the labor laws; g. to establish a fund for the care of old and helpless (invalid, etc.) members or of the direct dependents of deceased members; h. to provide for the establishment of pharmacies in places that do not have pharmacies; i. to encourage the use of locally-made proprietaries and other pharmaceutical products; j. to act as a link between its members and the official authorities; k. to publish all books and registers needed by pharmaceutical establishments.

Istanbul, with the largest number of pharmacists in its vicinity, has become the first region, and *Chamber I* is established here; the second Chamber is in Ankara, and so on. Turkey, with its 66 provinces (vilayet) is now divided into nine regions, the division is more or less geographical. Each region has its Chamber of Pharmacists, and *Disciplinary Jury.* All registered pharmacists, whether engaged in private enterprise or engaged by the government or in the military service, are obliged to register at the Chamber of Pharmacists of their region, and are forced by law to have their registration transferred in case they move to a different region. The executive committee of each Chamber is elected annually from among its membership. The membership also elects the Disciplinary Jury for each region. The Disciplinary Jury has the authority to suspend members of the Chamber from practicing the profession for some time, or to collect fines, in all cases of professional misconduct. Each Chamber elects five deputies to the *Congress-at-Large* which meets biannually. This Congress elects from among its membership the members of the *Central Exe-*

* *Mr. Hamdi Dürüst, Ph. C.'51, is owner and manager of Modern Eczane (Modern Pharmacy), in Istanbul, Turkey. See The Apothecary 1956, p. 75.*

cutive Committee of the Association, and the *Grand Jury of Professional Discipline.* The term of office on these two bodies is for two years. The following are also invited to sit with the Grand Jury : two professors from the schools of pharmacy, two judges from the High Court, the Deputy Director General of the Ministry of Health, etc. The decisions of the Grand Jury are final in matters referred to it by the Disciplinary Juries of individual Chambers. The Central Executive Committee is the symbolic group which represents the pharmacists of Turkey at home and abroad and it is entrusted with coordinating the activities of the various Chambers.

With this new organization, the five pharmaceutical associations, now called *societies,* to distinguish them from the Association of Chambers, namely : the *Society of Pharmacy Proprietors of Turkey,* the *Society of Manufacturers, the Society of Wholesalers, the Society of Importers, the Society of Aid to Pharmacists,* will gradually sink into insignificance, since they represent the interests of smaller bodies of the profession.

The sources of income of the Chambers and of the Association at large are as follows : an inscription fee of ten Turkish pounds per member, paid once only; the following annual dues : pharmacists engaged in other professions pay LT. 10, government or privately employed pharmacists pay LT. 18, pharmacy proprietors pay LT. 30, proprietors of wholesale drugstores, manufacturing plants or laboratories pay LT. 100; bequests and gifts; fines collected by the Disciplinary Juries and the Grand Jury; and aid extended to the Chambers by the Central Committee. Part of the income goes to the Chambers and part to the Central Committee.

The Chamber of Pharmacists of Istanbul Region, of which I am a member, is set up by a group of very enthusiastic colleagues. Already, they have succeeded in marking certain mile-posts : 1. *Lunch Recess in Pharmacies.* They have effectually enforced the hitherto unestablished practice of observing a recess for all pharmacies, except those on duty, from 1-2 p.m. on weekdays, and from noon to 1 p.m. on Saturdays; 2. *Non-Pharmacist-owned Pharmacies.* Although not permitted by law, it is a fact that a number of pharmacies, although registered under the name of a qualified pharmacist, are secretly financed and run by lusty merchants. The Chamber considers it as one of its duties to combat this practice by exposing these establishments. The procedure is very simple : as the Chamber is a legally recognized body, it can obtain the names of the pharmacists under whose permit and license the pharmacy operates. Under the same authority, the Chamber obtains the income-tax forms submitted to the tax office, thereby exposing the fraud. In this way, we hope to establish a profession run by professional pharmacists, rather than by financially better-equipped opportunists; and also, of higher professional standards. I may add here, that exception is made in the case of the heirs of a deceased pharmacist, who are permitted to run the pharmacy for a maximum period of five years under the permit and license of a responsible registered pharmacist.

Newly Published Professional Books

THE AMERICAN DRUGGIST BLUE BOOK, 1956-57. American Druggist, New York, U.S.A. Price $8.

THE AMERICAN DRUG INDEX, 1957, by Wilson & Everett, Lippincott, Philadelphia, Pa., U.S.A. Price $5.

EPITOME OF THE PHARMACOPEIA OF THE UNITED STATES AND THE NATIONAL FORMULARY WITH COMMENTS, 10th ed., 1955. Lippincott, Philadelphia, Pa., U.S.A. Price $3.

TESTS AND STANDARDS FOR NEW AND NONOFFICIAL REMEDIES 1955. Lippincott, Philadelphia, Pa., U.S.A. Price $2.

NEW AND NONOFFICIAL REMEDIES, 1957. Lippincott, Philadelphia, Pa., U.S.A. Price $3.50. This book is published annually by the Council on Pharmacy and Chemistry, of the American Medical Association. Beginning 1958, new editions of the book, which usually leave press in May of the year of publication, will be called "New And Nonofficial Drugs"; and The Council's name is now to be known as the "Council on Drugs".

THE MERCK MANUAL FOR DIAGNOSIS AND THERAPY, 9th ed., 1956. Merck, Rahway, N.J., U.S.A. Price $7.25, deluxe edition $9.

BLAKISTON'S NEW GOULD MEDICAL DICTIONARY, 2nd ed., 1956. McGraw-Hill, New York, U.S.A. Price $11.50.

Supplement to Vol. I of PHARMACEUTICAL FORMULAS, 1955. Chemist & Druggist, London. Price 2s. 6d.

VETERINARY DRUG ENCYCLOPEDIA AND THERAPEUTIC INDEX, 1956, by Stephensen & Mittelstaedt. Drug Publications, New York, U.S.A. Price $6.

TRAITÉ DE PHARMACIE CHIMIQUE, 4th ed., 1955-56, Lebeau *et al.*, Masson, Paris. Price, 5 vols. 37,000 fr. (carton, 32,000 fr.).

TUTORIAL PHARMACY, 5th ed., 1957, Cooper and Gunn, Pitman, London. Price 45s. net.

Pharmaceutical Congresses

THE BRITISH PHARMACEUTICAL CONFERENCE

The 94th annual meeting of The British Pharmaceutical Conference will be held in Bristol, England, from the 2nd to the 6th of September, 1957.

THE INTERNATIONAL PHARMACEUTICAL FEDERATION

The 17th International Congress of the Pharmaceutical Sciences will be held in Leiden from the 12th to the 14th of September, 1957. The program will consist mainly of a « Symposium on Heparin » and of short research reports. Prof. Amin Haddad plans to attend the Congress.

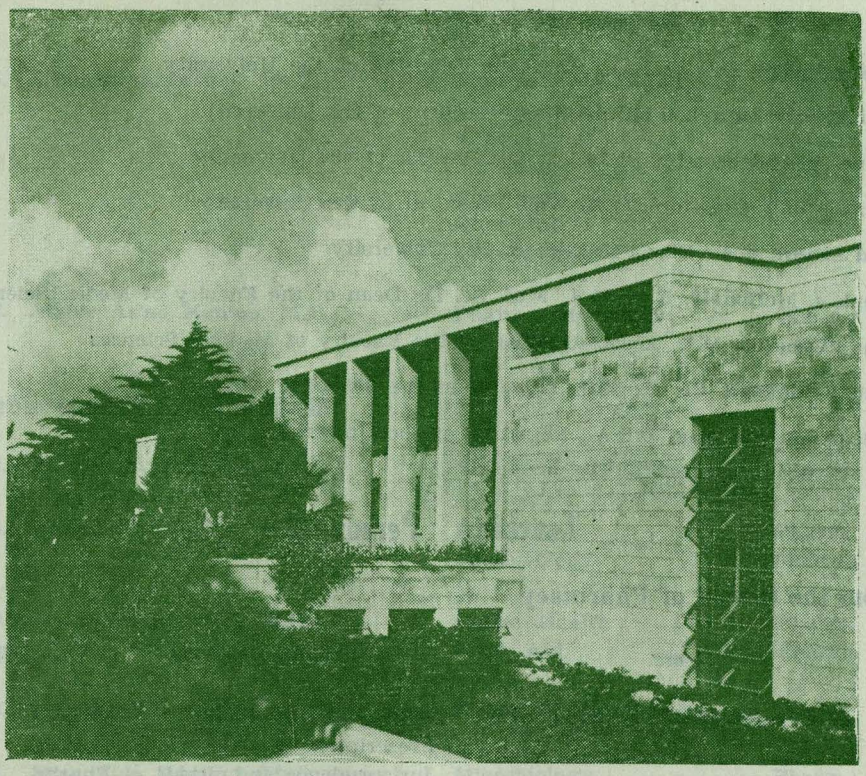
JOURNEES PHARMACEUTIQUES FRANCAISES

The French Pharmaceutical Congress will hold its annual meeting in Paris from the 7th to the 12th of October 1957. The following are some of the items on the program :

1. The relation between chemical constitution and immunological specificity. By Dr. Michael Heidelberger, U.S.A.
2. Hygienic food problems in the Lebanon. By Prof. M. Garnier (Beirut).
3. Man and the tropical complex — Some Practical Aspects of Nutrition. By Lt. Col. Pille (Dakar).
4. A symposium on, « The various aspects of bacteriological control. » By a number of speakers.
5. A convention on, « The best methods of informing the customer of the variety of services offered to him by the pharmacist. » By a number of speakers.

THE FOURTH PAN-AMERICAN CONGRESS OF PHARMACY AND BIOCHEMISTRY

The fourth Pan-American Congress of Pharmacy and Biochemistry will be held in Washington, D.C., from the 3rd to the 9th of November 1957. Almost every phase of scientific and professional pharmacy, including pharmaceutical education, is included in the program.



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that they may have life and have it more abundantly

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Farid Amin Fuleihan, B.B.A., Registrar of the University.

Teaching Personnel

From the School of Pharmacy

Name	*Courses taught*		*Class*
1. **Amin Farid Haddad, Ph.C., M.S.**	History of Pharmacy	Pharm.	IV
	Prescription Seminar	Pharm.	IV
	Jurisprudence and Ethics	Pharm.	IV
	Pharmacy IV	Pharm.	IV
	Pharmacy III	Pharm.	III
	Dispensing	Pharm.	II
	Pharmacy I	Pharm.	I
2. **Charles Abou-Chaar, Ph.C., M.S. (Abu-Shar)**	Drug Chemistry	Pharm.	IV
	Pesticides	Pharm.	IV
	Pharmacognosy & Lab.	Pharm.	III
	Library Practice	Pharm.	III
	Pharmaceutical Botany	Pharm.	II
	General Botany & Lab.	Pharm.	I
3. **Edward Vorperian, B.A., Ph.C., M.S.**	Inorganic Pharm. Chem.	Pharm.	III
	Organic Pharm. Chem.	Pharm.	III
	Organic Chemistry	Pharm.	II
	Theory of Solutions	Pharm.	I

*** On furlough 1956-57.**

4. Levon Karamanukian, B.A., Ph.C.	Drug Chemistry Lab.	Pharm.	IV
	Pharmacognosy Lab.	Pharm.	III
	Pharmacy II 1st sem.	Pharm.	II
	Qualitative Chemistry	Pharm.	I
5. Uthman Kanafani, Ph.C.	Pharmacy IV Lab.	Pharm.	IV
	Pharmacy III Lab.	Pharm.	III
	Pharmacy II Lab.	Pharm.	II
	Pharmacy II 2nd sem.	Pharm.	II
	Pharmacy I Lab.	Pharm.	I
	Quantitative Chemistry	Pharm.	I
	Dispensing	Pharm.	I
6. Munir As'ad Kan'an, M.D.	Pharmacodynamics	Pharm.	IV
	Toxicology	Pharm.	IV

From the School of Medicine

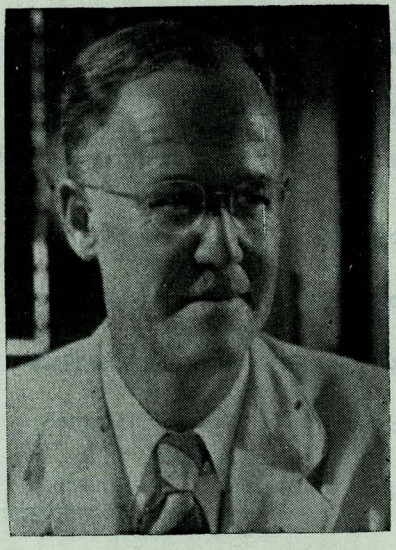
7. *Stanley E. Kerr, Ph.D.	Biological Chemistry	Pharm.	IV
8. Kamal Abu-Daoud, M.D.	Physiology	Pharm.	III
	Microbiology	Pharm.	II
9. Zeken Shakhashiri, M.D.	Public Health	Pharm.	IV
	First Aid	Pharm.	IV
10. Georges Abu-Haydar, M.A.	Biological Chemistry Lab.	Pharm.	IV
11. Miss Aida Djanian, M.S.	Microbiology	Pharm.	II
12. Avedis Khachadourian, M.D.	Biological Chemistry	Pharm.	IV
13. Usama Khalidy, M.A.	Biological Chemistry	Pharm.	IV

From the School of Arts and Sciences

14. Richard Glade, Ph.D.	Biology	Pharm.	I
15. Miss Edma Fattal, M.S.	Biology Lab.	Pharm.	I
16. Thomas Matthews, Ph.D.	Sociology	Pharm.	I
17. Lutfy Diab, Ph.D.	Psychology	Pharm.	I
18. Jamal Ghattas, B.B.A.	Business Methods	Pharm.	II

*** On furlough 1956-57.**

Dr. SAMUEL W. EDGECOMBE
ACTING PROVOST



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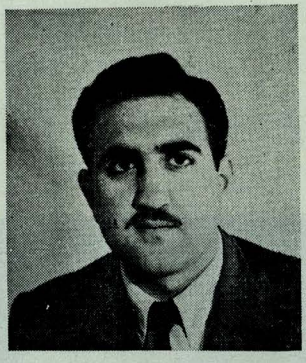
Third Year

MUHAMMAD ZIYAD HABASH
Jordan

Likes : music, sports.
Motto : welfare of country first.
Speaks : Arab., Eng.

BASSILIOS BASSUS
Lebanon

Plays : violin.
Scoieties : Pharm. Soc.
Speaks : Arab., Arm., Eng., Fr., Turk.

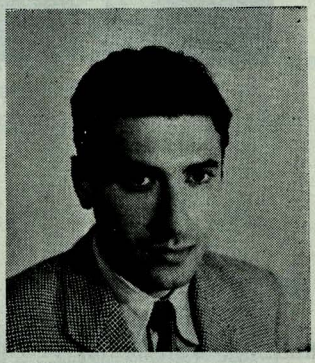


ABDUR-RASUL JISHSHI
Bahrain

Likes : music, fishing, photography.
Motto : principles give meaning to our lives.
Plays : piano.
Societies : Pharm. Soc., C.W.L.
Speaks : Arab., Eng.

AMAL KUSAYB
Lebanon

Likes : music, fishing.
Motto : do unto others what you wish to be done unto you.
Plays : piano.
Societies : Pharm. Soc.
Speaks : Arab., Eng., Fr., Ger.



NABIL BANNA
Lebanon

Likes : music, gardening.
Motto : live and let live.
Plays : accordion, *Oud.*
Societies : Pharm. Soc.
Speaks : Arab., Eng., Fr.

ALI SHIBAYKAH
Sudan

Likes : photography, collecting coins, sports.
Motto : prepare for the hereafter as if you were dying tomorrow and build as if you were living ever.
Societies : Pharm. Soc.
Speaks : Arab., Eng.

VOSGAN ANPARDJIAN
Lebanon

Likes : music.
Motto : help the helpless.
Speaks : Arab., Arm., Eng., Fr., Turk.
Societies : Pharm. Soc.

KASIM DABBAH
Palestine

Motto : be a successful pharmacist.
Societies : Pharm. Soc.
Speaks : Arab., Eng.

GEORGE BAHU
Jordan

Likes : hunting, swimming, driving, dancing.
Motto : life is wonderful but handle it with care.
Plays : piano.
Societies : Pharm. Soc.
Speaks : Arab., Eng.

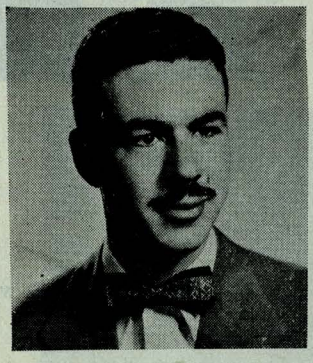
BARKEV MEKHJIAN
Jordan

Likes : hiking, gardening.
Motto : cooperate for the good of mankind.
Societies : Pharm. Soc.
Speaks : Arab., Arm., Eng., Turk.

Second Year

SAMIRAH KHAMASMIYYAH
Syria

Likes : music, travelling.
Motto : serve the Arab World.
Societies : Pharm. Soc.
Speaks : Arab., Eng., Fr.



HENRY BASEM HANANIYYA
Jordan

Likes : collecting stamps, dancing, ping pong.
Motto : you harvest what you sow.
Societies : Pharm. Soc.
Speaks : Arab., Eng.

JIHAD KAYYALI
Syria

Likes : acting, learning languages, visiting historical places.
Motto : laugh and be merry, for tomorrow you die.
Plays : piano.
Societies : Pharm. Soc., Biol. Soc., W.S.O.
Speaks : Arab., Eng., Fr., Turk.

YERANOUHI KOUYOUMJIAN
Lebanon

Likes : collecting stamps, sports, movies, social work.
Motto : find truth and peace.
Societies : Pharm. Soc.
Speaks : Arab., Arm., Eng., Fr., Turk.

NAYIF HAMARNAH
Jordan

Likes : movies.
Motto : live the good & happy life.
Societies : Pharm. Soc., C.W.L.
Speaks : Arab., Eng.

MARY ALBERT
Lebanon

Likes : swimming.
Motto : respect yourself, others will respect you.
Plays : piano.
Societies : Pharm. Soc.
Speaks : Arab., Arm., Eng., Fr., Turk.

SHIHADEH MUSA
Lebanon

Likes : hunting, swimming, farming.
Motto : be cooperative.
Plays : flute.
Societies : Pharm. Soc., Chem. Soc., C.W.L.
Speaks : Arab., Eng., Fr.

EVKINE PAPAZIAN
Syria

Likes : music, swimming.
Motto : understand and serve people.
Plays : piano.
Societies : Pharm. Soc.
Speaks : Arm., Bulg., Eng., Fr.

GEORGE DIGENIS
Greece

Likes : sports.
Motto : uphold the good name of your family.
Societies : Pharm. Soc.
Speaks : Arab., Eng., Fr., Gr.

ELIZABETH MANOUKIAN
Syria

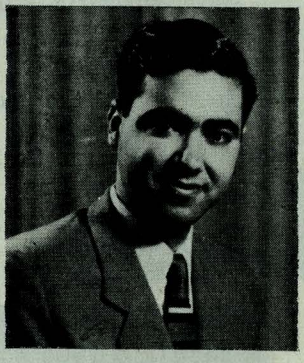
Likes : collecting books, fiction.
Motto : respect others, others will respect you.
Societies : Pharm. Soc.
Speaks : Arab., Arm., Eng., Fr., Turk.

ILYAS SHAMI
Syria

Likes : music, dancing, sports .
Societies : Pharm. Soc.
Speaks : Arab., Arm., Assyr., Eng., Turk.

First Year

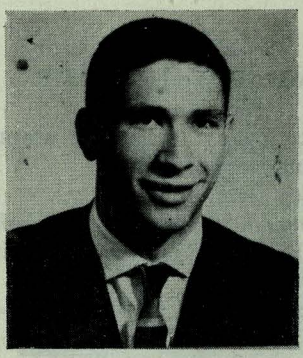
GABRIEL KUNYAZIH
Syria
Likes : swimming.
Motto : be of service to community.
Societies : Pharm. Soc.
Speaks : Arab., Eng.



ABDUR-RAHMAN MAHMID
Bahrain
Likes : collecting stamps, photography, swimming.
Motto : play while you play, work while you work.
Societies : Pharm. Soc.
Speaks : Arab., Eng.

HAROUTUNE ARTINIAN
Lebanon
Likes : collecting stamps, photography, & sports.
Motto : keep smiling & make others smile.
Societies : Pharm. Soc., French Soc.
Speaks : Arab., Arm., Eng., Fr., Turk.

ARIF SARRIF
Jordan
Likes : drawing, photography.
Motto : be good to others, you will be good to yourself.
Plays : harmonica.
Societies : Pharm. Soc.
Speaks : Arab., Eng.

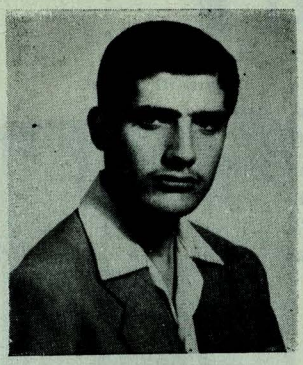


JOHN HALEBLIAN
Lebanon
Likes : music, hiking.
Motto : the fear of the Lord is the beginning of wisdom.
Plays : Plays : piano.
Societies : Pharm. Soc.
Speaks : Arab., Arm., Eng., Fr., Turk.

SAID AWWAMI
Saudi Arabia
Likes : indoor table games.
Motto : be of service.
Societies : Pharm. Soc.
Speaks : Arab., Eng.

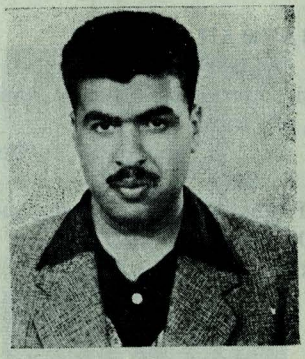
UMAYMAH MALAS
Syria
Likes : music, fiction, collecting snapshots, cooking.
Motto : get most of schooling to best serve country.
Societies : Pharm. Soc., Chem. Soc., W.S.O.
Speaks : Arab., Eng., Fr.

ELIE ABU-SHANAB
Syria
Likes : jokes.
Motto : life is short, enjoy it.
Societies : Pharm. Soc., C.W.L.
Speaks : Arab., Eng., Fr.



MUHAMMAD YAKUB AMR
Jordan
Likes : photography, collecting stamps & coins.
Motto : enjoy life abundantly.
Plays : piano, accordion, *derbakkeh.*
Societies : Pharm. Soc., C.W.L., Ping Pong Club.
Speaks : Arab., Eng.

FARUK SAKHNINI
Palestine
Likes : camping, swimming.
Motto : enjoy life & help others enjoy it.
Societies : Pharm. Soc.
Speaks : Arab., Eng.



AHMAD ZUBI
Syria
Likes : collecting stamps, tennis.
Motto : be of service to others.
Societies : Pharm. Soc.
Speaks : Arab., Eng.

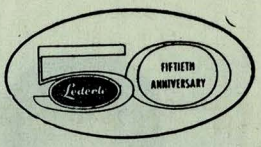
AWNI JARRAH
Palestine
Likes : swimming, movies, parties.
Motto : enjoy life without disturbing others.
Plays : *daff.*
Societies : Pharm. Soc., C.W.L.
Speaks : Arab., Eng.

HAGOP ARTINIAN
Lebanon
Likes : music, sports.
Motto : man is a social being.
Societies : Pharm. Soc., French Soc.
Speaks : Arab., Arm., Eng., Fr., Turk.

USAMAH KHAYYATAH
Lebanon
Likes : scientific books, sewing, cooking.
Motto : follow the golden mean, be brave and kind.
Societies : Pharm. Soc., Chem. Soc., Bowling Club.
Speaks : Arab., Eng., Fr.

MARWAN ABUL-HAJJ
Jordan
Likes : collecting stamps, chess.
Societies : Pharm. Soc., Biol. Soc.
Speaks : Arab., Eng.

TORKOM NAHABEDIAN
Syria
Likes : music, singing, sports.
Motto : help fellowmen.
Societies : Pharm. Soc.
Speaks : Arab., Arm., Eng., Fr., Turk.



Diamox

ACETAZOLEAMIDE LEDERLE

NOW ACCEPTED FOR USE IN

EPILEPSY[1]

Recent clinical trials show that DIAMOX suppresses both the frequency and severity of epileptic seizures. DIAMOX appears to produce a relative acidosis, in a manner similar to the ketogenic diet, and may also have a direct effect on nerve tissue. No direct sedative action is apparent.

GLAUCOMA[2]

Oral administration of DIAMOX is followed by significant reduction in intraocular pressure in acute glaucoma. Experimental evidence indicates decreased secretion of aqueous humor. DIAMOX also appears to enhance the action of commonly employed miotics.

CARDIAC EDEMA

Now the most widely prescribed drug of its type, DIAMOX has been immediately accepted by clinicians because it is an effective, safe and convenient *oral* diuretic.

Available in 250 mg. tablets and 500 mg. ampuls for intravenous use.

1. MERLIS, S.: Diamox: A Carbonic Anhydrase Inhibitor—Its Use in Epilepsy. Neurology. 4:11, 863-866 November 1954.

2. BECKER, B.: Decrease in Intraocular Pressure in Man by a Carbonic Anhydrase Inhibitor, Diamox. Am. J. Ophth. 37:1, 13-15 January 1954.

LEDERLE LABORATORIES DIVISION *AMERICAN Cyanamid COMPANY*
PEARL RIVER, NEW YORK

Lederle
*REG. U.S. PAT. OFF.

THE PHARMACEUTICAL SOCIETY, A.U.B.

A Report by the Cabinet

This year marks the 24th year in the life of the Pharmaceutical Society which was founded in 1933. Again, this year, the Society assumed its position as one of the most active and flourishing of student societies on the campus. It is hoped that future members will do their best to preserve the high prestige acquired by the Society through the devotion and cooperation of its members.

The Cabinet for the year 1956-57 consisted of George Bahu (Pharm. III), President; Artin Malakian (Pharm. IV), First Vice President; Abdur-Rasul Jishshi (Pharm. III), Second Vice President; Henry Basim Hananiyya (Pharm. II), Secretary; George Digenis (Pharm. II), Treasurer; Marwan Abul-Hajj (Pharm. I), First-year-class Representative. Mr. Uthman Kanafani acted as Faculty Adviser.

The Cabinet with the wise guidance of its active Adviser and the support of the student body, was able to fulfill its program successfully. Three activities: the Taghora Magic Show, the Christmas Party, and the Dancing Party took place in West Hall. Two trips were organized, the first to Kasmiyyah River, South Lebanon, and the second to Beit-Eddin, Barouk, and Nabeh el-Safa. The Society had planned to hold its traditional Opening Reception in honor of the incoming Pharmacy I students, but was cancelled due to the Anglo-French-Israeli operations against Egypt. The Society ended its activities for the year by holding a Farewell Reception in the Alumni Club in honor of the Graduating Class, on May 30, 1957.

The Cabinet wishes to thank its Advisor, Mr. Uthman Kanafani, for his efforts and constant guidance, and the Director of the School, Prof. Amin F. Haddad, for his counsel and support. Thanks are also extended to the members of the Faculty and student body who have cooperated to make this year a pleasant and a constructive one.

The following is a list of the activities sponsored by the Society. *A pictorial record appears on the following pages.*

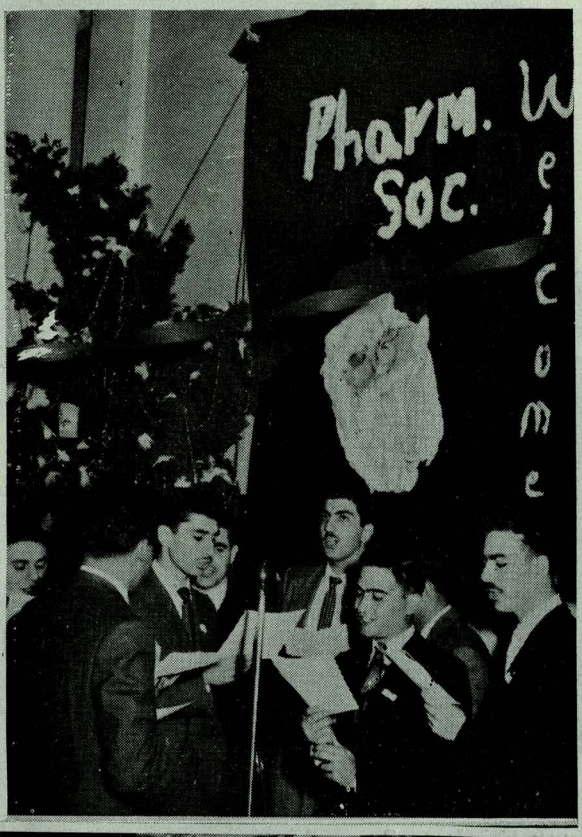
1. Nov. 1, 1956 — Election of President and 2nd Vice President, Pharm. Bldg.
2. Nov. 7, 1956 — Opening Reception, W.H.C.R. (cancelled).
3. Nov. 24, 1956 — Taghora Magic Show by Taghour Dahi, W. H. Auditorium.
4. Dec. 19, 1956 — Christmas Party held jointly with the Student Nurses Assoc., W.H.C.R.

5. March 2, 1957 — Dancing Party, W.H.C.R.
6. March 15, 1957 — General Knowledge Contest, Pharm. IV vs. Pharm. III; Pharm. IV won.
7. March 22, 1957 — Trip to Kasmiyyah River, South Lebanon.
8. March 27, 1957 — General Knowledge Contest, Pharm. II vs. Pharm. I; Pharm. II won.
9. April 2, 1957 — General Knowledge Contest, Pharm. IV vs. Pharm. II; Pharm. II won.
10. May 5, 1957 — Trip to Beit-Eddin, Barouk, and Nabeh el-Safa, with student nurses.
11. May 8-20, 1957 — Ping Pong Tournaments, for members; Muhammad Yakub Amr won the first prize, and Elie Abu-Shanab won the second prize.
12. May 25, 1957 — Election of Officers for the year 1957-1958, Pharm. Bldg.
13. May 30, 1957 — Farewell Reception & General Knowledge Contest, Alumni Club.

... outside the laboratory ...

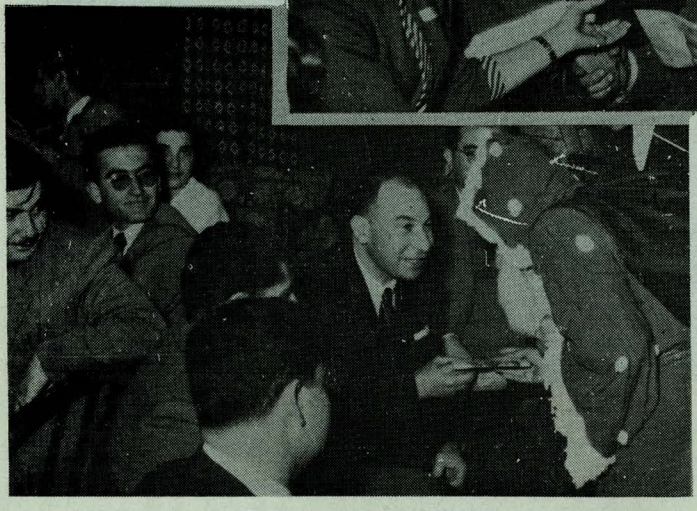
A. U. B.,
in thee we glory.

Make us true and
brave.

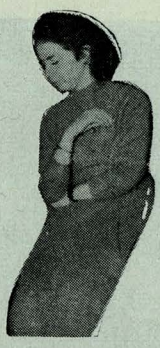


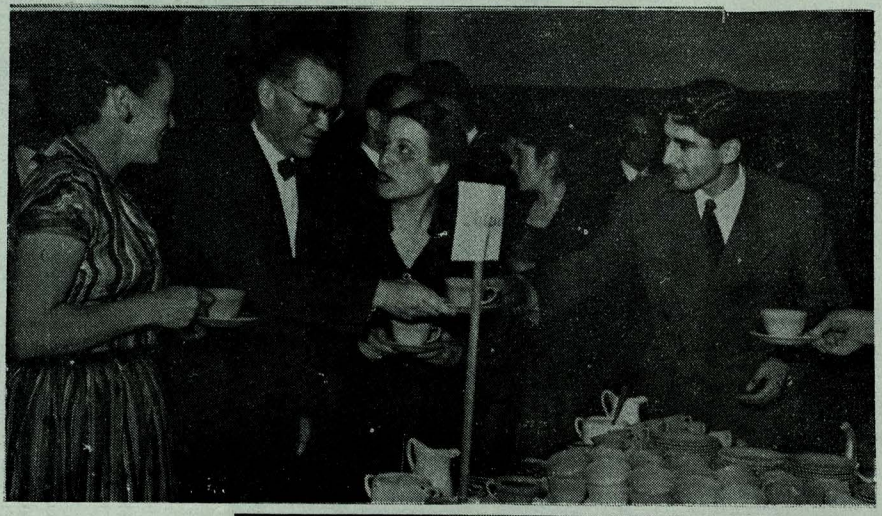
Horse-meat sandwich ?

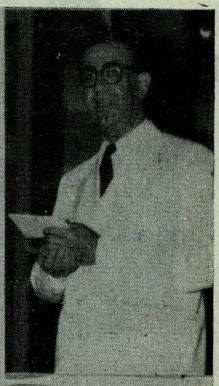
Do you think so ?



Great
Expectations ...














Receiving Awards ... Declaiming ...

UN LAIT VIVANT

D'après Krylow, la teneur en vitamines du lait conservé dépend des facteurs suivants : procédé de préparation et de fabrication chez lequel l'influence de la température et de la lumière joue un rôle prépondérant, utilisation des ustensiles et des machines, moyen et durée de conservation, emballage. Le procédé spécial de fabrication Guigoz (sous vide et à 48° seulement) répond exactement à ces principes. — « Le Lait Guigoz conserve les vitamines du lait frais ». Tel est le résultat des analyses de l'Institut d'Etat pour le contrôle des vitamines.

Lait Guigoz

LAIT DE LA GRUYÈRE, EN POUDRE

GUIGOZ S. A. VUADENS (Gruyère)

PRIZES AWARDED

at the farewell reception held by the

Pharmaceutical Society, A. U. B.

Director's Prize

Prof. Amin F. Haddad presented Tawfik Karam, Pharm. IV, with a copy of the **Merck Index,** 6th ed., for attaining the highest grade average of the past three academic years.

Apothcary's Prize

The Apothecary Board gave George Bahu, Pharm. III, a copy of the **New American Encyclopedia,** Books, Inc., New York, 1951, in recognition of his devoted services as the business manager of the Yearbook.

Widacka's Prize

John Haleblian, Pharm. I, received a copy of the **Concise Oxford Dictionary,** 4th ed., 1956, that was kindly offered by Miss Maria Widacka Ph.C. '50, London, as a present to the winner of the General Knowledge Contest.

Pharmaceutical Society Awards

1. A silver cup was presented to the winner of the School of Pharmacy Championship in ping-pong. The cup went to Muhammad Yakub Amr, Pharm. I.

2. A silver medal of the Society was presented to the runner-up in the School of Pharmacy Championship in ping-pong. The recipient was Elie Abu-Shanab, Pharm. I.

Athletic Teams

of the School of Pharmacy for the year 1956-57

The Basket Ball Team

The members were : Nabil Banna, captain; Hagop Artinian, George Digenis, Nayif Hamarnah, and Ilyas Shami.

The Football Team

The members were : Muhammad Ziyad Habash, captain; Haig Gourdikian, Henry Basim Hananiyya, Artin Malakian, Barkev Mekhjian, Ali Shibaykah, Ahmad Zubi.

The Volley Ball Team

The members were : George Digenis, captain; Hagop Artinian, Nabil Banna, Artin Malakian, Shihadah Musa, Torkom Nahabedian, and Ilyas Shami.

Ping Pong Tournament

The Pharmaceutical Society organized a ping-pong tournament for the members. The School of Pharmacy Champion, Muhammad Yakub Amr, Pharm. I, received the silver cup offered by the Society. The runner-up, Elie Abu-Shanab, Pharm. I, received the silver medal of the Society.

IF

If you can keep your head when all about you
    Are losing theirs and blaming it on you;
If you can trust yourself when all men doubt you,
    But make allowance for their doubting too;
If you can wait and not be tired by waiting,
    Or, being lied about, don't deal in lies,
Or, being hated, don't give way to hating,
    And yet don't look too good, nor talk too wise;

If you can dream — and not make dreams your master;
    If you can think — and not make thoughts your aim;
If you can meet with triumph and disaster
    And treat those two impostors just the same;
If you can bear to hear the truth you have spoken
    Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to broken,
    And stoop and build 'em up with wornout tools;

If you can make one heap of all your winnings
    And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
    And never breathe a word about your loss;
If you can force your heart and nerve and sinew
    To serve your turn long after they are gone,
And so hold on when there is nothing in you
    Except the Will which says to them : « Hold on »;

If you can talk with crowds and keep your virtue,
    Or walk with kings — nor lose the common touch;
If neither foes nor loving friends can hurt you;
    If all men count with you, but none too much;
If you can fill the unforgiving minute
    With sixty seconds' worth of distance run —
Yours is the Earth and everything that's in it,
    And — which is more — you'll be a Man, my son !

Rudyard Kipling

Best Loved Poems, *Permabooks*, N. Y., 1948.

An "IF" for Girls

If you can dress to make yourself attractive,
Yet not make puffs and curls your chief delight;
If you can swim and row, be strong and active,
But of the gentler graces not lose sight;
If you can dance without a craze for dancing,
Play without giving play too strong a hold;
Enjoy the love of friends without romancing;
Care for the week, the friendless and the old.

If you can master French and Greek and Latin,
And not acquire, as well, a priggish mien;
If you can feel the touch of silk and satin,
Without despising calico and jean;
If you can ply a saw and use a hammer,
Can do a man's work when the need occurs;
Can sing when asked, without excuse or stammer,
Can rise above unfriendly snubs and slurs.

If you can make good bread as well as fudges,
Can sew with silk and have an eye for dust;
If you can be a friend and hold no grudges,
A girl whom all will love, because they must.

If sometime you should meet and love another,
And make a home with faith and peace enshrined,
And you, its soul, a loyal wife and mother,
You'll work out pretty nearly to my mind
The plan that's been developed through the ages,
And win the best that life can have in store,
You'll be, my girl, a model for the sages —
A woman whom the world will bow before.

Elizabeth Lincoln Otis

Something to Live By, *Permabooks*, N. Y., 1948.

SCHOOL OF PHARMACY

Statistics on Students

1956-57

Number of Students

Men students 35 , Women students 11 , Total 46.

Marital Status

Single 41 , Engaged 4 , Married 1.

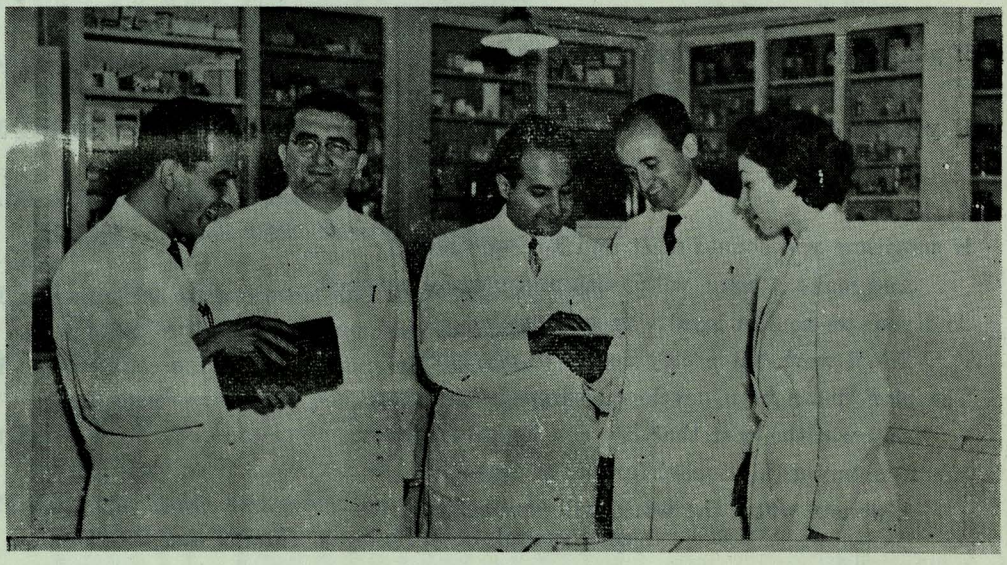
Nationalities

A.	Lebanon	18		Greece	1
	Syria	10		Iraq	1
	Jordan	9		Saudi Arabia	1
	Palestine	3		Sudan	1
	Bahrain	2	B.	Total Nationalities	9

Student Opinion Poll

Students like the family atmosphere of the School and the smooth student-faculty relations.

Students complain of the crowded building, miss certain amenities available in other buildings and consider the curriculum tough.

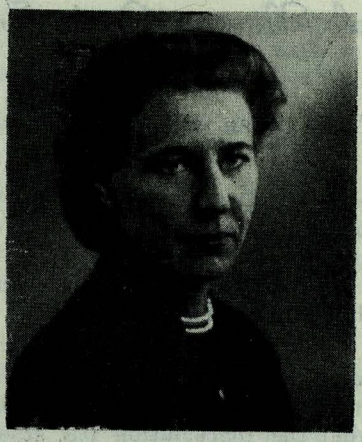


The Hospital Pharmacy Staff

From left to right : Morris Karam Ph. C., Assistant Hospital Pharmacist; Edward Ishkhanian Ph. C., Hospital Pharmacist; John Adel, Dispenser; Hani Sha'ar, Technician; Miss Mary Nakkash, Secretary.

Miss Maria Widacka

a very faithful alumna...



Miss Maria Widacka, originally born in Poland, graduated from the School in 1950 with the degree of Pharmaceutical Chemist. She was one of the best students in her class, liked by every body and very cooperative. In her own words, she « fell in love with the Lebanon and my Alma Mater, » and eversince she went to England, her country of adoption, she never ceased her correspondence with her classmates, her friends, the Faculty, and the student Pharmaceutical Society of A.U.B.

She is regular subscriber to *Middle East Forum* and *Al-Kulliyah,* publications of the Alumni Association, A.U.B.; and to *the Apothecary,* the yearbook of the School. She is not a stranger even to the new students because of her interest in the Pharmaceutical Society, A.U.B. Regularly, year in and year out, she sends a book as a gift to the winner of the General Knowledge Contest (School of Pharmacy), and a cash contribution to the *Apothecary.* In 1954 the *Apothecary* published for her « A Prescription Survey From London » —a survey carried out especially for the Yearbook.

Miss Widacka is at present a member of the Pharmaceutical Society of Great Britain, and a pharmacist in London where she is a superintendent and one of the directors of Hewett Chemists, Ltd.

A Nitrous Oxide Inhalation....

To be taken with a grain of salt, ad libitum ...

prescribed by ... **Ali Shibaykah**

Overheard in lectures, whispered in the corridors, smelled in the labs and shouted in the Lounge :

A point of view !

Representatives of the four classes of pharmacy were asked, separately, what the abbreviation T.S. stood for :

The fourth year student answered : may be Testo-sterone,
The third year student answered : I think Test Solution,
The second year student : it must be Taenia Saginata,
The first year student : why ... certainly it is Torpedo Suppository ....

A headmaster ...

A pharmacist was made headmaster of a school. On the first day he « suspended » ten students, « dissolved » all the societies, and made chapel exercises obligatory « three times daily before meals. »

R and R' ?

Professor : In the general structural formula for ether, what does R & R' stand for ?

Intelligent 2nd year student : Well Sir, since it is « ether », it must be Rock and Roll ...

Accuracy ...

Professor : ... official rhubarb is indigenous to China ...

Worried student : But Sir, which China : communist or nationalist ?

A complete answer ...

Professor, early in the year : Enumerate the emulsifying agents we studied last year, youngman ... er .. what is your name ?

Student hesitating : Yes ... Sir Sir, my ... my name ... is George Alexandros Kiriakos Athanassiadis Cosmidis Papadoupoulos Costa Digenis .... cling-clang, class is over.

Proposed Elective Courses for next year...

Opera, Jazz & Hymnology.

The class will be held in the corridors and halls of the Pharmacy Building when other classes are in session. The course will be offered during both semesters and will be given free by women students of the incoming third year class. Pre-requisite, a spirit of jolliness. Credit zero.

Practical Cosmetology.

A 10-credit hour course for men students and a non-credit course for women students. The course will consist of a series of demonstrations made by women students before the newly-bought mirror in the Lounge. Sessions are held daily in the intervals between classes.

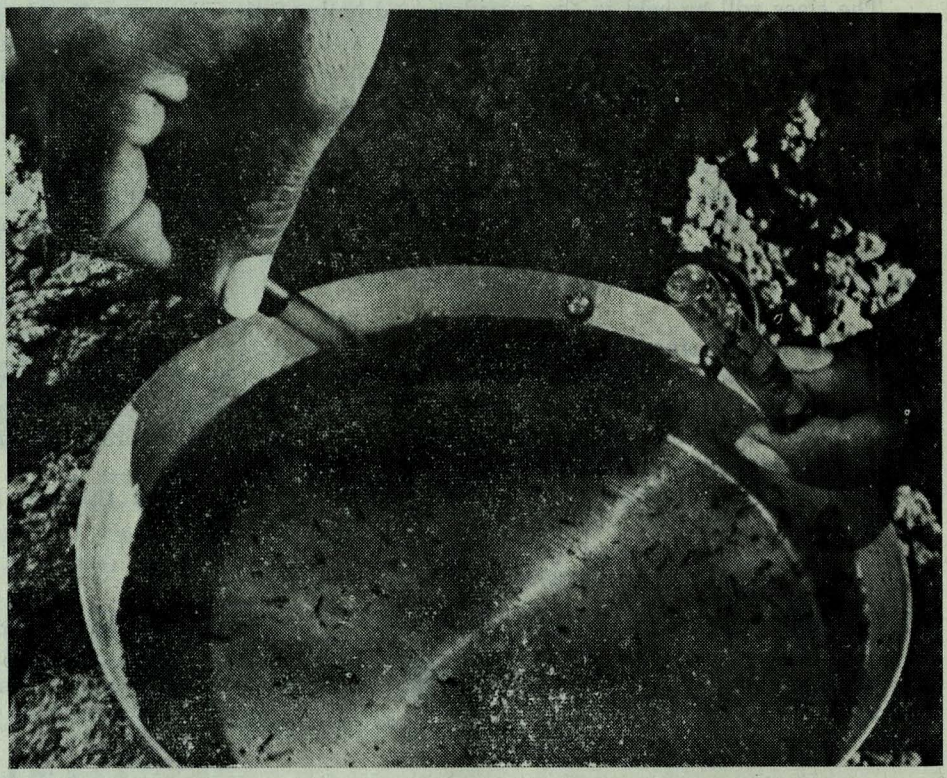
Philosophy of Pharmacy.

This is an hour course for undergraduates who have spent at least seven years in the School before reaching their senior year. The course will consist of private conferences held in the Preparation Room. The atmosphere must be one charged with cigarette smoke and coffee perfume.

Tutor : the man who has been longest in the School, nearly a third of a century ..., Mr. B.J.

the best years of our lives ...

The Eradication of Malaria



Our picture, taken in Sardinia, shows larvae being placed in a test tube for examination

In the world's battle against endemic disease, as in so many other spheres

OIL PLAYS ITS PART

serving progress SHELL

Excerpts

FROM OUR MAIL

Mr. Samih Afifi B.Sc. '52, Jedda, Saudi Arabia :

« ... Time seems to pass so quickly and I was so much consumed in my work to the extent of failing to write to my dearest friends. »

« ... As to my work, I have been too busy lately with members of the medical profession in checking the spread of infectious diseases, especially smallpox and chickenpox.

In addition to my work, I was honored by the Ministry of Health by being appointed its representative in the Pricing Committee. Some of the duties of this Committee consist of pricing imported medicines and publishing a tariff list of such imported drugs to be distributed to all pharmacies and drug-stores so that they will commit themselves to the price list. Also we are supposed to inspect pharmacies and drug-stores at regular intervals to insure that each medicine bears a price label which coincides with the official price list. The Committee has the power to take a decision to fine the proprietor who disobeys the pricing regulations 200 Riyals the first time, 400 Riyals the second time, and 400 R. in addition to confiscating the unpriced drugs and suspending the permit to operate, the third time. The resolutions of the Committee are final.

I am glad to mention to you that I was accepted as an active member in the American Pharmaceutical Association starting with Jan. '57. Three days ago I received the first three numbers of both the Practical and the Scientific editions of the Journal. I received also two numbers of Pharmacy International. »

Mr. Joseph Andonian B.Sc.'53, Hollywood, Cal., U.S.A. :

«Not so long ago, as you may remember *(see Apothecary* 1956, p. 125), I joined the Los Angeles University of Southern California, College of Pharmacy, as a prospective candidate for the Pharm. D. degree *(Doctor in Pharmacy)*. Paraphrasing a Hollywood dance studio slogan, I walked in and danced out, in not more than two semesters, with a diploma. Typing is one of the requirements for graduation, but they left out shorthand — a skill that could have been useful while taking down phoned prescriptions. For some reason, physicians dictating an Rx are always in a hurry and their nurses are in an even greater hurry.

My subsequent pilgrimage to San Francisco in a classmate's Volkswagen, packed with pharmacy books and notes was more than a sightseeing trip : and it was not just a coincidence that the California State Board of Pharmacy was in San Francisco, that same week.

Last summer I worked in a modern « drive-in » pharmacy, one of the very few in Southern California, equipped with everything including an AM-FM radio and a portable TV set ! Unfortunately, the other pharmacist was too fond of baseball.

I now live in Hollywood, in a hillside apartment formerly occupied by a

screen- TV actor apparently not too well known. Hollywood is a crazy place and I feel so much at home, that is, whenever I am not homesick for Lebanon.

Elvis Presley and the «rock-'n-roll » are gradually giving way to Harry Belafonte and the « calypso ». It seems like all the stars are out of town, in either Las Vegas or Palm Springs.

I now work in an Rx pharmacy in Glendale half owned by the Dean of the USC College of Pharmacy; and take pride in the fact that we do not, and are not going to, carry cigarettes, inspite of contant public demand, including the nurses in the medical building.

The 1956 issue of the *Apothecary* was a sensational success with some of my American colleagues who saw it. They could hardly believe that in the land of palm trees and dates, deserts and camels, Arabian nights, dancing girls and magic carpets there could be so much science, for that matter any science at all ..... »

Mr. Goubran Atallah B.Sc. '52, Heliopolis, Egypt :

« ... My pharmacy is in Zamalek and I am living in Heliopolis, so every trip takes me around 35 minutes by car. I have to do it four times daily; so every day I drive more than two hours in addition to my work of nine hours in the pharmacy. I am satisfied and I can say that I have the best pharmacy in Zamalek. I have divided my work among three persons : I personally am in charge of the laboratory, I prepare myself every prescription and I don't allow any person to touch anything in the lab. I have a very experienced sale man for specialities, he is in charge of ordering medicines from agents and paying bills. A young girl is in charge of the perfumery department and the cash at the same time. I also have two errand boys with bicycles for delivering medicines to homes. Everyone knows his job, and everything is going well. My only free day is Sunday. I always spend this day with my small family. I have a boy Moufid Reda and a girl May. Reda looks exactly like me; it seems to me he is going to be quite an intelligent future A.U.B. student. You would be quite surprised to see me now, I have changed so much with all my responsibilities and my children around me. I am becoming a good old father. The only friend I see very often is Samir Girgis (B.Sc. '55). I am always in touch with him, and when we are together we always remember the four years at A.U.B., the best years of our life. »

Mr. Ibrahim Durr B.Sc. '54, Cleveland, Ohio, U.S.A. :

« It's a year now since I last wrote to you *(see Apothecary* 1956, p. 129); things have not changed much. I am a year older and just about half way through with my work. Next spring I shall be taking my preliminary examination which will cover just about all what I learned in chemistry so far : organic, inorganic, physical, and biological. When this is gone, well I hope, the only obstacle left will be the thesis problem. My course work has been going well so far and with no difficulty at all; I guess this year we had the toughest of all possible courses, steriochemistry and chemistry of natural products; I passed them successfully — thank God.

A month ago, I spent a week in Chicago attending the annual meeting of the biochemists. Fortunately, I met many friends, to mention only Drs. Kerr,

Babikian of the Biology Department, and Adrouni to whom I was introduced by Dr. Kerr. We had a nice time in Chicago, which is a very big and noisy city; it has many places of interest and at all levels too ! Speaking of familiar faces, I was surprised one morning to find myself face to face on the stairs of the medical school with Dr. Ghantous; I did not have a chance to see him as much as I would have liked to, we had our midyear that week.

One more month, even less, and the year will be over. I am trying to make some plans for the summer vacation late in August. Last summer I camped with thirty students of fifteen different nationalities. It was a very rich experience meeting such a a small world; the spot was absolutely lovely, on a very beautiful lake in North Minnesota. I may do it again this year, but I prefer to visit a new area. »

Mr. Hamdi Dürüst '51, Istanbul, Turkey :

« ... It was with a sense of real pride that I heard of the success of this first historic conference *(First Middle East Pharmaceutical Conference)* held in Beirut, organized by my beloved professors in collaboration with their colleagues in the French Faculty and Order. Congratulations ! The delegates from Turkey were full of praise of the organization, of the hospitality and, most important of all, of the « caliber » of the conference, and were ever thankful for the interest in the welfare and the punctuality of the members. I need not talk much about the most positive impression they have obtained regarding the pharmaceutical education in Lebanon and the well-informedness of most of the graduates they talked to. To them, the Turkish members, A.U.B. was the ideal « fortress of education », and all told me how lucky I have been to study there. »

« ... Congratulations again for *The Apothecary* 1956. It was indeed another original issue from cover-design to contents, from the Editorial to the newsletters. So delighted was I, that I could not leave it aside for many days, reading very late in the night, when the nights were so short, especially !

Pharmacy Technicians have organized themselves into a society, and for the past year, have been editing a monthly magazine called the « Practical Pharmacist ». I have also contributed to it occasionally. Naturally the contents are mostly of the standard a practical technician could understand. The editor, on seeing *the Apothecary* asked me if I could summarize Samih Afifi's « *Pharmacy in Saudi Arabia* » and Nicolas Athanassiadis' « *Pharmacy in Ethiopia* » for their coming number, to be included under the title « *Pharmacy Here And Abroad* ».

« ... Well, in all this excitement, to check and stop artificial inflation, pharmacists were not on their own, either. Prices of proprietaries were fixed by the ministry since time immemorial. But sanitary supplies and surgical dressings as well as perfumery came under the new law of the limitation of profits. The limits of profit for sanitary supplies were the same as those for proprietaries (namely, 20 % for importers, 10 % for wholesalers, and 25 % for retailers), but for perfumery, it was cut severely, so as to discourage the importation and sale of 'articles of luxury' in this time of industrial reorganization of the nation : for perfumery, importer 10 %; wholesaler, 5 %; retailer, 10 % ! This means that if a jar of cosmetic such as Pond's Cream or say a bottle of an expensive perfume is dropped by mistake in the pharmacy, one has to sell

10 similar containers to be able to make up the loss ... This of course discourages many pharmacists to keep great stocks of perfumery and other articles of luxury. Soaps, toothpastes, hairshampoos are not classified as luxuries, however. ... Coming to the point, many pharmacists, who somehow disliked the idea of being governed in their professional charges by a standard tariff are now thankful to the association for its efforts last year in the realization of a tariff! Under this new price-limitation law, we would have been in a desperate position, had the tariff not been passed and enforced only 3 or 4 months ago ! We all acknowledge the leadership of Prof. Tandal in this line, and are reaping the fruits of his foresight. »

Two months later he writes : « The gloomy month of September marks the end of the beautiful summer days of Istanbul — in weather and climate, in the people's state of mind, in the way of life, in the color and aroma of the flora of the hills surrounding the metropolis and the sea — in short, in every respect. »

« ... As of recent, I was asked to take up the post of Technical and Professional Adviser of the new magazine to be published by the Society of Pharmacy Proprietors, since the former one, the *Eczacilik Bulteni,* becomes the organ of the chamber of pharmacists. In spite of its laudible four-word title, the job is no other than that of proof- and manuscript-reading, arrangement of the material, etc. At long last, the new cabinet of the Society was formed, and I finally succeeded in remaining outside of it, at the cost of accepting the magazine job, alas ! The executive committee accepted my excuses and voted to invite other reserve-members in the line of succession. I again remain reserve-member No. 1. Professor Tandal got unanimous vote of confidence. »

See « Pharmacy in Turkey », p. 75.

On Jan. 14, '57 he writes : « ... Following the elections, Prof. Tandal was elected to the active post of the Secretariat-General of the Central Committee (later he became President) of all the chambers of pharmacy of Turkey. I was elected to the reserve-membership of the Central Committee of all the Chambers, and also was appointed, by the Central Committee, to be in charge of their bulletin. Because of my over-loaded schedule, I declined the editorship of their bulletin but accepted the post of Managing and Make-Up Editor. »

On May 10, '57 he writes : « I had to delay answering your good letter until our baby, a son, arrived on Wednesday, May 8, 1957. We are all grateful to God Almighty for blessing us with such good tidings ! Thank God, Mrs. Dürüst and the boy, weighing 3500 grams at birth, are both feeling fine, and making us all the happier. »

On May 27, '57 he writes again : « Busy as we are in answering the 'call of duty' of our baby boy, it takes sometime before we can sit down to reply to the very kind congratulatory messages of many friends and acquaintances. »

« ... Our son's name will not be totally unfamiliar to you, as most Turkish families choose names that are mostly Arabic and sometimes Persian in origin. The practice here is to adopt a religious name plus the first name by which the person is to be known and identified throughout his life.

What other name could your student Hamdi Dürüst choose for his son than that of one associated with his sweet memories of his unforgettable years at A.U.B., Beirut, and the Lebanon. So, for my son's religious name I chose that of the prophet whose tomb I visited in Damascus : Yahya, known by you as St. John the Baptist.

Arabic being your mother tongue, you will not have difficulty in finding out the meaning of his name by which he will be identified : HALUK, pronounced Ha-louk, which name has come to mean 'good temper and good nature' in Turkish. So we had him registered as 'Yahya Haluk Dürüst'. May God bless his little heart.

So as to provide better care for Haluk, we plan to move to Kadikoy, the site of ancient Chalcedon, on the Asiatic side of the city for the summer. This will make it a bit harder for me to travel by a ferry-boat to and from my pharmacy everyday, but, never mind ... ! »

Mr. Nadim Khalluf '50, Beirut, Lebanon :

« With the excellent background acquired while studying and working at A.U.B., I left for the University of Massachusetts, at Amherst, to study Food Technology and to train in the various State and Federal Public Health Laboratories. Though I was working under the pressure of time and novelty of every kind, yet this background helped me complete successfully the requirements for the M.S. degree *(Mr. Kalluf took 9 semester courses in Food Technology and 3 semester courses in Public Health; he later took a course in Fisheries and Oceanography also. See Apothecary* 1956, p. 134).

On June 5th, 1956, after the months of hard academic work, I began the practical training at the Government Laboratories which lasted through September 1956. During this practical training I had a rare opportunity of visiting some food handling establishments where one could not but marvel at men and machines working together with an excellent and amazing performance.

Research in the newly discovered field of foods has found a real place. It aims at a better product as to nutritive value, preservation, palatability, and packaging. Palatability is based on taste panels, and judgement is according to a difference preference triangular system.

The food handling establishments have succeeded to a great extent in transferring the kitchen from the American home into the factory, thus allowing housewives to spend less time in the preparation of the meal and conversely more time for the family and the community. Food preservation methods have evenly spread such food items as the seasonal and the perishable ones all the year round.

The *can* took the most important place in that necessary industry and made the saying go true : «Americans live out of a can ». Now the tendency is more and more towards refrigeration as it proved to retain the flavor, and the heat-labile vitamins necessary for nutrition.

Man is realizing more and more the importance of food to health, and with that in mind, the governments of progressive nations are more concerned about the safety and wholesomeness of the food which is presented to the public. For that purpose control laboratories for the examination of food, food inspection techniques, and the enforcement of the law, are now considered a must in a healthy nation. The Lebanese Government, realizing this, has already

established, with the help of I.C.A. (Point IV), an excellent laboratory and sent some hand picked people abroad for specialization *(among them Messrs. Sami Na'man and Nadim Khalluf — Editor)*. The work of this laboratory will begin shortly and with the support and understanding of all concerned, will provide our community with safe and nutritious foods. »

Mr. Sami Na'man B.Sc. '53, Beirut, Lebanon :

« ... In my last letter (see *Apothecary* 1956, p. 126), I mentioned that I was leaving Boston towards the end of June (1956). Thus a few days after I left MIT (Mass. Inst. Technology), I proceeded by train to Austin, Texas, to commence a summer field-training program arranged by the Dep't. of Health in Washington.

My training in Texas was planned to get me acquainted with phases in the fields of sanitary and food analyses which I did not get during the preceeding months. This lasted till the end of July 1956.

The following month, August, was divided among the various branches of the University of California and the State Dep'ts. of Health and Agriculture. In Davis, Calif., the seat of the School of Agriculture and Food Technology, I was fortunate to meet a few prominent scientists such as Dr. Emil Mrak and Dr. Reese Vaughan of the Dep't. of Food Techonology.

At Riverside, Calif., at the Citrus Experimental Station of UCLA (Univ. of Calif., Los Angeles), I met Dr. Gunther, an eminent scientist in the field of pesticides, who was very generous and cooperative in giving me all the information needed to improve my knowledge on the subject. Further information on the same subject was attained at the State Health Dep't. in Sacramento, Berkeley, San Francisco, and Los Angeles.

My program in Calif. also included a few inspection visits to food manufacturing plants, namely Del Monte, Libby's, Campbell, in Sacramento; and Sunkist Citrus Plant in Ontario, and others.

Following my trip to California, I was transferred to Chicago, Ill., where I spent the first week of September at Ill. State Health Dep't. The next week was spent in Detroit, Mich., and following that I stayed for 10 days at the Robert Taft Sanitary Engineering Center in Cincinnati, Ohio. At this center certain bi-weekly courses are given on the various subjects of sanitation; experiments are also carried on continuously for improving the methods of treatment and analysis of water, sewage, and industrial wastes.

The field program ended at Washington, D.C., where I spent two weeks at the Federal Food and Drug Administration which is the central headquarters where all legal proceedings are issued against violators of the regulations. Continuous research is carried at their laboratories where all analytical procedures and methods are tested and verified before they are published as official. During my stay there, I also obtained a comprehensive idea of their work, and brought back with me many of their publications.

Prior to my return to Lebanon, I spent one week in New York City at the State Health Dep't. Laboratories.

At present I am appointed as the Sanitary Chemist at the Government Central Public Health Laboratories in Beirut. This lab. is modern and well equipped for a thorough control of all public health hazards pertaining to foods, drugs, and sanitation. »

ALUMNI NEWS

The Apothecary takes pleasure in extending the greetings and sincere good wishes of the Director and Faculty of the School to all its graduates wherever they may be. Only news which has become available to us, and not previously published, is included below.

BIRTHS

Heartiest congratulations to parents and long life to the new-come

Goubran Atallah '52, Cairo, owner Zamalek Pharmacy, a boy Moufid Reda, on September 29, 1955, and a girl May, on December 19, 1956.

Hagop Derghazarian '45, Beirut, a baby girl Nelly, on September 4, 1956.

Hamdi Dürüst '51, Istanbul, a baby boy Yahya Haluk, on Wed. May 8, 1957

Nuruddin Isa '44, Aleppo, a son Mazin, on Monday October 8, 1956.

Edward Ishkhanian '50, Hospital Pharmacy, A.U.B., Beirut, a baby boy Paul, on April 26, 1957.

Fathi Jardani '46, Amman, a baby boy Rida, on Sat. June 9, 1956.

Uthman Kanafani '49, Beirut, School of Pharmacy, A.U.B., a son Bassam, on Wednesday October 24, 1956.

Wasfi el-Khazen '53, Kuwait, a baby boy Hanna, on June 22, 1955.

Mrs. Bronislaw de Sas Lozinski '47 (née Miss Maria Danuta Kazatel), London, a baby girl, in 1957.

George Tarazi '49, Jericho, Jordan, a baby girl Sylvia, their first child, on December 3, 1956.

Ahmad Adib Tayyar '35, Aleppo, a daughter Lyna, on February 17, 1957.

Panos Titizian '55, Beirūt, a baby girl Nora, on November 1, 1956.

Tzolag Tutelian '50, Tyre, Lebanon, a daughter Alice, on May 8, 1957.

ENGAGEMENTS

Sincerest good wishes, may wedding bells be near

Vartkes Apelian '54, Beirut, to Miss Sonia Tutunjian, on November 17, 1956.

Antoine Chalhoub '57, Beirut, to Miss Monique Bittar, on August 30, 1956.

Varoujan Etymezian '55, Jordan, to Miss Grace Haroutunian (Soph. 1956) in January, 1957, in Amman.

Elias Farah '53, Kuwait, pharmacist at the Mental Hospital, to Miss Lulu Musa, on March 20, 1957, in Ramallah, Jordan.

Ara Izrabian '53, Burj Hammoud, Nahr Beirut, to Miss Madeleine Der Boghossian, a graduate of Beirut College for Women, on May 11, 1957.

Tawfic Karam '57, Amioun, al-Koura, Lebanon, to Miss Amal Abdu.

Sarkis Kevorkian '51, Aleppo, to Miss Annie Davidian from Beirut.

Hagop Mekhjian '50, Jordan, to Miss Valentine Shahabazian on July 23, 1956, in Amman.

Miss Arlette Rizk '56, Beirut, to Mr. Fadlu Sha'ban B.Sc. '54, on September 30, 1956, in Beirut.

Fadlu Sha'ban '54, Amman, to Miss Arlette Rizk B.Sc. '56, on September 30, 1956, in Beirut.

Arthur Youhanna ' 54, Basrah, Iraq, to Miss Jihan Hindi.

WEDDINGS

A full measure of happiness and a blessed home

Muhammad Tahir Faydi '51, Nablus, Jordan, to Miss Kaffa Zakariyya on January 26, 1957, in Beirut.

Ahmad Kamileh '45, Jerusalem, got married in May, 1956.

Joseph Kronfi '41, Khartoum, Sudan, to Miss Su'ad Bunduki on August 16, 1956, in Homs, Syria.

Bashir ar-Rashid '54, Jordan, got married in Amman.

Nicholas Trochalakis '53, Jerusalem, to Miss Niove Antoniadis on February 8, 1957, at the Galilea Church on the Mount of Olives.

Jerry Zerounian '54, Amman, to Miss Blanche Shehadeh on July 1, 1956.

MISCELLANEOUS NEWS

Zaki Abu-Ghazalah '49, Beirut, is now working with the Saudi Arabian Health Office as Hospital Controller for Saudi Arabian Patients in Lebanon.

Riad Alami '51, Kuwait, is now engaged at the Public Health Department there.

Muhammad Sadik Ali (Musuli) '38, Iraq, runs his own National Pharmacy in Basrah.

Captain Zuhair Annab '48, Jordan, is now in charge of all the laboratory in the Base Army Hospital in Amman.

Vartkes Apelian '54, Beirut, is detailing for Burroughs Wellcome & Co., with Messrs. Abéla Frères.

Hanna A'raj '48, Beit Jala, Jordan, has been recently chosen as a member of the Order of Pharmacists of the Hashemite Kingdom of the Jordan.

Noubar Arsenian '35, Jerusalem, is in charge of the Radiography Department at the Augusta Victoria Hospital; is owner of the Jerusalem Grand Pharmacy there; and is a member of the Order of Pharmacists of the Hashemite Kingdom of the Jordan.

Bisharah Azzam '44, Aleppo, is now directing the Union Pharmaceutique d'Orient drugstore.

Yousuf Badri '37, Sudan, is Principal of the big group of Ahfad schools in Omdurman.

Raffy Balian '56, Beirut, is proprietor of Raffy Pharmacy, previously Rishani Pharmacy.

Jamil Barghash '43, Beirut, is working with Messrs. Tanas Atallah & Co.

Shibli Bayyuk '56, Beirut, is at the Chemistry Department, A.U.B., as assistant instructor of chemistry.

Nizar Harissi Daghir '54, Kuwait, is now working at the Public Health Department there.

Garabed Demerjian '46, Aleppo, is the proprietor of the American Pharmacy.

Hagop Derghazarian '45, Beirut, is in charge of the Solution Room at the American University Hospital, A.U.B.

Varoujan Etyemezian '55, Jordan, became partner in Medical Products Pharmacy in Amman, starting Jan. 1, 1957.

Fahd Farraj '50, Jordan, established a new local firm under the name **Balsam,** producing collyres, cough mixtures, etc.

Na'im Farraj '54, Kuwait, is working at the Public Health Department there.

Samir Girgis '55, Egypt, opened his own Champoleon Pharmacy, Champoleon Street, Cairo.

Nuruddin Isa '44, Aleppo, established a drugstore in his name, P.O.B. 952.

Edward Ishkhanian '50, Beirut, is the Hospital Pharmacist at the American University Hospital, A.U.B.

Adnan Jabshah '55, Kuwait, is working at the Public Health Department there.

Ahmad Kamileh '45, Jerusalem, owns and runs a pharmacy in the old city.

Morris Karam '52, Beirut, is Assistant Hospital Pharmacist at the American University Hospital, A.U.B.

Hassan Kawwaf '36, Latakia, Syria, runs his own pharmacy and has a share in a drugstore there; has been for the last two years prospecting with other associates for iron ore, manganese and chrome in the mountains north of Latakia.

Edmond Kayyali '39, Jerusalem, is working as Field Pharmacist with U.N.R.W.A.

Salameh Kayyali '51, Jordan, established his own Petra Drugstore in Amman.

Nadim Khalluf '50, Beirut, received his M.S. degree in food technology from the Univ. of Massachussets in Amherst, then spent several months practicing in State and Federal laboratories in California and Washington, D.C.; now he is in the Foods and Drugs section of the Central Laboratory, Ministry of Health, Lebanon.

Sami Malak '56, Beirut, is in charge of the Clinical Biochemical Laboratory, A.U.B.

Nadim Masri '55, Jordan, is now medical representative for Carlo Erba at Mavro-Michaelis Drugstores in Amman.

Sami Na'man '53, Beirut, came back from the United States after studying at MIT in Boston and practicing in health departments in Texas, California, and other states; he is in the Foods and Drugs section of the Central Laboratory, Ministry of Health, Lebanon.

Yervant Nazarian '21, Latakia, Syria, is running his own prosperous pharmacy in Latakia.

Partig Partigian '50, Beirut, is now working with U.N.R.W.A. as Senior Pharmacist for Lebanon Area.

George Sabbagha '08, Lebanon, is now living in Tripoli; he is an honorary member of the Grand Lodge of Scotland.

Gabriel Saïdah '26, Jerusalem, is working at the General Administrative Offices of the U.N.R.W.A. headquarters.

Yousif Sanoussian '50, Jordan, became partner in Sami's Pharmacy in Amman starting April 1, 1957.

Nicolas Sassine '56, Beirut, opened a new modern pharmacy in Ashrafiyyeh — Sassine Pharmacy.

Fadlu Sha'ban '54, Jordan, is partner in Sha'ban and Aramieh Drugstore, agents for Merck — Sharp and Dohme International, in Amman.

Daud Shakhshir '45, Nablus, Jordan, has been recently chosen as member of the Order of Pharmacists of the Hashemite Kingdom of Jordan.

George Slim '54, Beirut, is detailing for Ciba products at Abu Adal & Co. Drugstore.

Fuad Stephan '32, Beirut, is Chief Chemist of the Chemistry Section at the Central Laboratory, Ministry of Health. This section includes : the Food and Drug Laboratory, Industrial Hygiene, and Environmental Sanitation.

Yussif Sukhtyan '43, Jordan, established his own al-Jala' Pharmacy in Amman.

Ra'uf Sulfiti '50, Jordan, established his own Cairo Pharmacy in Amman, in Jan. '57.

George Tarazi '49, Jordan, is the responsible pharmacist at Daoudi's Pharmacy in Jericho; also prospector for Bayer firm in Jordan.

Ahmad Adib Tayyar '35, Aleppo, is Chief Analyst of the Public Health Department; also running his own analytical laboratory there.

Edward Tahmazian '56, Beirut & Tripoli, is detailing for Gold Leaf Pharmacal Co., Inc.

Panos Titizian '55, Beirut, is detailing for Merck — Sharp and Dohme at Aramieh's Arabian Drug Co.

Nicholas Trochalakis '53, Jerusalem, is senior pharmacist with U.N.R.W.A.

Shawkat Yanni '38, Jordan, is the sole owner of the Jordan New Pharmacy in Amman.

Fuad Zaru '50, Jordan, runs his own pharmacy in Ramallah, and is engaged.

Jerry Zerounian '54, Jordan, is working for Geigy of Switzerland in their Amman branch.

Pharmacy is service ....

... And they continue to give a good account of themselves.

Of the fifteen correspondents and representatives of the **Al-Kulliyah** (Alumni News Bulletin) and **Middle East Forum** (published by the Alumni Association, Beirut), the following five are alumni of the School of Pharmacy :

1. Aleppo — John Shakârjian '51, Aleppo, Syria.
2. Basrah — Arthur Youhanna '54, Rafidain Pharmacy, Basrah, Iraq.
3. Cairo — Loris Dirlik '32, Norton's Pharmacy, Shari' Sherif, Cairo, Egypt.
4. Jerusalem — Noubar Arsenian '35, Jerusalem Grand Pharmacy, Jerusalem, Jordan.
5. Khartoum — Adel Maksad '51, Khartoum Civil Hospital, Khartoum, Sudan.

In this connection the **Editor** of the **Apothecary** wishes to acknowledge the warm support which the Alumni of the School of Pharmacy have given and continue to give to the **Apothecary** whether by sending news items, writing letters, collecting subscriptions and donations, writing articles or subscribing to it, etc. The **Director** and the **Faculty** are proud of them all. They are too many to name. God bless them.

Our Director

Alumni will be happy to learn of two honors which came to our Director, Prof. Amin F. Haddad during the current academic year. He has been appointed by the World Health Organization a member of the Expert Advisory Panel on the International Pharmacopœia and Pharmaceutical Preparations, for a period of five years. He has also been designated by the Order of Pharmacists of Lebanon to be Lebanon's delegate and representative of the Scientific section of the International Pharmaceutical Federation, to be a liaison officer between the FIP and the scientific circles in the Lebanon.

THE ORDER OF PHARMACISTS OF LEBANON

The following alumni are serving on the Council of the Order: Messrs. Adib Kaddurah, Ph.C. '38, president; Charles Abou-Chaar, Ph.C. '36, secretary; Khairallah Harik, Ph.C. '38, treasurer; Nicolas Harissi Dagher, Ph.M. '20 and Muhyiddine Mahmassani, Ph.C. '28, members.

Prof. Amin Haddad, Ph.C. '33, is chairman of the Scientific Committee and editor of the Lebanese Pharmaceutical Journal. He is also a member on the committee working on the project of a law for a retirement scheme for pharmacists. Prof. Abou-Chaar is a member of the Scientific Committee. Spiridon Metni, Ph.M. '10, is an elected member of the Disciplinary Committee; Elias Bishouty, Ph.M. ' 14, Raif Zantut, Ph.C. '36, and Ohannes Shahinian, Ph.C. '29 are members in the Committee of Inspection. *(Members of the Council also serve on the different committees of the Order. Their names, however, were not repeated).*

IN MEMORIAM

Hassan Kanafani, father of Mr. Uthman Kanafani '49, passed away suddenly on Tuesday July 3, 1956, in Beirut.

Najib Kubaysi '05, passed away on Saturday October 6, 1956 in Amman. He is survived by one son Emile, and four daughters.

Saba Sayegh '21, passed away on Wednesday July 1, 1956 in Beirut.

Nishan Vorperian, father of Prof. Edward Vorperian '44, passed away quietly on Sunday January 6, 1957, in Beirut.

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preparation which...

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Theophylline.....	100 mg.

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