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CONTENTS—Continued

	<i>Page</i>
Genito-Urinary Infections in General Practice — <i>by Luis F. Torres, Jr., M.D.</i>	573
EDITORIAL:	
Medical Preparedness	579
MISCELLANEOUS:	
ABSTRACTS FROM CURRENT LITERATURE	583
SOCIETY ACTIVITIES	585
INDEX TO VOLUME XXVI	588

IMPORTANT NOTICE

Each member of the Association is entitled to receive a copy of the Journal every month. Articles are accepted for publication on condition that they are contributed solely for this Journal. Manuscripts should be typewritten, double-spaced, and the original, not the carbon copy, submitted. Advertising matter must be received not later than the 20th of the month immediately preceding the month of issue.

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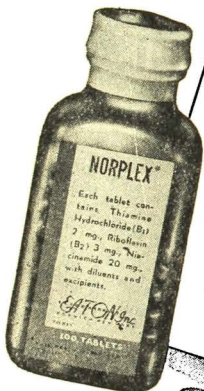
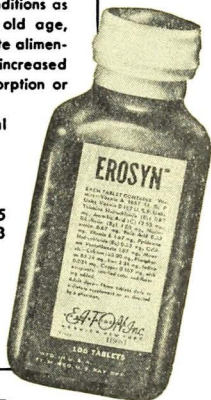
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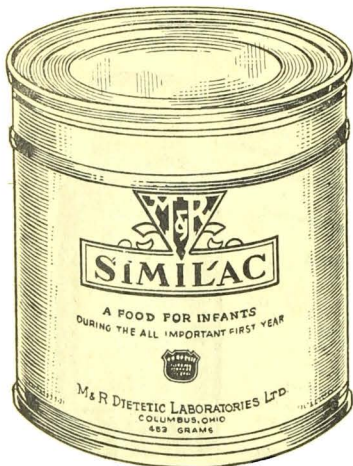
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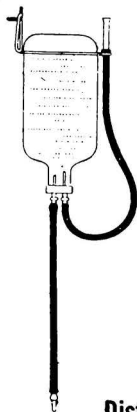
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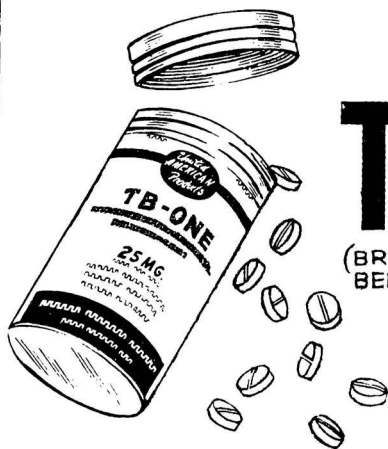
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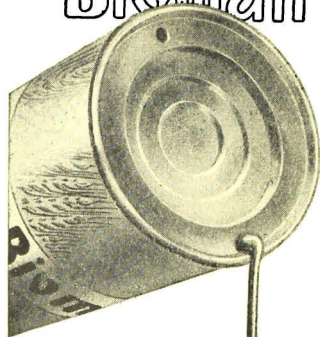
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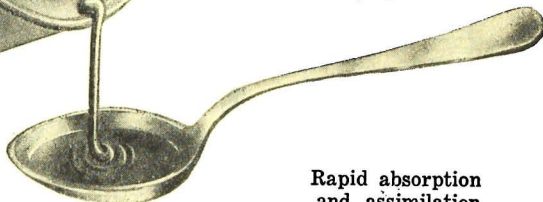
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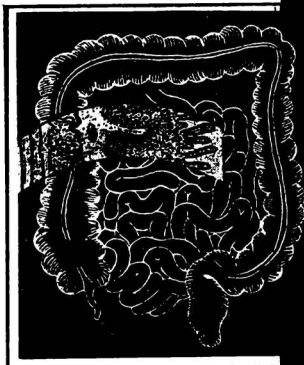
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1. Seneca, H., and Henderson, E.: In press.

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No. 12

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Original Articles

SCHISTOSOMIASIS JAPONICA IN AMERICAN SOLDIERS
IN THE PHILIPPINES *

A Clinical and Laboratory Study
of 297 Treated Cases

O. WHITMORE BURTNER, M.D.

Miami, Florida, U.S.A.

Attention has been directed to the occurrence of Schistosomiasis Japonica in American and Philippine soldiers who were stationed in certain areas of the Republic of the Philippines during the last war. The infection is distributed over parts of the Philippines, China, Japan, Formosa and the Celebes.

This disease is caused by the fluke *Schistosoma japonicum* which is transmitted by a fresh water snail. The free-swimming cercariae penetrate the unbroken skin and travel through the lungs to the portal veins where they develop into adult flukes. Eggs are deposited in the mesenteric venules four to five weeks after skin exposure.¹ Some of these eggs may penetrate to the intestinal lumen or be carried to the liver by the portal circulation. Common symptoms are fever, headache, muscle and joint pain, upper abdominal pain and cough. The typical acute case shows generalized lymphadenopathy, enlargement of the liver, characteristic proctoscopic findings, leucocytosis and eosinophilia.

This paper reports a study of 297 treated American soldiers followed in the 1st Convalescent Hospital, Leyte, Philippine Islands, between

From the Medical and Laboratory Service of the 1st Convalescent Hospital, Leyte, Philippine Islands.

* Read in part before the Army Medical Society of Leyte, September 13, 1945.

Acknowledgement is made to T/Sgt. G. Slajchert, S/Sgt. E. M. Ingersoll, T/5 N. V. Snider and T/5 R. Libby who worked long hours beyond the call of duty to perform the examinations for ova.

For most of the original data prior to treatment, exclusive of histories, I am indebted to the 44th, 118th, 126th and 133rd General Hospitals, to the 76th, 116th and 117th Station Hospitals and to the 73rd Field Hospital, all of which referred patients for follow-up examinations.

Submitted for publication, December 4, 1950.

March and August 1945. All of the cases, except four treated by the author, were referred from other hospitals upon completion of treatment and were later returned for further study or for indicated retreatment to the referring hospital. Fifty-five patients had been treated on the basis of a clinical diagnosis alone and the diagnosis was confirmed in 32 of these by finding eggs in the stool following treatment. For the 23 patients in whom the clinical diagnosis was not confirmed by a positive stool, typical histories and physical findings obtained in each case.

Any clinical or laboratory data affected by other disease complicating schistosomiasis was excluded from the study. There were 26 cases of infectious hepatitis, six of malaria, and one of bacillary dysentery. Of 163 patients with intestinal parasites, 98 had hookworm, 51 *E. histolytica*, 31 trichuris, 24 ascaris, 9 strongyloides and 3 oxyuris. Of the 297 patients in the series, 45 per cent showed only the single infection with *S. japonicum*, 35 per cent showed double, 16 per cent triple, 3 per cent quadruple and 1 percent quintuple parasitic infections.

EXPOSURE

During the invasion of Leyte, commencing October 20, 1944, many combat and service troops were exposed to water containing schistosoma cercariae. Much of the action was near or in swamps, rice paddies, carabao wallows and fresh water streams. Bridge building often resulted in rather heavy exposure. In other instances, soldiers swam, bathed or washed clothes in infected water.

All bodies of fresh water on the island were regarded as potentially infected because of the widespread prevalence of schistosomiasis among the civilian population, the presence of an animal reservoir in the carabao, dog and pig² and the wide distribution of a snail host. Mainly responsible for keeping the water infected is probably the fact that many civilian dwellings are located near fresh water, night soil is deposited near them and inhabitants are repeatedly exposed while washing in streams and planting rice.

Table 1 shows the branch of service of the 200 cases studied as well as a breakdown of water exposure into unavoidable and avoidable classifications. That most of the cases were infantrymen was due in part to their large numbers on the island. Engineer, air corps and anti-aircraft personnel probably had a higher incidence of disease in relation to the smaller number of troops on duty in these branches. Almost half of the 200 soldiers studied could have avoided contracting the disease had medical intelligence been obeyed.

Included in table 1 is an analysis of the type of exposure in relation to clinical severity of illness for the four branches of service from which most of the patients were derived. It is interesting that the infantry and engineer units, with the most severe cases, had a larger proportion of soldiers unavoidably exposed through military operations and a smaller proportion who swam or washed in streams of their own volition. Conversely, the air corps and anti-aircraft units, with the less severe cases, had a smaller percentage of personnel exposed through military opera-

tions and a larger percentage with contact that could have been avoided. One can only speculate upon the reasons why water contact resulting from military necessity appeared to be the more important factor. Combat and bridge building operations may have resulted in more frequent or in longer exposures than did swimming and washing. Rice paddies waded in combat were suspected of being more contaminated than streams selected for swimming and washing. Also, the use of soap and towel may have reduced the number of cercariae penetrating the skin.

The outbreak of schistosomiasis in troops on Leyte was of epidemic proportions for several months and taxed hospital facilities. In one infantry battalion, 45,000 man-days were lost during an eight-week period from this disease alone. Many troops undoubtedly left the island for other campaigns during the incubation period before diagnosis could be made.

INCUBATION PERIOD

The incubation period varied widely in individual patients. First systemic symptoms usually appeared not sooner than three weeks after exposure. Six soldiers with only a single exposure had incubation periods of 17, 31, 56, 74, 85 and 94 days. For the other patients with multiple exposures, the interval from first exposure to onset can only approximate the incubation period since infection may not have been acquired during the first water contact. This interval was 53 days for 30 relapses and eight days longer for 239 "cures." It was under 30 days in 14 percent, over 50 days in 62 percent and over 100 days in 13 percent. In general, the mildest cases had the longest incubation periods.

SYMPTOMS

Schistosomiasis is a clinical entity with protean symptomatology. Complaints are often multiple, involve many systems, and many are just as characteristic of other diseases. Nevertheless, the majority of the patients studied had certain symptoms which, together with the physical examination, often led to a tentative diagnosis of schistosomiasis before eggs could be demonstrated in the stool.

Symptoms usually followed a rather definite sequence although the time of appearance varied considerably from patient to patient. First systemic symptoms appeared at an average of 60 days from first water exposure and these were usually no more than malaise, fever, headache and nausea. As shown in table 2, diarrhea and muscle and joint pain appeared about two weeks after the onset. Urticaria, cough, stiffness of the neck and abdominal pain commenced at about three weeks. Simple myalgia of the neck appeared at about four weeks in those mild cases not developing stiffness of the neck. Angioneurotic edema was sometimes present after about five weeks from the onset.

Symptoms considered most helpful in diagnosis of the acute case are stiffness of the neck, upper abdominal pain, pain over the liver, urticaria and angioneurotic edema, and cough. As shown graphically on chart

1, stiffness of the neck occurred in 50 percent during the acute stage and 29 percent more had only muscle pain of this region. Elsewhere, migratory, persistent muscle and joint pain involved the lumbar region in 48 percent, shoulders in 31 percent, and knees in 25 percent. The thighs, hips, arms, elbows, legs, scapular region, ankles and wrists were also affected in this descending order of frequency. Intermittent chest pain not related to respiration was a rather frequent complaint.

Abdominal pain occurred in 89 percent and was of two types. The first type was dull, constant, epigastric in location, and could often be provoked by palpation of the liver. The second type of pain consisted of intermittent cramps about and below the level of the umbilicus, was usually present after meals, and was often accompanied by mild distension. Pain over the liver was a subjective complaint in 22 percent. Anorexia occurred in 89 percent.

Angioneurotic edema, present at some time in 43 percent, and urticaria in 40 percent were always suggestive of schistosomiasis. A previous history of allergy in 35 patients did not predispose them to these allergic manifestations. Cough was present in 55 percent and was usually dry, hacking and persistent, becoming productive in a few severe cases.

A previous history of definite swimmers' itch was obtained in 11 percent. Two bathers developed transient wheals soon after water exposure and eight had skin eruptions one to three days later.

Other symptoms of less diagnostic importance are headache, diarrhea and tenesmus. Headache was a prominent and persistent complaint in 91 percent. The frontal region was involved in 82 percent, the occipital in 31 percent and the temporal in 10 percent. Diarrhea was present at some time in 63 percent and was associated with tenesmus in 34 percent. Although diarrhea was often continuous in severe cases, it was characteristically intermittent and even alternated with constipation in some mild cases. Mild burning, frequency and nocturia sometimes coincided with a period of diarrhea.

About 80 percent of the patients gave a history of having had fever. Two or three weeks of bed rest alone prior to treatment usually reduced the temperature considerably. During the acute stage, the temperature was usually normal in the morning, often began to increase at noon, usually reached a peak in the late evening and was followed by a profuse sweat. Perspiration was characteristically disproportionate to the degree of pyrexia and occurred at some time in 55 percent of the soldiers. Twenty percent had shaking chills with the febrile stage of the disease.

As shown on chart 1, the 10 most frequent symptoms for all patients were malaise, headache, abdominal pain, anorexia, muscle and joint pain, diarrhea, urticaria and angioneurotic edema, cough, profuse perspiration and stiffness of the neck. No significant differences in the occurrence of these complaints can be demonstrated between the relapse and "cures" before treatment.

SEVERITY

Little difference in overall clinical severity of illness existed between the relapses and "cures" before treatment. As shown in table 3, the relapses included relatively more of the severe cases, fewer mild cases but more of the asymptomatic cases. Most of the patients were classified as mild and moderately severe. The 295 cases studied were classified as follows: asymptomatic 1 percent, almost asymptomatic 5 percent, mild 49 percent, moderately severe 41 percent and severe 4 percent.

SIGNS

A palpable liver and enlarged lymph nodes are the two most frequent signs of early infection with *S. japonicum*. Enlargement of the spleen also occurs and transient stiffness of the neck is common during the acute stage. Urticaria and angioneurotic edema often appear and disappear but petechiae are uncommonly found. Signs of lung involvement or of cerebral involvement may occasionally be present. Altogether the physical examination revealed some confirmatory evidence of schistosomiasis in more than half of the soldiers in the series.

The liver was palpable in 51 percent of the patients while the spleen was felt in only 18 percent. The liver was rarely down more than 6 cm. nor the spleen more than 4 cm. Tenderness on percussion over the liver was very often present whether or not the liver could be felt. Epigastric tenderness was common.

Records of lymph node enlargement were incomplete for the patients in the series at other hospitals before referral. However, lymphadenopathy was present in almost half of 28 untreated cases seen by the author, the cervical and axillary groups being most frequently affected.

Limitation of motion of the neck was a characteristic finding during the acute stage. Some patients showed a meningismus for a brief period while others had only tenderness of the posterior neck muscles.

Episodes of urticaria and angioneurotic edema were common. Giant hives occurred in a few cases. Angioneurotic edema appeared over the eyelids, lips, wrists and ankles particularly.

Petechiae of the legs and arms, particularly, were found in 10 of the 297 cases at other hospitals. Tender, deep red or purple spots on the toes up to 1 cm. in diameter, or bluish discoloration beneath the finger nails and toe nails were present in four cases. These discolorations were believed due to occlusion of end arteries by schistosome ova. Eggs of *S. japonicum* have been demonstrated in skin papules from a case of schistosomiasis by Fishbon.³

Only a small number of patients with cough showed signs of lung involvement by physical examination and these signs were quite varied. In general, they were that of a patchy pneumonitis and occasionally that of asthma alone. The majority showed no changes to percussion and none had lobar consolidation. Lung involvement, when it occurred, developed during the first month of illness and usually lasted at least a month. No abnormalities of the heart from schistosomiasis were noted and the pulse paralleled the pyrexia in all uncomplicated cases.

Cerebral involvement in oriental schistosomiasis has been discussed in detail by Carroll.⁴ In the present series, evidence of involvement developed in ten patients within two to six weeks after the onset of illness. Three showed complete hemiplegia, two resembled meningo-encephalitis and had paralysis of one extremity, and five showed paralysis of part of one extremity. The acute cases showed stupor or coma, incontinence, and the weakness, spasticity and exaggerated deep reflexes of pyramidal tract involvement. Confusion and personality changes persisted for four weeks in one case. The two cases resembling meningo-encephalitis were originally clinically diagnosed as meningococcal meningitis. By the time schistosoma eggs were found in their stools three and four weeks later, both had recovered without residuals.

PROCTOSCOPY

The proctoscopic examination is a useful procedure in the diagnosis of schistosomiasis. Characteristic lesions pathognomonic of the disease are frequently seen and immediate diagnosis is made possible when scrapings are examined for eggs. Because lesions may be minimal, careful inspection is necessary.

The development of mucosal changes was traced from frequent examination of new and old lesions. The sites most frequently involved are the dorsal and lateral walls of the recto-sigmoid and the rectal pouch. The early lesion is a small, irregular, hyperemic area, 2 to 10 mm. in diameter. Within about a week, a fine, pin-point, sand-like granularity appears over the hyperemia and, shortly thereafter, tiny yellowish-white vesicles form in the same zone. The vesicles soon become small papules 1 to 3 mm. in diameter and are seen in clusters of three to 30 beneath the mucosa. These small pseudo-tubercles then become more firm, the hyperemia disappears, and the area becomes slightly indurated to the touch of the curette. If a few tubercles are gently scraped from the mucosa it is often possible to demonstrate eggs when few or none can be isolated from a single stool specimen. Pea-sized nodules and small pedunculated polyps are occasionally seen. One such polyp showed eggs on section. Little correlation existed between the appearance of the bowel and the clinical condition of the patient. Some patients with many tubercles studding the mucosa from rectum to recto-sigmoid were almost asymptomatic while others with few lesions were severely ill.

Typical lesions were demonstrated in 56 percent of 36 patients at other hospitals before treatment. Eggs were demonstrated from scrapings or swabs from the mucosa in five of seven patients so examined. The time at which lesions first appear was not determined as the patients were examined after an average of 46 days of illness. However, typical mucosal lesions were found as early as one day and six days, respectively, after the onset of illness in two patients.

CHEST X-RAY

The chest X-ray was occasionally helpful in making a presumptive

diagnosis of schistosomiasis but was more useful in ruling out pulmonary pathology from other causes.

The characteristic picture seen in schistosomiasis was a bronchiolitis with fairly consistent peribronchiolar accentuation accompanied by minimal mottling. Irregular areas of peribronchial consolidation, similar to changes seen in bronchopneumonia, were sometimes present. Mottling was sometimes confined to the periphery or to one or both bases, with the upper lobes spared. Less frequently there were well defined, soft, irregular areas of increased density distributed in patches over a part or all of both lungs. In a few cases, the picture was that of a disseminated bronchopneumonia. One X-ray was reported as resembling miliary tuberculosis.

X-ray changes due to schistosomiasis were diagnosed in 15 of 52 patients before treatment. The patients with X-ray changes had shown pulmonary symptoms or signs for some time before the plate was taken and the first film was read as positive in each one. Half of the plates were made at 10 to 40 days after onset of illness and half at 48 to 98 days. Maximum changes appeared to take place at between the twentieth and fortieth days of illness. Review of the patients with positive X-rays shows that their severity of disease approximated that of the other patients in the series.

BLOOD COUNT

Eosinophilia and leucocytosis are characteristic of schistosomiasis. While the white cell count may fall toward normal during clinical remissions, the eosinophil differential usually remains high for a considerable period in untreated cases. Few other tropical diseases call forth as great an eosinophil response.

Maximum eosinophilia averaged 40.7 percent for 33 relapses and 37.5 percent for 225 "cures." The maximum value was 82 percent in one patient. Thirteen percent of the cases had less than 10 percent eosinophils, 33 percent more than 50 percent, and seven percent more than 70 percent of these cells. Maximum eosinophilia was not reached until an average of 47 days from the onset of illness in 248 patients. Although severe cases sometimes showed a high eosinophilia, there was often little correlation between the severity of illness and the eosinophil response. Eosinophil surveys on troops led to the discovery of 15 of the 297 patients in the series.

The average white cell count, corresponding to the counts showing maximum eosinophilia, was 14,700 and 14,400 cells per cmm., respectively, for the relapses and the "cures." Twenty-nine percent were under 10,000, 19 percent over 20,000 and 4 percent over 30,000. In general, the leucocytosis paralleled the severity of illness, reaching 44,500 in one very ill patient.

A significant anemia was shown by only a few patients who had remained untreated and quite ill for three or four months. The average hemoglobin before treatment was 12.0 grams for 15 patients selected at random and this was slightly lower than in the remainder of the hospital population.

STOOL EXAMINATION

Since eggs in the stool are frequently few in number and since their demonstration is necessary for a positive diagnosis, the stool specimen should be suitably concentrated before examination. Direct smear often fails unless bloody mucus is available for examination. Flotation methods are unsatisfactory because the salt solution ruptures the egg. The following gravity sedimentation method was routinely employed and yielded excellent results.

About 12 grams of stool (preferably portions containing mucus) are emulsified in about 100 cc. of tap water, and strained through three thicknesses of gauze into a 250 cc. cylinder. Water is added to the 250 cc. mark and the specimen allowed to settle for one hour. The supernatant is then removed down to about 25 cc. (a suction pump is convenient) being careful not to disturb the sediment. Water is again added to the 250 cc. mark and the process repeated for a total of three sedimentations. The final sediment is then poured into a test tube and allowed to stand at least 15 minutes. Small amounts of sediment are aspirated from the bottom of the tube with a narrow pipette and spread evenly and thinly over a glass slide. The entire process must be completed within 5 to 6 hours or hatching may occur.

The miracidium within an egg may be very active but about a third are non-motile due to their age and to fermentative action of the feces. The short lateral spine is very rarely seen unless the egg is teased into a suitable position. After antimony treatment, dark brown and black, non-viable ova with obliterated internal structure and black granules may be found for a considerable period after apparently successful chemotherapy. Such ova, without granules, are found on rare occasions in untreated cases. The immature egg without miracidium is found in the ratio of about one for every eight mature forms but a positive diagnosis of active schistosomiasis should be established only by demonstrating mature, viable eggs.

TREATMENT

Chemotherapy for schistosomiasis should be instituted unless disease of the liver, kidneys, heart or lungs contraindicates. Fuadin and tartar emetic are two drugs commonly used but dosage is still empirical because long follow-up studies are not available. These drugs were administered according to the schedules outlined below unless serious reactions intervened. The total dose was varied in individual cases. Treatment was commenced at an average of 50 days after onset of symptoms.

Fuadin (neoantimosan, stibophen) contains 13.6 percent antimony as a solid. It is supplied in ampules containing 5 cc. of 6.4 percent solution which is injected slowly intramuscularly. The first three doses of 1.5, 3.5 and 5 cc. were given on successive days and subsequent doses of 5 cc. on alternate days. Seventeen doses or 80 cc. is equivalent to 0.696 grams of antimony.

Toxic reactions from fuadin appeared late, if at all, and usually consisted only of headaches and muscular soreness. In no case was treatment discontinued and rarely was it necessary to reduce the dose.

Reactions from tartar emetic were more frequent and severe than from fuadin. Coughing, a sense of constriction of the chest and moderate upper abdominal pain sometimes appeared about a quarter of an hour after an injection. Headache, stiffness of the neck, muscle and joint pain, vomiting, abdominal pain and rise in temperature, when they occurred, reach a maximum 6 to 15 hours after an injection and were sometimes repeated with subsequent reduced doses. Diarrhea accompanied in some patients. Reactions became more frequent toward the end of therapy when generalized muscular soreness was present in almost every case.

Following a toxic reaction from tartar emetic, the dose was sometimes reduced, temporarily discontinued or fuadin substituted. Tartar emetic was replaced by fuadin in 13 of 56 patients initially placed on this drug. Ten of the 13 showed elevated temperature, stiffness of neck muscles, abdominal pain and vomiting. In the three other cases, substitution of a protodiastolic gallop rhythm in another, and in the third because of neuritis possibly due to chemotherapy.

Electrocardiograms were abnormal in four of five patients under treatment with tartar emetic at other hospitals. Tracings were repeated on one patient and these were negative seven days after completion of a 27 day course of treatment. Only one of the patients complained of mild precordial pain. The changes described were low voltage R₁, flat T₁, and inverted or diphasic T₂ and T₃. The rhythm, P waves and PR and QRS intervals were within normal limits in the patients studied in this series. It is presumed that these changes represent a direct effect of antimony upon the myocardium.

RESULTS OF TREATMENT

Relapse is defined as the finding of live ova in the stool three weeks or more after completion of treatment. Live ova found earlier than this are not indicative of treatment failure since Vogel¹ has established that the maximum life of eggs from laying to death is three weeks and it may require this length of time after laying for eggs to appear in the stool.

The results of treatment of the 297 patients are presented in table 4. Patients are divided into four groups of relatively high and low total doses of tartar emetic and fuadin and these are listed in the order of the relapse rate. Tartar emetic, in an average total dose of 1.96 grams of tartrate (0.706 gram antimony), was apparently the most effective drug in that dosage range as none of 20 patients so treated were proved to have relapsed. Fuadin, in an average total dose of 77.0 cc. (0.670 grams antimony), was the next most effective with a relapse rate of 7.5 percent for 39 patients. A lesser amount of tartar emetic and a much lower dose of fuadin yielded relapse rates of 13.0 and 13.4 percent, respectively. Two of 13 patients, treated with both tartar

emetic and fuadin in low total dosage, were found to be treatment failures. The overall relapse rate was 11.8 percent for the 297 patients in the series followed for an average of 44 days from completion of treatment. Results of treatment are further analyzed in the next section.

DATA ON STOOL EXAMINATIONS

Chart 2 shows the disappearance of live ova during treatment of one rather heavily infected patient. A maximum of 28 mature and immature live eggs per cover slip were found on one occasion before treatment and the number had diminished considerably after one week of chemotherapy. Dead ova were temporarily more numerous during treatment. Live ova disappeared on the twenty-third day of treatment.

In chart 3 the results of 2,315 stool examinations on all patients in the series were analyzed from commencement of treatment. Dead ova, completely tabulated after 30 days, were demonstrated less often in the "cures" than in the relapses but persisted for a considerable period in many patients. In some cases these dark granular ova were so numerous that one could be sure the patient had received antimony injections. Although dead ova are not indicative of relapse, when they become numerous in the stool of a treated patient, further search often revealed typical live ova as well.

Chart 3 also shows that live ova reappeared in the relapses with increasing frequency after 50 days from beginning treatment. Live ova reappeared after 36 to 64 days in half of the relapses and after 65 to 114 days in the other half. Since the fact of relapse was first proved at an average of 69 days (49 days after completing treatment) and the "cures" were followed for an average of only 67 days (43 days after completing treatment), it is evident that this short follow-up period is inadequate.

Follow-up should be prolonged because the interval after treatment when worms may recommence laying eggs is apparently variable and a number of stool examinations may be required to demonstrate live ova in remaining light infections. In this connection, Winkenwerder⁶ obtained an overall relapse rate of about 25 percent five to six months after treatment of a similar group of over 300 soldiers in the Philippines. Furthermore, at Harmon General Hospital a review of 486 patients showed that 70 percent of all cases of schistosomiasis which had been treated with fuadin, irrespective of when and where and of the amount administered, had relapsed at least once.⁷ It seems desirable, therefore, that patients treated for infection with *S. japonicum* be adequately, periodically followed for at least one year.

THE CEPHALIN FLOCCULATION TEST

The cephalin-cholesterol flocculation test of Hanger was performed on 234 treated patients to investigate its relation to relapsing cases, to patients with liver enlargement from schistosomiasis and to clinical

severity of illness following treatment. While results are not conclusive for all of these, interesting correlations exist.

Patients with active or recent infectious hepatitis, amebiasis or malaria were excluded as were those with recent urticaria or angioneurotic edema. Bacto-Difco cephalin-cholesterol antigen was used. The standard method was followed, with precautions against the influence of light and bacterial contamination. Only 24-hour readings were taken. Results of the test are shown in table 7.

The cephalin flocculation test was somewhat more positive for the relapses of whom 29.0 percent had a 2 plus reading as compared with 10.3 percent of the "cures." However, the difference is quite small because about 65 percent of both groups showed negative readings.

Twenty-one "cured" patients with liver enlargement at the end of follow-up showed higher values than did the combined 203 "cures" with and without enlargement. Two-plus readings were shown by 28.6 percent of these, contrasted with 10.3 percent of the combined group.

The best correlation existed with the lack of and fact of clinical improvement. Patients classified as improved had fewer positive readings, those unchanged were more positive and those found to be worse were significantly most positive. As many as 23.3 percent of those "worse" had two-plus readings while only about 7 percent of both the "improved" and "unchanged" groups fell into this range.

THE POST-TREATMENT COURSE

Evaluation of the course of treated patients upon any basis other than examination of stools or proctoscopic scrapings was usually difficult. Patients' complaints were partly unreliable as a guide because many of them were not characteristic of schistosomiasis alone, some were the result of treatment and some were superadded or exaggerated by anxiety reactions. Lymphadenopathy and a palpable liver and spleen might be absent in the face of persisting infection. X-ray changes persisting in the lungs offered no clue to the patient's progress. The total white cell count and eosinophil count were useful guides but pointed to failure of treatment in relatively few cases. However, in a small group of patients a strong clinical suspicion of relapse was entertained before viable ova were found to reappear in the stool.

During treatment, the course of patients later relapsing was indistinguishable from that of patients later considered "cured." The same clinical improvement usually took place, enlargement of the liver and spleen receded in about the same proportion, the total white cell count and eosinophil count decreased about equally and viable ova diminished or disappeared from stool specimens of all patients. However, at the end of the average follow-up period of 68 days from commencement of treatment (44 days from completion of treatment), difference could be demonstrated in some of the clinical and laboratory data between the relapses and the "cures." Some of this data is shown in tables 3, 5, and 6 and in chart 1.

At the end of follow-up, the relapses were less improved than were the "cures" but some improvement took place in almost every case. Headache, muscle and joint pain and abdominal pain, although less severe, were still common and were only slightly more frequent in the relapses than in the "cures." Enlargement of the liver and spleen was found in 11 percent or less of both groups while lymphadenopathy tended to persist. Leucocytosis and eosinophilia remained about stationary in the "cures" during the post-treatment period while the leucocyte count rose from 9,700 to 14,200 cells per cmm. in the relapses. One suspected but not proved relapse had 54 percent eosinophils when discharged for further follow-up 70 days after beginning treatment.

The X-ray of the lungs was positive in 31 percent of 42 patients examined after beginning treatment. Of these, half were last examined two to 12 days from beginning therapy and half at 18 to 53 days. Clearing of previously noted changes was slow. The X-ray became negative at 23 days and 25 days, respectively, in 2 of 15 patients on whom repeated films were taken.

The "cures" and relapses as groups each gained an average of 1.0 pound during hospitalization and each had the same average maximum weight loss of 19.0 pounds from 165 pounds during illness. An elevated temperature was present later than one week from completion of treatment in only 36 percent of 31 relapses but was also present in 21 percent of 178 "cures."

All of the 10 patients showing cerebral involvement had recovered with little or no residual paralysis by two months after beginning treatment but these cases had a milder course throughout than some others at other hospitals. The greatest improvement was shown by one patient who developed an hemiplegia seven days after the onset of illness, was treated 24 days later and was afebrile with no neurological signs 28 days after antimony was commenced.

Bowel lesions characteristic of schistosomiasis were found more frequently in the relapses than in the "cures" after treatment. Some evidence of healing was seen in almost every case followed serially and the characteristic papules disappeared completely from some areas of mucosa. From the appearance of the bowel it was usually not possible to determine whether or not the disease was still active. Sixty-seven percent of 21 relapses and 36 percent of 91 "cures" showed evidence of having or of having had schistosomiasis. Half of the patients were last examined at 24 to 58 days and half at 58 to 122 days from beginning chemotherapy. Live ova were found in mucosal scrapings from six of eight treatment failures tested. Dead eggs alone were present in scrapings from 11 of 23 "cures."

From the data presented, the total white cell and eosinophil counts and the severity of illness during convalescence proved to be the best clinical guides of the patient's progress. The presence or absence of enlargement of the liver, spleen or lymph nodes was of less value within the limited follow-up period. Before viable ova reappeared in the stool a strong clinical suspicion of relapse was entertained in a small group of

patients who again developed elevated temperature, occipital headache, myalgia, enlargement of the liver and further elevation of the total white cell and eosinophil counts.

IMPORTANCE IN EXPOSED MILITARY PERSONNEL

Acute infection with *Schistosoma japonicum* may well be considered in former military personnel of the Republic of the Philippine Islands and of the United States who have a history of treatment for the disease or of exposure to fresh water in an endemic area. Mild and relapsing cases may have few or no symptoms and signs, and few eggs may be found in the stool of a previously treated patient. Epigastric pain, tenderness over the liver, myalgia, cramps and eosinophilia should arouse suspicion. The liver and spleen may not be palpable and lymphadenopathy may be absent. Cirrhosis of the liver and anemia are described as late accompaniments. Repeated stool specimens should be checked on suspects for a relatively long period. Persistently negative stools do not exclude active disease and proctoscopic scrapings may afford a diagnosis in some such cases.

Chronic schistosomiasis in endemic areas can be a real threat to good health and to normal life expectancy. Unfortunately, effective control of the disease has proved difficult at best. However, any progress that can be made toward reducing the infection rate and finding and treating the active case represents a wise and forward-looking policy.

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TABLE 1.—Number of Unavoidable and Avoidable Cases by Branch of Service.

	Cases Studied	Cases Unavoidable	Cases Avoidable	Additional Cases Both Unavoidable and Avoidable
Infantry	55	15	13	27
Engineer	36	18	10	8
Air Corps	35	6	23	6
Anti-Aircraft	15	1	14	0
Field Artillery	12	2	4	6
Ordnance	12	2	9	1

Quartermaster	8	1	7	0
Signal	7	3	2	2
Paratroops	7	2	3	2
Special Service	6	0	4	2
Medical	3	0	2	1
Cavalry	2	0	0	2
Tank	1	1	0	0
Chemical	1	0	1	0
Total Cases	200	51	92	57

Type of Exposure and Clinical Severity

Order of Clinical Severity	%*		%*		Total % Unavoidably Exposed	Total % Avoidably Exposed
	Waded Streams	Waded Paddies or Swamps	Built Bridges	Total % Exposed		
Infantry	1	53	35	0	76	73
Engineer	2	17	0	56	72	50
Air Corps	3	14	17	11	34	83
Anti-Aircraft	4	7	7	0	7	93

* Unavoidable exposure.

TABLE 2.—Onset of Symptoms

	Days from Exposure—avg.	Days from Onset—avg.	Cases Studied
Swimmer's itch	0		41
Skin eruption	1-2		7
Onset—malaise, etc.	60*	0	269
Diarrhea		15	19
Muscle and joint pain (excluding neck)		16	24
Urticaria		21	76
Cough		23	17
Stiffness of neck		23	59
Abdominal pain		24	21
Myalgia of neck		29	31
Angioneurotic edema		34	65

* From first exposure

TABLE 3.—Clinical Severity

	Relapses %	"Cures" %
Before Treatment		
Asymptomatic	8.6	0.4
Almost asymptomatic	2.9	5.0
Mild	37.1	50.4
Moderately severe	37.1	41.1
Severe	14.3	3.1
At End of Follow-up:		
Asymptomatic	5.7	5.8
Almost asymptomatic	28.5	57.6
Mild	65.8	36.2
Moderately severe	0.0	0.4
Severe	0.0	0.0

Progress — At End of Follow-up:

Greatly improved	0.0	0.4
Moderately improved	0.0	13.5
Slightly improved	14.3	27.3
Unchanged	31.5	44.9
Slightly worse	48.5	13.5
Moderately worse	5.7	0.4
Much worse	0.0	0.0

			<i>Ratio</i>
All improved	14.3	41.2	1.0 to 2.9
All unchanged	31.5	44.9	1.0 to 1.4
All worse	54.2	13.9	3.9 to 1.0
Cases Studied	35	260	

TABLE 4.—Results of Treatment

Drug	Relapses		"Cures"		Relapse Rate
	Cases	Avg. Gms. Antimony	Cases	Avg. Gms. Antimony	
Tartar Emetic 1.92-2.03 gms.	0	—	20	0.706	0 %
Fuadin 60-90 c.c.	3	0.666	36	0.670	7.5 %
Tartar Emetic 1.80 gms. only	3	0.648	20	0.648	13.0 %
Fuadin 36-59 c.c.	27	0.370	175	0.368	13.4 %
Both Tartar Emetic and Fuadin	2	0.488	11	0.396	15.4 %
All	35		262		11.8 %

TABLE 5.—Enlargement of Liver, Spleen and Lymph Nodes

		Before Treatment	At end of Treatment	At end of Follow-up
		%	%	%
Enlargement: of Liver	—Relapses	46.8	14.3	11.4
	—"Cures"	53.7	13.8	8.5
of Spleen	—Relapses	18.8	0.0	8.6
	—"Cures"	17.5	10.7	6.9
of Lymph Nodes	—Relapses	*	31.4	25.7
	—"Cures"	*	44.3	33.6
Cases Studied	—Relapses	32	35	35
	—"Cures"	229	262	259

* Approximately 50% in 28 patients not included in the series.

TABLE 6.—Eosinophil and Leucocyte Counts

		Before Treatment	At end of Treatment	At end of Follow-up
% Eosinophils (average)	—Relapses	40.7*	17.6	18.1
	—"Cures"	37.5*	16.3	15.4
% Under 10% eosinophils		13	25	41
% Over 50%		34	0	0
% Over 70%		7	0	0
Leucocytes per cmm. (average)	—Relapses	14,700*	9,700	14,200
	—"Cures"	14,400*	9,800	9,600
% Under 10,000		29	63	63
% Over 20,000		19	2	2
% Over 30,000		4	0	0
Cases Studied	—Relapses	33	35	6
	—"Cures"	225	260	59

* Averaged from the counts showing maximum eosinophilia in each case before treatment.

TABLE 7.—*Cephalin Flocculation Tests—Percent Distribution at End of Follow-up*

Readings	All Relapses	All "Cures"	"Cures" with Liver Enlargement	"Cures" Improved	"Cures" Unchanged	"Cures" Worse
0	64.5	65.6	57.1	81.8	61.5	33.3
1	6.5	21.1	14.3	10.4	27.0	36.7
2	29.0	10.3	28.6	7.8	7.3	23.3
3	0.	3.0	0.	0.	4.2	6.7
4	0.	0.	0.	0.	0.	0.
Cases	31	203	21	77	96	30

BEFORE TREATMENT AT END OF FOLLOW-UP

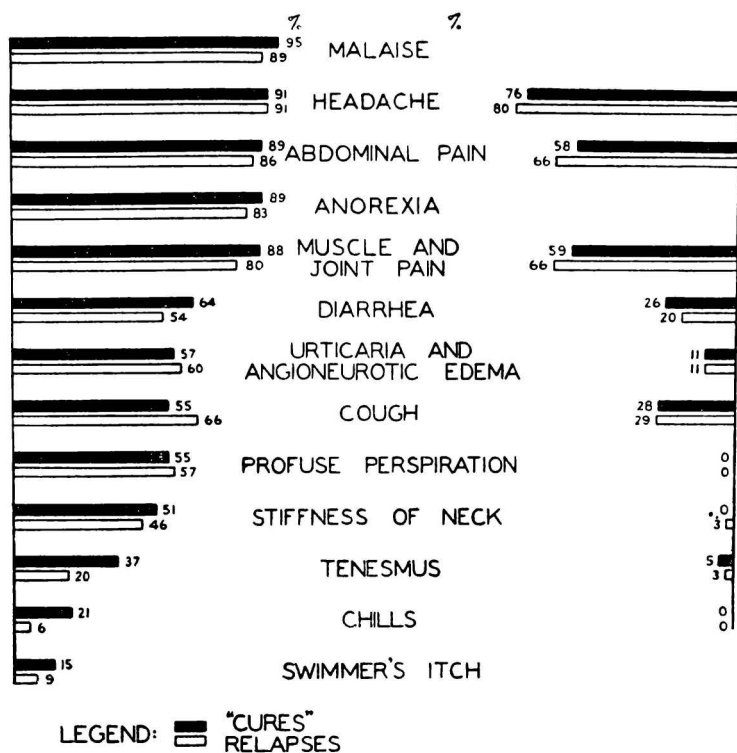


Chart 1.—Frequency of symptoms. A comparison of 262 "cures" and 35 relapses before and after treatment.

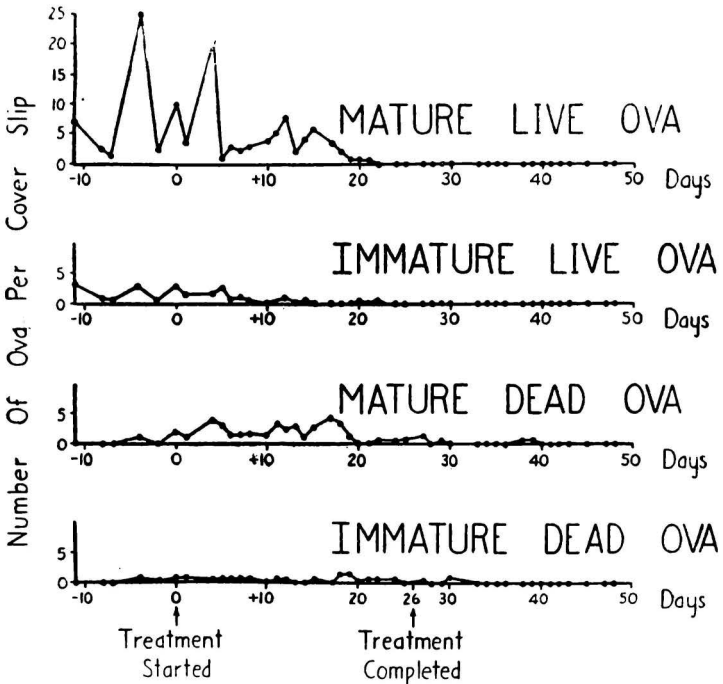


Chart 2.—Disappearance of ova from the stools of one rather heavily infected patient treated with 70 c.c. of Fuadin. Live ova disappeared on the twenty-third day of treatment. Dead ova were temporarily more numerous during treatment.

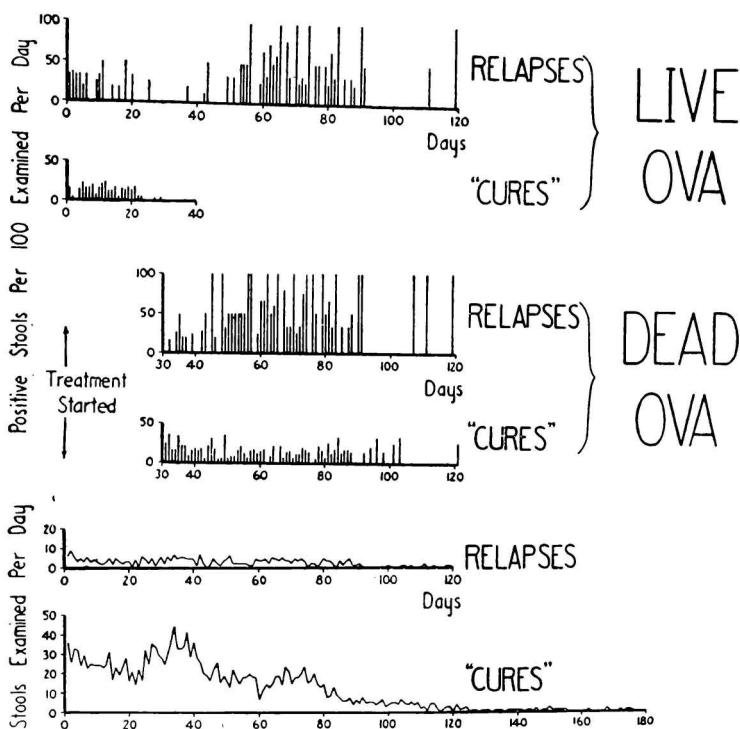


Chart 3.—Frequency of stool specimens containing live and dead ova following treatment of 35 relapses and 262 "cures." Shows the reappearance of live ova and increased frequency of dead ova in the relapses. Indicates the importance of prolonged follow-up after 50 days from beginning treatment.

TUBED IRIS TONGUE MODIFICATION OF IRIDENCELEISIS

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In presenting this paper, I am reminded of Duke Elder's statement in his article, "The Dependence of Surgery on Physiology." "There is a tendency among surgeons who are zealous in their craft . . .," he wrote, "to forget the empiricism of their methods, to think that by relieving a symptom they have cured a disease and consequently to suffer disappointment because, despite their efforts, the more deeply-seated disease process goes on." This statement is applicable to operations devised for glaucoma. Until we have fully understood glaucoma, we shall not be able to improve, perfect, or modify our surgical technics for intraocular pressure regulation, to save or prolong the little efficacy and value of these various filtering operative procedures.

It should be realized that all of these filtering operations for glaucoma are unphysiological; but because we have not fully understood glaucoma itself, and because very often we are faced with an urgent necessity of establishing a normal intraocular pressure in order to save an eye, the mechanical value of a filtering operation comes to the fore.

I have taken iridencleisis as one operation that may well suit many a glaucomatous eye. But because failures do occur, I have tried to modify certain aspects of its technic as described by Holth. This I believe should be tried, since these small modifications tend to depend on physiology without diminishing its mechanical value.

Among the causes of failures in the use of iridencleisis as the operation of choice are: faulty indication for the operation; excessive traumatization of the conjunctiva, Tenon's tissue, iris; complete closure of the filtering cicatrix due to degenerative changes; partial prolapse of the ciliary processes, lenticular dislocation and development of inflammatory adhesions at the root of the iris pillar causing occlusion of drainage channels; and, rarely, the secondary development of sympathetic ophthalmia.

Classical iridencleisis, as described and pictured, has for its main feature the incarceration of iris tissue at the extremity of a scleral incision. Very often this iris tongue exteriorized may be twisted, flattened, or everted. Some surgeons combine the meridional iridotonia with a tear of the iris root. Others purposely evert the iris so that the pigment epithelium is exposed under the conjunctiva. In view of the several variations in the methods used by individual surgeons, it has occurred to me that failures in this type of operation may be due to certain deficiencies

in the technic because of failure to respect the tissues involved, and in the simple mechanics of a drainage system. Hence I present this modification.

Technic

Premedication with nembutal, demerol-atropine hypnosis, local pontocaine anesthesia, and retrobulbar anesthesia with procaine 4% is given. A broad conjunctival flap about 7-8 mm. from the limbus is cut including Tenon's tissue, and is dissected bluntly towards the cornea until the bluish corneoscleral junction is seen. With Bard-Parker knife No. 15, a scleral incision is made about 5-6 mm. long and deepened until the chamber is just perforated. Usually the iris tissue begins to prolapse in the form of a bleb or cone; and this is gradually increased by enlarging the scleral incision with the knife point, at the same time preventing the sudden gush of aqueous humor.

After a sufficient scleral opening is provided, usually 4-5 mm., the iris is further coaxed out, if insufficiently exteriorized by depression with a repositor of the scleral lip of the incision—until the pupillary border is visible out of the line of incision.

Should the iris not prolapse spontaneously, it may be grasped with a non-toothed iris forceps and drawn out slowly until it forms a cone, whereupon a single meridional cut with fine straight iris scissors is made preferable at 12 o'clock position. Care is taken that the extremity of the cut catches the pupillary margin, at the same time reaching only the margin of the scleral opening.

Two iris tongues result from this single cut, and they form a folded or tubed iris pillars, with the external iris surfaces forming the outer surfaces of the tube and the pigmented inner surface of the iris forming or lining the inner aspect of the tubes. Each of the tube is drawn to one side, and the conjunctival flap is replaced over them and sutured with a continuous running suture. Atropine is instilled, although pilocarpine may be used if there is minimum of handling and if there is no evidence of iris tension.

First dressing is made 49 hours after operation, during which pilocarpine is instilled to promote early chamber reformation.

Should there be bleeding during the making of the scleral incision, pin-point thermocautery should be done. To avoid or minimize the bleeding of the iris during the iridotomy, the cut should not include the iris root which contains the greater iris arterial circle. Should there be excessive blood in the chamber—this happens very rarely—irrigation may be done.

Results, Observations and Discussion

I have selected 12 of my cases for presentation because they were well followed-up, and their records are more complete for study. Pre-operative and postoperative study involved visual examinations, tomometric recordings, fundus examinations, perimetric charting of the visual fields, biomicroscopy, and, in some cases, gonioscopy.

The diagnosis of these cases varies. The cases include from acute congestive glaucomas, secondary glaucomas (inflammatory), chronic congestive glaucoma, and the simple or noncongestive glaucoma.

As much as possible, we used a uniform technic, except in a few instances involving minor points. At any rate, one or two tubed iris tongues were left exteriorized.

Observations during the performance of the operation showed that the *ab externo* method of entering the chamber is safer and less fraught with possibilities of hemorrhage, sudden release of aqueous and sudden decompression, and traumatization of the iris and the lens. The *ab externo* method also enables one to regulate the size of the opening especially in consideration of the base and peak intraocular tension. With this technic one may be able to choose whether to exteriorize one or both iris pillars.

Generally it was noted that no undue tension on the iris was created with a single meridional iridotomy, and the iris was least traumatized since handling of the tissue was kept at a minimum. Actually the iris may be touched only once or twice, since exteriorization makes use of the intraocular hydrostatic pressure. In making the single iridotomy, the shape of the pupil is not unduly altered and may account for the much less glare that the patients have after this procedure in comparison with multiple cuts on the iris.

Anterior chamber reformation, as observed, was not unusually delayed, since reformation was more or less established by the 4th or 8th day. Tension was observed to be low during the first 10 days but normal intraocular pressure is regained by the second postoperative week—and maintained. In others in which the same technic was used, we did not come across any secondary rise of pressure again.

In the majority of cases, vision remained the same—or at least, was not impaired. In a few instances vision as well as the fields of vision, definitely improved.

Gonioscopic study of some of the cases showed probable patency of the drainage tubes, manifested by the absence of sclerosis at the bases of the iris pillars, coaptation of the scleral incision only at the scleral cleft between the two iris tubes, maintenance of the anatomical relationship of the pigmented and anterior surfaces of the iris, the ciliary processes, and the lens; and the non-presence of iris pigments liberated or dispersed along the drainage points.

On the conjunctival surface of the filtering cicatrix, the bleb generally encountered, as in other iridencleisis, is not found, since the site of the draining iris in my cases remains more flat, and seems thicker or more close to the scleral surface. This aspect of the configuration of the filtering area probably accounted for fewer complaints from the patient of foreign body sensation than those in whom other technics were used, and where a thin and highly elevated filtering bleb was formed.

Cases	Diagnosis	Pre-op. Vision	Pre-op. Tension	Period of Observation	Post-op. Vision	Post-op. Tension	Visual Field Changes	Complications
F. R.	Glaucoma simple, chr. bil. bil.	OD-20/20 OS-20/80	OD-35 OS-61	1 yr. 8 mo.	OD-20/20 OS-20/80	OD-19 OS-23	OD—slight gain of 5° OS—no change	N o n e
M. C.	Glaucoma simple left Glaucoma acute congestive, Rt.	OD-20/20 OS-20/80	OD-42 OS-30	1 yr. 8 mo.	OD-20/20 OS-20/60	OD-17 OS-14	OD—normal OS—no change	N o n e
P. P.	Glaucoma acute, cong. left	OS-20/180	OS-78	1 yr. 8 mo.	OS-20/30	OS-16	OS—Increase 10-15° all quadrants	OS—beginning cataract, central.
I. de C.	Glaucoma, chronic, congestive, left	OS-Cf.-1/2 ft.	OS-68	1 yr. 5 mo.	OS-20/60	OS-12	OS—Increase 15-25°	N o n e
F. B.	Glaucoma, chr. congest. Rt. Absolute	OD (—)	OD-54	1 yr. 1 mo.	OD (—)	OD-48	OS—no change	N o n e
	Glaucoma, chr. simple, left	OS-20/30	OS-28		OS-20/30	OS-16		
A. S.	Glaucoma, chr. simple, Rt.	OD-20/80	OD-40	8 mo.	OD-20/40	OD-12	OD—Increase of 10°	None—high astigmatism. Myopic.
M. P.	Glaucoma, abs. left Glaucoma, simple, chr. Rt.	OS-(—) OD-20/40	OS-54 OD-48	7 mo.	OD-20/40	OD-23	OD—gain of 25°	N o n e
E. C.	Glaucoma, secondary to sclerovoveities Rt.	OD-Cf. 5 ft.	OD-54	9 mo.	OD-20/200	OD-23	OD—gain of 15°	N o n e
F. C.	Glaucoma, chr. congest. bil. atrophy iris	OD-15/120 OS-20/160	OD-58 OS-38	7 mo.	OD-20/20 OS-20/25	OD-19 OS-17	OD—gain 40° OS—gain 50°	N o n e
P. R.	Glaucoma chr. simple bil.	OD-20/25 OS-20/80	OD-48 OS-48	3 mo.	OD-20/20 OS-20/80	OD-12 OS-14	OD—gain of 20° OS—gain of 35°	N o n e
P. D.	Glaucoma chr. congestive, left Glaucoma simple, chr. Rt.	OD-20/120 OS-Cf. 3 ft.	OD-30 OS-70	6 wks.	OD-20/40 OS-20/50	OD-20 OS-20	OD—gain of 25° OS—gain of 35°	N o n e
J. P.	Glaucoma, chr. simple bil.	OD-Cf. 3 ft. OS-20/120	OD-83 OS-47	3 wks.	OD-15/200 OS-20/120	OD-15 OS-17	OD—no change	OS—under pilocarpine

Cataractous changes in those that did not have evidences of the degeneration before the operation was not encountered as a late development.

From the foregoing results and observation, it may be deduced that at least this modification of the technic has succeeded in reducing intraocular pressure and has maintained this pressure at a normal level for prolonged periods of observation. In many cases visual improvement has even resulted.

There are several advantages which I believe contributed towards the apparent success of the modification. These advantages are: the operation is adaptable to several types of glaucoma. I have used it for the acute congestive stage of the disease and even for those with atrophic iris said not to be suitable for a filtering operation of this type. In one or two cases the modification was used for the secondary glaucomas of the inflammatory type without untoward effects or delay in the whitening of the eye. Utilization of intraocular pressure to exteriorize the iris results in a minimum of handling of the iris. This is very important in keeping the integrity of the iris tissue as filtering cicatrix.

On the side of physiology and simple mechanics of drainage, there is least disturbance of the anatomical relationship of the intraocular structures. The creation of two or one tube of iris lined by normally placed pigmented surfaces, precludes the necessity of hoping or expecting the filtering cicatrix to be lined by detached uveal pigments, which has been found by B. Payne to be the ultimate development in the filtering cicatrices for the various filtering operations for glaucoma, including iridencleisis. By creating a tube for drainage, aqueous should reasonably be expected to find its drainage pathway less apt to be blocked than if the iris were just exteriorized, impacted against the sclera or twisted on itself. By making a single iris meridional cut, the complete coaptation of the scleral lips of the incision is prevented, except at the region of the base of the iridotomy. This I believe is just as important, since the two iris tubes are not excessively closed on themselves. The creation of two iris tubes also fulfills the requirement of a successful iridencleisis. As Sugar had written, it is not the size or area of the iris incarcerated or exteriorized, but rather the thickness or depth of the iris tissue, that determines the drainage pathways.

As a whole, the technic is easy, safe, and may be tried even by the average ophthalmic surgeon.

CONCLUSION

I do not know if this technic is being used by our local ophthalmic surgeons; neither have I found mention of the procedure, or any modification of it, in foreign literature. It is possible that our surgeons have used this modification intentionally or unintentionally. But I certainly do wish to emphasize in this presentation certain details, no matter how small or inconsequential, which may mean failure or success in iridencleisis. They are: the least traumatization of the eye, the least handling of the iris tissue, the least disturbance of the normal anatomico-physio-

logic disposition of the intraocular structures, and the creation of tubed tissue pathways for drainage.

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HOOKWORM ANEMIA IN FILIPINO CHILDREN

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Stransky and Quintos reported on hookworm anemia in 1947. They distinguished three stages of blood changes in hookworm disease. The first stage of "compensated anemia, is characterized by increased erythropoietic activity of the bone marrow, being sufficient to maintain the equilibrium between blood formation and destruction. The second stage is characterized by anemia, microcytosis and hypochromia, and further increase in the erythropoietic activity of the bone marrow. The third stage is characterized by all symptoms of aplastic anemia and panmyelophthisis.

The so-called first stage is the response to hookworm infestation. If there is sufficient protein and iron intake, the hemoglobin level is maintained, in spite of increased loss of blood. In countries where there is sufficient intake of iron-rich food, there will be no hookworm anemia, in spite of widespread hookworm infestation. The second stage develops early, however, if there is no sufficient iron or protein for the maintenance of the hemoglobin level. The third stage may be the final outcome if, after years of poor protein and iron intake and continuous hookworm infestation, there is a sudden breakdown of the bone marrow, characterized by panmyelophthisis.

In this paper we are going to report on 15 cases observed in the Department of Pediatrics of the Philippine General Hospital. Six came from Luzon; four, from the Bicol region; four, from Leyte; three, from Mindanao; and one each, from Samar and Panay. Of the fifteen cases, thirteen were males and only two were females. In the report of Stransky and Quintos, there were 18 adults—13 males and five females—and 15 children—11 males and 4 females. The susceptibility of males is thus evident.

Out of the actual fifteen cases, fourteen were in the second stage of the disease and only one in the third, aplastic, irreversible stage. It may be stressed here that the diagnosis of the third stage does not depend on the hemoglobin level. There are extremely low hemoglobin levels in the second stage and the prognosis is still good, as the patients recover in a relatively short time; while in cases of aplastic anemia, the hemoglobin level may be still relatively high. The second stage is characterized by good erythropoietic activity of the bone marrow. The third stage is characterized, as already mentioned, by panmyelophthisis. In the second stage, there is eosinophilia and all symptoms of regeneration, like anisocytosis, poikilocytosis and polychromasia, some nucleated red cells. In the aplastic stage, there is no eosinophilia at all; and all re-

generative symptoms are absent. Besides, aplastic anemia is characterized by hemorrhagic diathesis.

The anemias that we have observed are definitely hypochromic. The color index varies from 0.4 to 0.7. The mean corpuscular hemoglobin vary from 11 and 20 mi. mi., the normal, from 27 to 30 mi. mi. Although the overwhelming majority of the cases are microcytic, normocytic and even macrocytic anemias may be observed. These differences are probably due to the presence or absence of protein-deficiency, as hypoproteinemia is accompanied by macrocytosis. In our cases with macrocytosis, there was invariably hypoproteinemia.

The macrocytosis may disappear and change to microcytosis, if the hypoproteinemia improves due to our therapy. But even after marked improvement, the hypochromia and microcytosis persist for a long time.

As to the differential count, eosinophilia is a constant symptom, if there is no aplastic anemia. It is present even in the first stage. Although eosinophilia may be absent in the peripheral blood, it is likely to be present in the bone marrow. Why eosinophilia is restricted in some cases to the bone marrow can not yet be ascertained. In case of low eosinophil count in the initial stage, iron therapy and improvement lead as a rule to marked increase of the eosinophilia. Another very important symptom of the first two stages is the high reticulocyte count, which is obviously a sign of increased erythropoietic activity of the bone marrow. In aplastic anemia, therefore, reticulocytosis is definitely absent.

Hypoproteinemia, already mentioned, is present in the majority of the cases, indicating the presence of protein deficiency as a second factor of the anemia. There may be an increase of the globulin level and a reversion of the albumin-globulin ratio. The hypoproteinemia is, however, much less marked than in our observed cases of hunger edema late in 1944 during the last months of the Japanese occupation. Therefore, hypoproteinemia seems to play a secondary role in hookworm anemia.

As to the clinical symptoms of hookworm anemia, hypochlorhydria or achlorhydria seem not to have much importance, as the examinations of gastric acidity showed that there may be normal acidity in severe anemias, while in moderate anemias, the acidity may be markedly decreased. On the other hand we observed in all cases of severe anemia, a loud systolic murmur over the whole cardiac area disappears as soon as the hemoglobin level has risen to over 8 gram per cent. It is obvious, therefore, that the murmur is a functional, hemic murmur, the result of the decreased viscosity of the blood in anemia.

In severe hookworm anemia there is, of course, as in all other severe anemias, dilatation of the ventricles and hypertrophy of the heart muscle. Myocardial damage may be present, as our electrocardiographic tracings show; but it disappears with improvement of the anemia. The damage may be due to thiamin chloride deficiency—at least to a certain degree.

As to the therapy, there are two possibilities: anthelmintic therapy and iron therapy. W. Cruz of Rio de Janeiro divided his cases into three

equal groups: (1) cases treated with anthelmintics alone; (2) cases treated with iron alone; and (3) cases treated with anthelmintics and iron together. In the first group there was no improvement at all. In the second group, there was marked improvement. In the third group, there was likewise striking improvement, but not more than in the second group. His conclusion was therefore, that iron treatment is the best for hookworm anemia. Our cases required large doses of iron three to four weeks before we could see any improvement, even if the hemoglobin level had been as low as 1.5 gram percent.

As to the anthelmintic treatment, we failed in the overwhelming majority of our cases. We administered tetrachlorethylen, hexolresorcinol repeatedly in the same case without being able to relieve the patient of his parasite ova, and hence of his parasite. We would not like, however, to draw definite conclusions from our rather small, though well observed, material.

As to the result of our treatment, we have to consider the importance of reinfection. Our cases came from the provinces; but as a rule they lived in Manila after the treatment. In the city, there is no reinfection; while in the province, reinfection is the main problem. But even reinfection would be of lesser importance, if iron deficiency anemia could be avoided.

We had a case of a child relapsing six months after he had been dismissed, recovered from anemia. On his first admission, he had had a very active bone marrow; on the second admission, the bone marrow looked to be at the verge of panmyelophthisis. The lesson of this case is that improvement of anemia is not an insurance against relapse (although the patients lived in Manila).

However, this child's food was not adequate both before his first admission and between the two admissions. This single case of relapse can not, therefore, be used as an argument against iron treatment.

The details of the blood examinations will be presented in a separate paper.

We hope we have furnished the evidence that the etiology of hookworm anemia is due: (1) to loss of blood because of the blood suckling worm; and (2) to increased demand for iron and proteins, in order to maintain a normal hemoglobin and serum protein level. If the demand can be satisfied, no anemia will develop; if not, the anemia may be very severe.

Besides iron and protein deficiency, multiple vitamin deficiency and secondary infections may be regarded as additional factors. In case of iron deficiency alone, iron therapy has to lead to fast recovery from all symptoms of anemia, while the effect of anthelmintic treatment is questionable.

SKIN LESIONS BENEFITED BY VITAMIN A

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INTRODUCTION

Bloch (1 & 2) is probably the first to call attention to some skin manifestation associated with Vitamin A deficiency. In 1917 he described the dry, shrivelled, scaly skin of infants associated with keratomalacia. This cutaneous disorder is usually so mild as to escape attention, or it may be considered so unimportant as not to warrant consultation and treatment.

What is known as the typical skin lesion of Vitamin A deficiency was reported by Frazier and Hu who found, among soldiers in China who had become blind due to keratomalacia, abnormal dryness of the skin, with earthy texture as if dusted with flour. Hyperkeratotic follicular, or small conical papules with plugged centers are observed in the extensor surfaces of the extremities, shoulders, knees, elbows, and buttocks. These lesions are called phrynoderma or toad skin.

These two skin lesions are undoubtedly due to Vitamin A deficiency, because of their association with keratomalacia, and because they disappear with Vitamin A therapy. There are, however, a great many skin lesions that are amenable to, or greatly benefited by, Vitamin A administration and/or its local application.

The mechanism by which Vitamin A affects the epithelial tissue has not yet been definitely explained. The content of Vitamin A in the skin, and the levels of carotenes in the blood of patients with skin diseases have not significantly deviated from normal. Still it has been reported by several workers that skin diseases characterized by dryness and excessive keratinization are improved by, or yield rapidly to Vitamin A, even when they have not responded to orthodox treatment, and even if they have never been considered to be due to Vitamin A deficiency.

Neurodermatitis, asteatosis, lichen pilaris, heratosis follicularis, pityriasis rubra pilaris, corn, and acne vulgaris are among the skin diseases reported to be benefited by the administration of Vitamin A (2).

COMMON SKIN LESIONS IN FILIPINO CHILDREN

There are skin lesions common among Filipino children which may not be due to Vitamin A deficiency, but which are, nevertheless, greatly benefited by the administration of Vitamin A and by the topical application of ointments containing cod liver oil. As far as can be ascertained, these lesions are not classified among the skin diseases described

in textbooks, nor are they reported in the available current medical literature.

There are two kinds: one is composed of one or more pale or pale brown macules with dull rough surfaces, sometimes covered with white brany scales very similar to that of *tinea flava*, but is devoid of itching. These macules are usually found in the face, neck, and upper extremities, although they may also be found in the lower extremities, buttocks, upper back, and upper chest. Sometimes they are devoid of the brany scales, but the similarity to *tinea flava* is so marked that they are wrongly diagnosed as such.

Another disease to which this skin lesion bears striking resemblance is the macular leprosy, from which it may sometimes be difficult to differentiate.

The other kind of skin lesion is pinkish, rough, dry patches, also distributed in the face, neck, and upper extremities. The roughness of the patch can be appreciated by passing the tips of the fingers over it. This lesion may be mistaken for seborrheic eczema, neurodermatitis, or ringworm.

These two skin lesions are very common among Filipino children up to the age of puberty, when they are observed to disappear gradually. They do not show the *microsporon furfur* of the *tinea flava*, and they resist treatment with salicylic acid, sulfur, and other parasiticides. On the other hand, they are greatly improved by the administration of Vitamin A by mouth, and by the topical application of ointments containing cod liver oil. They do not have anesthesia, which is usually present in leprosy.

TREATMENT

The treatment followed in the Cebu Skin Dispensary for these cases consists of giving an ointment composed of salicylic acid 1.0; cod liver oil and lanolin, aa. 10. for topical application, Vitamin A 25,000 units in capsules for older children, Irradol-A for smaller children who can not swallow capsules, and Abdec drops for infants. Sometimes it may be found necessary to photo-sensitize the skin with coal tar ointment, to which cod liver oil (equal parts) is incorporated, and to expose the lesions to ultra-violet rays, which is found to enhance the efficacy of Vitamin A in these lesions.

COMMENT

No claim is made that these lesions are due to Vitamin A deficiency. They are, however, believed to be still unclassified skin lesions, very common among Filipino children, and are amenable to treatment with the administration of Vitamin A by mouth, and by the topical application of ointments to which cod liver oil is incorporated. The salicylic acid is used to remove the brany scales and roughness of the surface of the patches, and not as a parasiticide as it is used for *tinea flava*. When treated as *tinea flava* with strong salicylic acid preparations, scaling is produced, but the macules remain unaffected. With Vitamin A the-

rapy as described, the lesions show improvement by the fading of their color until they completely match the normal color of the skin.

Because of the beneficial effects of Vitamin A in the treatment of these lesions, they are believed to be closely associated with the deficiency of this vitamin, if not mainly due to it.

These skin lesions are reported, because of the significant observation that they resist the orthodox treatment of *tinea flava*, to which they bear striking similarity; and because they are devoid of the anesthesia of macular leprosy for which they are often mistaken. As they do not fit with any entity described in textbooks and in the available current literature, and because they yield to Vitamin A therapy, there is sufficient ground to believe that they are closely associated with, or mainly due to, the deficiency of this vitamin. However, it must not be forgotten that many skin lesions belonging to established disease entities, and which may resist the orthodox treatment for them, may be greatly benefited or even completely cured by the administration of Vitamin A.

SUMMARY

Two types of skin lesions, one strikingly resembling *tinea flava* and macular leprosy, and the other resembling seborrheic eczema, neuro-dermatitis, or ringworm, are described. They prove resistant to the orthodox treatment for these diseases, but they also show some distinguishing characteristics. No positive proofs can be offered to show that they are lesions of avitaminosis other than the fact that they are greatly benefited by, and they sometimes yield readily to, oral administration of large doses of Vitamin A and the topical application of ointments containing cod liver oil. These skin lesions are very common among Filipino infants and children; but they are commonly diagnosed as either *tinea flava*, ringworm, seborrheic eczema, or neurodermatitis, and often as macular leprosy.

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A STUDY OF HEALTH ORGANIZATION AND ADMINISTRATION IN THE UNITED STATES; ITS APPLICABILITY TO THE PHILIPPINES

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On August 10, 1948, I left for the United States as a fellow of the United States Public Health Service. My mission was to take up a post graduate course in the field of public health, with a view to gathering material on the latest progress and trends in the health organizations of that country. Prior to my enrollment at the Harvard School of Public Health in Boston, I had occasion to visit the State Health Department of New York and the Mineola County Health Department. After finishing a full term, having majored in public health administration, I was assigned to observe the functions and activities of the different state and county health departments in Boston, Massachusetts; Baltimore, Maryland; Washington, D.C.; Atlanta, Georgia; Jackson, Mississippi; and San Francisco, California. I also had the privilege of making observations at some hospitals in Boston and New York, at the National Institute of Health in Washington, D.C., and at the Communicable Diseases Center in Atlanta, Georgia. Although I was not able to carry out this program fully within one year, yet, modesty aside, I feel that I spent my time profitably—having learned and seen much regarding the present system of public health administration in the United States, which, to my mind, typifies one of the most complex but best administered system of health administration in the world.

It is for this reason that I have decided to put down my observations on paper. It is said that even experienced public health workers are often confused regarding the different and divergent channels through which individuals receive health services in the United States, and the complexity of the system of public health administration in that country, which is very different from our system in the Philippines — from the systems in most Asiatic and European countries, for that matter. It would, however, be difficult to understand the progress of public health in the United States without first understanding its system of health administration. Furthermore, inasmuch as I intend to publish, in subsequent issues of this journal, articles dealing with my observations of the latest advances and progress in the United States in the various fields of public health, it is pertinent that the reader first have a panoramic view of the entire health structure of the United States.

To begin with, there are three distinct levels of health organization in the United States; namely, the federal, the state, and the local. It is

an accepted fact in public administration that the protection of community health is a public responsibility discharged through official agencies of the local government. Thus, in the U. S. as in many other civilized nations, local health organizations have been modeled closely after general local governmental organizations. In some sections of the country, the city, the town, or the municipality constitutes the local health jurisdiction; while in others, county health departments, multi-county health units, and city-county combinations known as local health districts, constitute the local health agencies.

The health functions of state health agencies vary in different states and range from mere regulatory authority or advisory service to the operations of complex direct-service units. More adequate local health service is stimulated through promotional, advisory, and supervisory activities; and through financial aid for approved health projects from state and federal sources. Voluntary health agencies and professional societies operating on a statewide basis occupy a prominent position in the total health structure.

Federal agencies are responsible for controlling interstate health hazards and for protecting the citizens from communicable diseases imported from abroad. The federal government sponsors research and demonstration on the causes, prevention, and control of diseases; and allots grants-in-aid for the expenses of state and local health services. The United States Public Health Service is the chief federal health agency; but the contribution of the national voluntary agencies and professional societies on program planning, formulating standards, and preparing educational material in their respective fields has been very valuable.

At each of the three levels of government — federal, state, and local — health functions are distributed among agencies having a variety of major interests and responsibilities. There is a wide variation in the definition of public health, and this is usually reflected in the structure of local health organizations. Thus, some health departments, in many of their operations, seem to stop somewhere short of applying remedial measures. They feel that finding a condition needing attention and bringing it to the notice of the person concerned should be the end and purpose of public health. Visitors from abroad have difficulty in understanding why public health agencies in many states are divorced from such elemental health measures as disposal of garbage and refuse, and various items falling within the scope of public services. It should, however, be borne in mind that the mere fact that a given service, as the removal of refuse, is not performed by the health department does not necessarily mean that this health activity is neglected; for a study of the whole system of governmental organization in the United States will reveal that official health organizations perform only a fraction of the total health work. For instance, hospitals of various medical types are most often operated by departments of public welfare; activities for improvement of sanitation are engaged in by departments of public works; control of animal diseases transmissible to

man is a responsibility of the department of agriculture; school health-work is undertaken, either by the boards of health or by the boards of education alone; or, more commonly, by joint and cooperative action of the departments of education and health.

It is not surprising, therefore, that the general scheme of health organization in the U.S., more often than not, amazes the foreign visitor or observer. On the other hand, it is astonishing that such varied and complex processes of health administration does not adversely affect the proper safeguarding of public health in the U.S. However, it cannot be denied that the people of continental U.S. enjoy a level of health and well-being worthy of emulation and attained by the inhabitants of only a very few countries in the world. And the trend of both individual and community health has been consistently upward for many, many years.

Another important point that interest the observer is that, from a purely legalistic standpoint, the three levels of government in the U. S. — federal, state, and local — represent distinct and separate entities. But actually they constitute a partnership for the protection and promotion of health. Thus, from the cooperative effort of federal, state, and local governments, of voluntary agencies and of private practitioners, there is woven the entire fabric of health service in the United States.

The federal health organization is concerned chiefly with participation in the researches, investigations, and demonstrations; administration of grants-in-aid; and regulation of health problems incident to movement of persons and things in foreign and interstate traffic. It is also concerned with the study of causes, prevention, and treatment of diseases. It grants financial aid to states for expansion and improvement of health services, administered by either state or local health agencies. It exercises the controls necessary to prevent the spread of diseases from one state to another or from other countries to the United States; and, less extensively, it loans personnel to state and local health departments for special or emergency situations and for performance of direct services for selective conditions or under particular circumstances.

As a general rule, there is little evidence that the pattern established by the federal government for allocating duties in the field of health has influenced, to an appreciable extent, the apportionment of authority among state agencies. It should be emphasized that the state is sovereign within the governmental system of the U. S. and has, therefore, inherent police power from which the authority to engage in health work chiefly originates. Each state has one particular agency, usually termed the department of health, which is charged with the over-all health program; but, as has already been mentioned, the system of operation of the health departments varies tremendously in the different states, depending upon the degree of responsibility for specific health activities which may be assigned to different state departments and agencies.

Thus, there are at least 16 different types of agencies and several branches of state governments which are engaged in services having some bearing upon the health of the community. Among these are: the department of health, the department of welfare, the department of agriculture, the department of labor, and the department of education; special boards or commissions such as the TB board, the cancer commission, etc.; independent state hospitals; the department of conservation, the department of mines, and the department of engineering; the state university and college; the state experimental stations; independent licensing and examining boards; the department of motor vehicles, the department of safety, and the department of civil service and registration. Although each of these departments has a responsibility for some particular health program, yet, with the exception of the health department, each of them functions only as a contributory body responsible for specific segments of the particular programs sponsored by the state health agencies, the latter being officially charged with the control of communicable diseases, and other activities strictly pertaining to public health.

While the state is a sovereign unit in the governmental system of the United States, it generally delegates to counties, municipalities, and other local governmental units, certain functions in the discharge of which the local political subdivisions may be considered quite autonomous. The authority of local governmental units is usually defined in the state constitution, in certain acts of the legislature, or in a charter implemented by local ordinances and regulations.

It is estimated that there are approximately 35,000 local government units throughout the United States having a legally authorized organization and governing body, a separate legal identity, the power to provide certain public or governmental services, and a substantial degree of autonomy—including legal and actual power to raise at least a part of its own revenue. Of these, 3,070 counties constitute the major subdivisions of the state, while the remaining 35,000 units of local government are minor subdivisions of the counties usually referred to as minor civil divisions.

A local health organization is usually characterized by a combination of jurisdiction and pooling of resources for maintenance of an effectively operating health department. Because of the rather haphazard arrangement of health services through official health agencies in many places, other local government agencies interested in special phases of health work have often assumed responsibility for their individual interests. For instance, boards of education may be concerned with school health problems; the department of public works, with construction and maintenance of sanitation facilities; and welfare agencies, with provision of medical and hospital care.

It can, therefore, be seen that the whole discussion of health organization in the United States involves the relationship and inter-relationship of numerous agencies at the different levels of government and of voluntary health agencies and establishments, the accomplishments of

which may be measured in terms of service to the people. This service begins at birth; is continued during his pre-school age, his school life, his majority—in industries, in government offices, in his private life, in his travels—the last decade of his life; and ends only at his death. Thus, the American citizen, from the day he is born until the day he dies, receives the maximum health service that can be offered by the most progressive health departments in the world. Moreover, the advances made in public health organization, administration, and performance during the past 25 years have been such as to constitute undoubtedly a source of pride to the American people.

This, in a nutshell, is the structure of the health organization and administration in the United States. To avoid monotony, the details of the points mentioned in this particular article have intentionally been omitted. Presentation and discussion of particular health activities in the United States, which may have some bearing or influence on the health organization in the Philippines will appear in subsequent articles.

A study of this system of organization will reveal similarities with and, at the same time, striking differences from, our system of health organization in the Philippines. Here, we also have three levels of government—the national, the provincial, and the municipal, corresponding to the federal, the state, and the local in the United States. And, as in the United States, the three levels of health organization are closely patterned after our governmental structure.

However, the essential difference is that, while the health organization in the United States is characterized by de-centralization, ours is a centralized one. This means that while the United States Public Health Service is the national health organization of the U.S., yet it generally has no direct and technical supervision over state health departments. The latter, in turn, do not exercise direct supervision over county, city, and municipal health departments, except in some cases as already mentioned. On the other hand, our health organization here is essentially centralized in the sense that the Central Office of the Bureau of Health controls and supervises directly the activities of the provincial and city health organizations; and the provincial health offices, in turn, supervise directly the functions of the local health organizations.

In other words, the Director of Health, who is the direct representative of the Secretary of Health in matters concerning the protection and promotion of health and the maintenance of sanitary conditions of the whole archipelago to an optimum level, assumes direct control and supervision over his representatives in the provinces and cities, the district control and supervision over his representatives in the provinces and cities, the district and city health officers; and district health officers, in turn, directly supervise the activities of presidents of sanitary divisions or the municipal health officers. There is no doubt that the system of health organization in the United States, which has just been described, is best suited to that country, in view of its extensive geographical area, its enormous population which is almost seven times that of

the Philippines, the habits and customs of the people, and lastly, its type of governmental organization.

The question, therefore, that may be posed in this connection is whether or not the system of health organization in the United States may be used as a pattern for that in the Philippines. To answer this question, it is important, first of all, to consider the following points:

The Philippine Archipelago is composed of 7,083 islands scattered over an area of 114,000 square miles. While the land area of the archipelago is very much less than that of continental United States, yet the presence of the numerous islands separated from each other by extensive bodies of water, making the direct supervision difficult, seems to favor de-centralization. Also, giving more autonomy to the provincial and municipal health organizations would create a spirit of independence among these entities and encourage and stimulate the health personnel to try out various measures and methods aimed at solving public health and sanitary problems, and at improving health and sanitary conditions in their respective districts where they can be considered experts along their lines.

On the other hand, we should not forget that our governmental structure is still a centralized one unlike that of the United States. Naturally, this calls for a centralized system of health organization. The late President Roxas, during his short incumbency in office, tried to give more autonomy to local governments, by giving them more powers, and by encouraging them to strive to be self-sufficient and practically independent from the National Government. However, his untimely demise put an end to this idea. If that policy of the late President had been realized, our government structure would have approached that of the United States in point of local autonomy; and, since health organizations should be patterned after the general governmental organization, the de-centralized system of health organization would have been applicable. Then again we have to admit that as a whole, our local governments are not, and possibly may not be, financially self-sufficient even in the near future, as to maintain independent, effective, health organizations.

Considering these points, it is believed that for the present, the de-centralized system of health organization similar to that in the United States may not be suited to the Philippines; and that, for better and more effective supervision of health and sanitary measures and services to the inhabitants of this country, our present system of centralized health organization is still preferable.

GENITO-URINARY INFECTIONS IN GENERAL PRACTICE *

LUIS F. TORRES, JR., M.D.

Pus cells in the urine constitute a direct evidence of infection in the genito-urinary tract. In chronic types of the disease, namely those lasting for more than 4 weeks, pyuria may be the only manifestation; chills and fever, lumbar ache are additional findings in the acute stages. The urinary tract is most vulnerable to bacterial invasion by reason of several factors.

Anatomic Facts

With such a direct communication from the abdominal aorta the renal arteries flood the kidneys with at least one-fifth of the circulating blood volume at any single moment. Any focal infection may have a direct hematogenous access to the renal substance. The retroperitoneal fascia that surrounds the kidneys and ureters and is continued downward to invest the pelvic organs is richly permeated by lymphatics. The colon, uterus and its adnexae, prostate, bladder and rectum are in intimate lymphatic relationship with the kidneys and ureters. In a state of chronic dilatation of the ureter when conceivably peristalsis is quite ineffective, ascending infection from the lower urinary tract has often taken place. The opposite may also happen. The rich blood supply of the prostate gland exposes it to the same dangers of blood-borne infection. Furthermore its intricate glandular structure favors a perpetuation of infection once it has taken a foothold.

Bacteriology

The bacteriology of urinary tract infections is predominantly of the B. Coli group. Less frequently non-specific coccal forms, such as staphylococcus, are found. The tubercle bacillus holds a special place in the bacteriology of this type of infections since it is productive of the greatest renal destruction. The gonococcus germ commonly invades the urethra from which it may spread to the male genital tract through the prostatic area. Occasionally it attacks the trigone of the bladder and even the renal pelvis. Let us remember too that the diplococcus of Neisser may invade the blood stream and produce an endocarditis or multiple arthritis.

While the source of gonococcus infection is well known, it is not always realized that bladder tuberculosis is always secondary to prostatic or renal tuberculosis; and that the kidney involvement always comes

*A clinical lecture read before the Nueva Ecija Medical Society, November 5, 1950, at Cabanatuan City.

from a focus of tuberculosis outside of the urinary tract. In this country most probably the lungs constitute the primary focus in renal tuberculous disease. The source of the commonest microorganism invading the urinary tract, namely *B. Coli*, is often found in a constipated large intestine. The coccal forms of infection have been known to come from the infected pulp cavities of decaying teeth, tonsillar or nasal sinus infections, uterine endocervicitis, infected hemorrhoids.

The mode of invasion of the kidney usually determines the pathologic type of renal infection. When the bacteria arrive by blood stream invasion, the cortically situated glomeruli are the first involved. Minute abscesses or by conglomeration, a carbuncle-like mass of suppuration, appear. Ascending or lymphatic invasion of the kidney results in inflammation of the lining membrane of the pelvis and calyces. Eventual submucous spread produces strands of inflammatory reaction in the substance of the kidney along the uriniferous tubules. Pyelitis or pyelonephritis are descriptive terms which are used interchangeably. Coccal germs commonly arrive through the blood; *B. Coli* type of bacteria usually through the ascending or lymphogenous route.

Infection and Obstruction

Acute renal infection begins with a chill of the initiating bacteremia. The ensuing fever is not characteristic but assumes diagnostic significance because of the associated tenderness at the costovertebral angle. Cortical abscesses, unless they break into the uriniferous tubules, do not produce a pyuria. In fact, pus cells may first appear in the urine only after fever and loin pain have abated, signifying release of tension within the purulent pockets.

In the absence of urinary obstruction, infection is very commonly of the acute variety and self-limited in duration. The anatomic peculiarities of the urinary tract are closely correlated with the function of its various segments. The drops of urine forming at the tips of the renal pyramids are propelled by the calyceal sphincters into the renal pelvis, whose normal capacity does not exceed 7-10 c.c. Every 1-2 minutes peristaltic waves squeeze out 2-4 c.c. of urine from the pelvis into the ureter, along which it is rapidly pushed into the bladder. The inherent ability of the urinary bladder to accommodate increasing amounts of urine without substantial increase in pressure permits gradual storage up to about 300 c.c. within the usual period of 3-4 hours. By the act of urination the bladder is emptied rapidly, the passage along the urethra being accomplished with a forceful stream. The bladder is the only place where urine is stored in any great amount for a period of a few hours, its stay in the renal pelvis being measured in minutes, along the ureter and urethra in seconds. An intraluminal obstruction (fibrous contracture, stone or newgrowth) or a neurogenic disturbance of peristalsis or contractility will destroy the timing or sequence of the normal flow from the highest renal level to the external urinary meatus. Any prolongation of the stay of a given amount of urine in any segment

of the urinary tract, is equivalent to an obstruction in the flow. This is the factor that perpetuates urinary infection, that makes it chronic.

The most strenuous effort with antibiotics will come to naught in any patient wherein obstruction and infection are found together. A vicious cycle can only be broken by removing the obstruction. It has been repeatedly shown, for instance, that the unobstructed human urinary bladder can be inoculated per urethram with a live bacterial culture and still escape infection. In the patient with chronic urinary infection only a complete urologic investigation will disclose the obstructive factor.

Cystitis in Women

In women the urinary bladder specially the trigone is particularly vulnerable to infections. The short female urethra predisposes to ascending infection. Furthermore there is a rich lymphatic network surrounding the bladder, vagina, uterus, fallopian tubes, ovaries and rectum. There is thus provided a lymphatic avenue for bladder infection. The often-observed localization of bladder infections to the trigone can be explained on various grounds. Anatomically the trigonal muscle is distinct from the detrussor, its lymphatic network being more prominent. Embryologically this portion of the bladder is of mesodermic origin, whereas the rest of the bladder is endodermal. Physiologically the trigone is the least distensible part of the bladder and takes an active part in its opening. Its innervation is from the sympathetic through the hypogastric nerves, while the detrussor receives a parasympathetic innervation through the nervi erigentes. The trigone responds to sympathetic stimulating drugs.

Trigonitis in women begins suddenly with symptoms which are familiar to the practitioner as those of cystitis. Extreme frequency of urination, as often as every 10-15 minutes dominates the clinical picture. Greater discomfort is experienced when the last drops are associated with pain. The symptoms may vary from mild bladder discomfort to severe strangury with a few terminal drops of blood.

"Cystitis" is a correct clinical diagnosis. But a realization that the trigone is primarily involved, the rest of the bladder being normal (as seen in numerous cystoscopies) will explain the frequency of urination, for the trigone is the "trigger area" of the urinary bladder. The occasional renal pain or ureteric colic is produced by edema around the ureteral orifice. The kidney is not infected, for its urine obtained by ureteric catheterization is found to be sterile.

Immediate treatment will require sedatives, belladonna, opium suppositories and hot Sitz baths. One to two grams of a sulfa drug daily for 7 days, preferably sulfacetimide which is very effective against *B. Coli*, will suffice. Aureomycin or chloramphenicol will also be effective but I consider them too expensive for general use. An icebag over the hypogastrium and a lot of orange juice to drink in the mild cases, or 30 c.c. of 5% Argylol introduced through a catheter in the more resistant cases will work wonders.

The rapid response of this type of cystitis to treatment does not excuse the attending physician from ascertaining the presence of any other source of infection. A radiograph of the entire urinary tract is done. The external urinary meatus must be inspected for a possible caruncle; the urethra must be milked outwards by pressure on the vaginal roof against the symphysis to detect any purulent discharge; a 20 Fr. metal sound must be passed without meeting obstruction in order to eliminate urethral stricture. A speculum examination must be performed to detect endocervicitis; a cystocele must be ruled out; bimanual pelvic examination may reveal adnexal infections. The anal region must be inspected for fissures, infected crypts or hemorrhoids. Finally the nasal sinuses, tonsils require careful study if the trigonitis symptoms recur.

Some patients will not have any demonstrable extra-urinary source of infection, but symptoms of cystitis appear whenever they have ingested spicy foods or some other article of diet like chocolate. One is greatly tempted to think of allergic cystitis in such instances but experimental and cystoscopic evidences are lacking. Certainly antihistaminics will not do any harm.

A study of the stained smear of the urinary sediment is of more than academic importance. A methylene blue stain will show easily bacillary, coccal, and diplococcal forms. Most bacillary forms of urinary microorganisms are susceptible to sulfacetimide, aureomycin and chloramphenicol, but not to penicillin. Coccal forms are susceptible to penicillin, sulfas and other antibiotics. The right therapeutic agent applied from the start will bring about the greatest possible chance for cure.

In the case of chronic cystitis with persistently negative findings of tubercle bacilli in the catheterized urine sediment the diagnosis by exclusion may have to be that of so-called amicrobic pyuria. This is a form of cystitis described recently wherein a virus infection has been thought to be its etiologic agent because of the failure to demonstrate any bacteria. Of course lest one fall into the habit of denoting as amicrobic every case of pyuria which fails to show microorganism, the urine must be cultured for tuberculosis and a guinea pig must be inoculated. The therapy of amicrobic pyuria which also constitutes a sort of diagnostic test is the intravenous injection of neo-arsphenamine in doses of 0.15-0.30 gram once a week for 5 doses. Amicrobic pyuria is rapidly cured with this therapy.

Urinary Tuberculosis

In the practice of medicine in a country like ours with such a high incidence of pulmonary tuberculosis it would be well for us to suspect every case of chronic cystitis which defies the usual remedies outlined above as possibly tuberculous. Repeated studies with acid-fast staining should be made of catheterized bladder urine. If careful search is rewarded with the finding of tubercle bacilli in the catheterized bladder urine, the diagnosis of bladder tuberculosis will require a thorough urologic investigation in order to determine the extent of the disease.

Nephrectomy for unilateral kidney tuberculosis is still the only accepted treatment. But streptomycin in one gram daily doses for 2-4 weeks before operation and for about 2-3 months after nephrectomy is a logical present day complementary medical treatment.

The subject of urinary tract tuberculosis offers a fascinating example of an initial blood-borne invasion of the kidney with subsequent descending infection to the bladder and final ascending and lymphatic spread to the other kidney. The patient will be found to have a past or present history of thoracic tuberculosis (blood streaks in sputum, pleural effusion, chronic cough, radiographic findings in chest) or he may show physical signs of active, quiescent or healed tuberculous lesions (such as cervical lymphadenitis, psoas abscess, Pott's disease, chronic arthritis of the knee, fistula-in-ano, healed scars or suppurating sinuses in scrotum, nodular epididymis, nodular prostate). Such physical stigma usually label the patient as tuberculous so that the natural conclusion as to the origin of a chronic pyuria is legitimate. From any of these sources the tubercle bacilli invade the kidneys through the blood stream. One kidney may offer greater local resistance to the infection hence clinically renal tuberculosis is detected as unilateral. The progressive destruction of the renal tissue leads to caseation which trickles down the ureter and into the corresponding side of the bladder trigone. The descending infection that takes place at this stage is seen very clearly during a cystoscopic examination as a collar of tubercles and ulcerated areas around the corresponding ureteric orifice, the rest of the bladder being still normal. The patient may be aware of lumbar discomfort, of a burning sensation on urination, of greater frequency in micturition and of a turbidity in his urine which his physician can promptly prove to be due to an abnormal number of pus cells and some red blood cells. Streptomycin injections now may diminish the symptoms but cannot stop the pathologic progress of tuberculosis. The bladder musculature soon loses its elasticity, the opposite ureteral orifice begins to gape, allowing ascending and lymphogenous extension to the opposite kidney. The disease must be stopped before this happens, and nothing short of nephrectomy will do it.

Prostatitis

The adult male is frequently harassed by a chronic burning sensation on urination, a heaviness in the perineum, low back ache, shooting pains down the leg and occasionally a tiny drop of slightly turbid urethral discharge when he wakes up in the morning or upon the passage of a hard stool. He may be treated for months as having gonorrhoeal disease, or as a case of lumbago or sciatica with the appropriate remedies. Any or all of these conditions may be truly present but let the prostate gland be carefully examined for a true evaluation of the syndrome. If it is found to be boggy, slightly tender, regardless of its size, it should be massaged to obtain its secretion. Normal prostatic secretion under the high power lens of the microscope will not show more than 5 pus cells and many refractile globules of lecithin. Should there be more than

this number of pus cells and incidentally no lecithin bodies (which disappear in the presence of infection) the diagnosis of chronic prostatitis could explain all the urinary symptoms and the neuralgic pains. The stand-by of treatment will have to be repeated weekly prostatic massage with microscopic check-up of the secretion. Urinary antiseptic will play a secondary role.

Gonorrheal Infection

In the male it is common to diagnose every case of purulent urethral discharge of a few days duration as gonorrheal infection. But it would be very proper to perform at least a methylene blue smear of the pus. Typical diplococci inside and out of leucocytes will be seen. The treatment of acute gonorrhea nowadays has become so simplified with the antibiotics, that many patients or, shall we say, persons thus afflicted, consider it even an absurdity to see a doctor. Gone are the days of urethral irrigations and instillations, of soundings, for a single intramuscular injection of 400,000 units of procaine-penicillin or of one gram of dihydrostreptomycin will effect an overnight stoppage of the discharge. Let us not bewail the obsolescence of local urethral medication, for it has certainly diminished the incidence of post-gonorrheal strictures. These fibrotic contractures were commonly man-made from over-zealous local medication. But let us bewail the fact that the present single-shot therapy gives the patient a false sense of cure, and throws him back into society, possibly a carrier. The healthminded physician therefore, must deem it his great responsibility to insist that the patient submit himself to tests for cure. The passage of metal sounds and prostatic massage as provocative tests must be followed by at least three negative smears and cultures at weekly intervals. This is a real bacteriologic cure.

Summary

In summary, I have endeavored to show that:

1. The anatomic structure of the genito-urinary tract exposes it to frequent blood-borne bacterial invasion and occasional ascending or lymphogenous attacks, the latter specially dependent upon a pre-existing stasis of urine.
2. The B-Coli group is the commonest invader of the urinary tract, but the tubercle bacillus demands special attention due to its destructive effects.
3. Acute urinary tract infection in the absence of obstruction is usually self-limiting, but obstructive factors produce chronicity.
4. Urinary tuberculosis is still a surgical disease although antibiotic therapy with streptomycin prepares the patient for surgery and may diminish postoperative morbidity.
5. The rapid and easy cure now available for gonorrheal infection does not absolve the physician from obligations to protect society from the carrier.

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Editorial

MEDICAL PREPAREDNESS

Just before the First World War, Dr. B. C. Crowell, then President of the Philippine Medical Association, had as the subject of his presidential address, "Medical Preparedness." Again, on the eve of the involvement of the Philippines in the Second World War, the late Colonel Victoriano Luna, Chief Surgeon of the Medical Corps of the Philippine Army, wrote an editorial entitled, "Medical Preparedness." Appearing in the December 1940 issue of the *Journal of the Philippine Medical Association*, this editorial urged the medical profession to pre-

pare for its vital part in the defense of our country and in the preservation of our national security.

So pertinent is this editorial to present conditions that it is worth quoting in part here:

"We should actively advocate, personally aid, and unconditionally encourage adequate medical preparedness for the emergency of war. The backbone of our defense system consists in a reserve force trained and organized to be ready on the field at a moment's notice. Under the national stress of an emergency our corps of physicians who are called unexpectedly from their civilian pursuits will surely be confused in the maze of medical problems crowding themselves for solution. Unstinted patriotism and high enthusiasm will not suffice. Careful planning and detailed preparations are further requisites so that the members of the medical profession can render the greatest assistance in preventing much of the physical devastation resulting from sickness and battle and can give the expected support for the favorable termination of the emergency.

"Medical preparedness is every physician's responsibility. Neither the Philippine Medical Association nor any of its component societies can be indifferent to the role they must assume in the nation-wide military preparation to which our people have seriously given continued attention since the very beginning of our present form of government. The noble heritage and altruistic ideals of our profession leave us no other alternative than to accept this new challenge for service, and there is every reason to feel confident that we shall not be found unequal to the tremendous work we shall be called upon to perform."

Colonel Luna was then the Chairman of the Committee on Medical Preparedness of the Association. We feel there is an even stronger reason for advocating the creation of another such committee, in view of the more serious tragedies that might befall our country should we be involved in a Third World War. For the use of atomic bombs, bacteriological warfare, guided missiles, and other instruments of destruction and death is bound to wreak indiscriminate havoc upon cities and their populations.

Because the Philippines may be cut off at any moment from outside sources of the necessities of life, it is imperative that determined efforts be exerted immediately to stockpile foods, drugs, and pharmaceuticals — not to mention surgical

instruments, X-ray films, and laboratory equipment and facilities. The production of all those things necessary to protect the health of our people including foodstuffs should be stepped up; and medical units organized to serve our rural population and to look after the health of our evacuees, with experts in the different fields of medical science to serve as consultants. "The Effects of Atomic Weapons" (September 1950 revision), obtainable from the United States Government Printing Office should be made available to every medical practitioner in this country, so that they may be prepared to cope with problems bound to arise in case of an atomic war.

The "Filipino people suffered more than any other people in the last war," and we fervently pray God that we be spared another such tragedy. But prayer is not enough. We also have to work for our own salvation and survival. We should not be caught unaware. We should be prepared. — A.S.F.

Miscellaneous

ABSTRACTS FROM CURRENT LITERATURE

ABSTRACTORS

Honorita Acosta-Sison, M.D.

Jose R. Cruz, M.D.

Felisa Nicolas-Fernando, M.D.

Trinidad P. Pesigan, M.D.

Porfirio M. Recio, M.D.

PRESBYOPIA. COMPARATIVE OBSERVATIONS OF WHITE AND NEGRO POPULATIONS by Lester L. Covell. *American Journal of Ophth.* Aug. 1950.

Laborers employed in Panama Canal Zone were divided into 2 main groups: (a) Those from Jamaica, the West Indies and from the Republic of Panama; (b) those from North America. He summarized his findings as: (1) Lues and tuberculosis more common in group (a); (2) Presbyopia seemed to develop at an early age in group (a), the course of development was rather abrupt, with early requirements of additions of + 2.50 D.

Analysis of records of refractions during 1935 to 1945—The complete explanation of the mechanism accommodation is not known. It is generally accepted, however, that loss of accommodative power, as occurs in presbyopia, is due to a decrease in the mobility of lens substance. This is different from weakening of ciliary muscle occurring during the course of acute infectious diseases. Such factors as general debility, chronic and systemic diseases and occupational stress may accelerate the onset of the presbyopia. Other factors: (1) low incidence of myopia in group (a) with subsequent increase in emmetropia and hyperopia; (2) possible factor of climate (tropical climate may well predispose to lens sclerosis); (3) higher percentage of degenerative diseases in (a); (4) diet and food habits and other factors should be studied. This group (a) develops presbyopia from 5 to 10 years earlier than the white population (group 'b').—F. N. F.

SUGGESTIONS FOR FIRST-AID TREATMENT OF CASUALTIES FROM ATOMIC BOMBING, by Richard Warren and James Jackson, *New England J. Med.*, 243:18, 696-698, Nov. 2, 1950.

After an atomic bombing a doctor should render first aid and also classify casualties for priority in definitive treatment. First aid should be given for those who are suffering from wounds, burns, and radiation injury. Those suffering from contusions and lacerations are to be treated along the usual principles but thorough and early treatment is important to avoid complications during the period of radiation sickness later; these injuries were observed in 70% of survivors of the bombings in Japan. Both flash and flame burns occurred in 65%-85% of these casualties in Japan. Flash burns are more superficial but present more destruction of the involved tissue and are due to the radiant heat of the bomb which could be effective up to 2½ miles above the ground. Flame burns follow burning of buildings or clothings by the radiant heat of the bomb. First aid is the same for both types and follow the usual methods. Tight occlusive dressings should be applied at once without vigorously cleaning the burned area. Morphine, 10 mgs. may be given for pain which is severe

in cases of flash burns. Radiation injury cases need rest as a first aid measure. Later hematologic studies should be made. Proper decontamination using detergents should be done.

Casualty sorting is necessary in determining those who need immediate treatment, those who have to be sent to special hospitals, those who may be sent home after minor treatment. It is very important that all cases treated be tagged showing the diagnosis, treatment given, and the suspicion of radiation overdose if any.

Of 100,000 casualties which a bomb of the type used in Japan is expected to produce, 20% will be killed outright; 20% will be ambulatory cases; 20% will not report at once; 40% will need immediate hospitalization. Of these 50% are expected to die ultimately and only about 10% can be saved by good medical treatment. Other atomic weapons will cause a proportional casualty rate.—P.R.

CARDIAC ARREST INCIDENT TO SURGICAL ANESTHESIA, by Robert Smith and Fred Nolan, Northwest Medicine, 49:10, 682-684, Oct. 1950.

Cardiac arrest may occur during or after the induction of surgical anesthesia. It may be due to inhibitive effect on cardiac activity by cyclopropane and barbiturates, reflex vagal stimulation by the insertion of the endotracheal tube, inhibition of the heart beat by excitation of the carotid sinus, reflex by the relative hypoxia during induction. Among the prophylactic measures taken are the use of atropine as pre-operative medication and the use of local anesthesia to the trachea and larynx before intubation.

The most rational procedures suggested by several investigators include artificial respiration, use of 100% oxygen inhalation, procaine either applied or injected into the heart, epinephrine, and cardiac massage. Manual massage of the heart overcomes dilatation and prevents the heart from losing its tone and thus restores the coronary circulation. Delay in cardiac massage may mean damage to the brain which will ultimately cause the patient's death in 1-15 days. The heart may be massaged by transperitoneal transdiaphragmatic, transperitoneal subdiaphragmatic, and transthoracic routes. The patient should be put in a Trendelenburg position. Rapid transfusion of blood or plasma or any substitute serves to increase the cardiac output. The ventricles should be compressed rhythmically about 40 times per minute to be synchronized with the movements of artificial respiration to produce an artificial diastole. In the Lahey Clinic cardiac massage is preceded by the injection intracardially of a mixture of 0.5 cc. of 1:1000 epinephrine and 9.5 cc. of 1% procaine. If there is an associated ventricular fibrillation, supplementary intracardiac injections of 5 cc. 2% procaine are to be made into the right heart or the local application of 10% metycaine or 5% procaine hydrochloride is to be done. As further measures 1 cc. of 1:1000 epinephrine or 5 cc. of 1% Calcium chloride may be injected into the right ventricle:

The success of the procedure depends upon the age of the patient, cardiac status before operation, and the cause of the asystole. The results are better in younger and healthier individuals than those suffering from organic diseases as arteriosclerosis, hypertension, coronary disease or from toxemia. Better results are to be expected in cases due to temporary asphyxia, reflex vagal inhibition, cardiac trauma, acute cardiac dilatation, hemorrhage, and vasomotor paralysis which cause circulatory insufficiency.—P.R.

GASTRIC ULCER OCCURRING AFTER VAGOTOMY by D. Morrissey, M. Ch., F.R.C.S., Brit. Med. No. 54680, Sept. 16, 1950.

In 347 cases of vagotomy for duodenal ulcer there were a total of 5 gastric ulcers that occurred postoperatively; two of these five were in 79 cases of duodenal ulcer reported now. This complication is unusual but significant, owing to the malignant potentialities of such ulcers and because such ulcers may be remarkably painless after vagotomy. The cause of the recurrence is probably associated with gastric stasis or retention. The conclusion formulated by the author is that vagotomy is unsuitable as a treatment of gastric ulcer, and would not confer any protection against the development of gastric ulcer.—P.R.

SOCIETY ACTIVITIES

Dr. Mariano M. Alimurung of the Faculty of Medicine and Surgery of the University of Santo Tomas was appointed by the Council of the Philippine Medical Association to represent the Association in the First International Cardiological Congress held in Paris, September 3-9, 1950. The Council, in the name of the Philippine Medical Association, expresses to Dr. Alimurung its deep gratitude for his very able representation of our Association in that Congress.

The following is Dr. Alimurung's report to the Council:

Dr. Antonio S. Fernando
Secretary-Treasurer
Philippine Medical Association
c/o Philippine General Hospital
Taft Avenue, Manila.

Dear Dr. Fernando:

Through you, I have the honor to submit to the President and the Council of the Philippine Medical Association the following report on the first International Cardiological Congress celebrated in Paris, September 3-9, 1950.

Above all, I want to express my appreciation for the privilege given to me as official delegate of our Association at that Congress. I was the only Filipino at that international meeting.

The inaugural session of the Congress was held on September 3 at the Grand Amphitheater of the Sorbonne. Professor Charles Lauby, leader of the French cardiologists and President of the Congress, presided over the inaugural session and delivered the presidential address. The French Minister of Foreign Affairs declared the Congress opened. Thereafter, the various international groups spoke in the persons of Prof. Ignacio Chavez of Mexico for the Latin Americans, Prof. Paul D. White of Boston for the North Americans, Sir John Parkinson of London for the English-speaking Europeans, and Prof. Gustav Nylin of Sweden for the rest of Europe's cardiologists. Over 1,000 cardiologists from more than 55 countries attended the Congress, although the Oriental countries were rather poorly represented. Aside from myself there were two from India, one from China, and one from Japan.

From the 4th to the 9th of September, five scientific sessions were simultaneously held every morning and afternoon at five big halls of the world-known Sorbonne. These different sessions carried with them a principal theme on which the various papers presented centered. The first session dealt on the anatomical, physiological, and pathological aspects of cardiology; the second, on electrocardiography, phonocardiography, and other graphic methods of study and diagnosis; the third, on hypertension, vascular diseases; the fourth, on clinical problems; and the last, on treatment. From the abundance and high quality of the papers presented, one could easily see the importance which cardiology has assumed in medical research and practice. Five to eight papers were read and discussed in each session.

I was privileged to present, on the afternoon of the first day, my paper on "The Unipolar Precordial and Extremity Electrocardiogram in Normal Infants and Children," which I illustrated with lantern slides. This study was the result of one of my projects while doing graduate studies in cardiology in Boston under a fellowship from Santo Tomas University. I am glad to inform you that this paper was well received. Its

partial presentation before the New England Cardiovascular Society two months previously was accorded a similar reception.

While it is impossible to give here a resumé of so much knowledge that was brought up in that Congress, I can say that there has been a tremendous advance in this field and that interest in it is now world-wide. To mention a few, the following may be cited: the rational approach and understanding of electrocardiography by means of the unipolar technic and with intracardiac studies, in place of the empirical interpretation; the development of vectocardiography, allowing the interpretation of the electrocardiogram from a three-dimensional study; the tremendous advances in the surgery of the heart, both in congenital malformation and in acquired valve disease, mainly rheumatic mitral stenosis; the development of newer diagnostic procedures which also contribute to a better understanding of physiology and pathology, such as phonocardiography, electrokymography, and ballistocardiography; the use of radioactive substances both in the study of physiological phenomena and in the treatment of certain conditions that may not respond to ordinary measures, such as the use of radioactive Iodine in congestive failure and angina pectoris; the new horizon opened by ACTH and Cortisone in the study of the pathogenesis and even the treatment of rheumatic fever and allied collagen diseases; the role of surgery in hypertension as well as various other medical approaches, like the rice diet of Kemper, etc.; the newer light on the pharmacology of certain cardiac drugs as disclosed by physiological data obtained through cardiac catheterization; and various other studies on pericarditis, cor pulmonale, Chagas' disease, etc.

In addition to these sessions, there were movie-programs on various surgical procedures, such as the Pott's operation for Tetralogy of Fallot, arterioectomy for arterial occlusion, and sympathectomy for hypertension; the use of Pronestyl for arrhythmias; certain new views on the mechanism of auricular arrhythmias; and new facts on the movements of the heart valves and their relation to the mechanism of production of heart sounds.

The social phase of the Congress was no less grand. There were: a reception given by the French group at the Maison de la Chimie; another reception given by the Municipal Council of Paris at L'Hotel de Ville; a special ballet performance at the Palais du Chaillot; the grand banquet; and the farewell reception at the famous Louvre.

One of the interesting exhibits was the one of medical books and monographs. This exhibit displayed, not only the most modern ones but also—and this was of even greater interest—those that have been regarded as the milestone in the history of cardiology. It was an unusual privilege to see the original manuscript of historical works of such men as Potain, Laennec, His, Heberden, Lewish, Purkinje, Harvey, and many others.

I am happy to have been able to renew friendships with cardiologists I had previously met in the Inter-American Cardiological Congress in Chicago in 1948, to have made new friends among European cardiologists, and to have contributed my bit as the lone delegate from the Philippines.

Sincerely yours,
(Sgd.) MARIANO M. ALIMURUNG, M.D.

The LAGUNA MEDICAL SOCIETY held its election of officers for 1951 and a scientific meeting on December 17, 1950, at the Laguna Chest Center, Sta. Cruz, Laguna. The papers read during the meeting were:—"Impressions from My Trip Abroad" by Dr. Eriberto Y. Aguilar; "Plastic Surgery in General Practice" by Dr. Benvenuto R. Diño, F.I.C.S., F.P.C.S., F.N.G.A., Chief, Surgical and Professional Services, V. Luna General Hospital. Closing remarks was delivered by Dr. R. Kamatoy, outgoing President.

After the program, luncheon and dance ensued. Dr. Alfredo C. Balderama acted as master of ceremonies.

The following were elected officers of the Laguna Medical Society for 1951: President, Dr. Mercedes Uichanco; Vice-President, Dr. Francisco T. Hernando; Secretary-

Treasurer, Dr. Fernando O. Manas; Assistant Secretary-Treasurer, Dr. Florencia Chipeco-Alano; Councilors, Drs. Eriberto Aguilar, Santiago Gutierrez, Salome Carpena-Tobias, Isaac Austria, Felipe Arcigal and Serafin Panggat; Press Relations Officer, Dr. Gregorio Ortanez.

The PANGASINAN MEDICAL SOCIETY held its twenty-ninth scientific meeting and annual election of officers at the Avenida Hotel, Dagupan City, on December 17, 1950. The program was as follows:

1. Opening Remarks — Dr. Rodolfo V. Guiang.
2. Pediatrics in General Practice — Dr. Renato Maria Guerrero, Professor of Pediatrics, College of Medicine, University of Sto. Tomas, and President, Philippine Pediatrics Society.
3. Closing Remarks — Dr. Vivencio V. Villafior, President, Pangasinan Medical Society.

Luncheon was served after the meeting and then the business meeting immediately ensued.

Officers for 1950 are: President, Dr. Vivencio V. Villafior; 1st Vice-President, Dr. Arturo L. Reyes; 2nd Vice-President, Dr. Numeriano Rabago; Secretary-Treasurer, Dr. Aquilino C. Pastoral; Sub-Secretary-Treasurer, Dr. Juliana A. de Vera; Auditor, Dr. Jesus Cuesta; Press Relations Officer, Dr. Godofredo Antonio. Councillors are: First District, Drs. Jose Escaño and Jose Valenzuela; Second District, Drs. Alfredo Tegasantos and Sancho David; Third District, Drs. Jaime Estrada and Angel Geslani; Fourth District, Drs. Ovidio Rous and Conrado Javier; Fifth District, Drs. Eriberto Ulep and Francisco Angara; Dagupan City, Drs. Guillermo C. Tuazon and Ignacio de Guzman: *Ex-officio*, Drs. Jose L. de Guzman and Gualberto de Venecia; Adviser, Dr. Constantino Limjoco.

INDEX TO VOLUME XXVI

(Includes only Authors of Original Articles that appear in the Journal)

A	<i>Page</i>		<i>Page</i>
ABAD, MOISE A.—Conventional Management of Bronchitis	159	CHIYUTO, SULPICIO—Leprosy—Susceptibility and Transmission	363
ACOSTA-SISON, HONORIA—Observations in Obstetrics and Gynecology Abroad	521	CLEVE, EDWARD A.—The Perennial Rhinitis	503
ANSELMO JOSE E. (See Dizon, Luciano, Navarro and Pesigan)		CONCEPCION, ISABELO (See Uy-guanco and Rodriguez)	
ALMEIDA, AMELIA (See Reyes, Reyes and Velasco)		CRUZ, FLORENCIO Z.—The Joint Cooperative Program for the Control of Venereal Disease in the Philippines	307
ARAGON, GLORIA T.—(See Eugene Stransky)			
ATIENZA, ROMEO Y.—A Report on the National Blood Program	349	D	
ATIENZA, ROMEO Y.—Blood Banking	267	DAUIS-LAWAS, DOMICIANA F. (See Eugene Stransky)	
B		DIZON, G. D.—Lead Poisoning Among Lead Workers	417
BAJA-PANLILIO, HERMINIA—The Retina in Toxemias of Pregnancies	407	DUQUE, AMADEO U. (See Laqui, and de Jesus)	
BANSON, ANTONIO (See Estrada, Nery, Lizardo and Mann, Jr.)			
BANUELOS, HORACIO (See Salas-Curtin and Nañagas)		E	
BOCOBO, FLORANTE C.—Summary of Experiences with Adrenocorticotropic Hormone (ACTH) on Collagen and Allergic Diseases	499	ESTRADA, JANUARIO—Radical Resection of the left Maxilla	319
BOCOBO, FLORANTE C.—The Incidence of Dermatophytosis of the Feet Among Filipino High School Students	169	F	
BONA DE SANTOS, SOFIA—Progress on B.C.G. Vaccination in the Philippines	295	FANG, EDWARD Z. (See Tangco, Gomez, Navarro, Villazor and Gozun)	
BUENSUCESO, ONOFRE (See Romeo Y. Atienza)		FELIX, NATALIA (See Stransky and Pecache)	
BURTNER, O. WHITMORE—Schistosomiasis Japonica in American Soldiers in the Philippines	537	FERNANDO, ANTONIO S.—An Outline of the Future Activities of the Colegio (Special Article)	45
C		G	
CARPIO, D. (See D. M. Garduño)		GARCIA, DAVID (See Florante C. Bocobo)	
CHIKIAMCO, CARMEN S. (See Paterno S. Chikiamco)		GARCIA, EUSEBIO Y.—“Flumamine” a New Synthetic Analgesic and Anti-Flu Drug	287
CHIKIAMCO, PATERNO S.—Role of Radiology in the Diagnosis and Treatment of Mediastinal Tumors ..	193	GARCIA, EUSEBIO Y.—Toxoplasmosis and Sparganosis in Native Filipinos (Clinical) (Clinical Notes)	225
		GARCIA, FAUSTINO—The Philippine Medicinal Plants as Materia Medica for our Medical Practitioners	199
		GARCIA, RICARDO C.—Significance and Evaluation of the Serologic Titer in the Diagnosis of Syphilis	121

	<i>Page</i>		<i>Page</i>
GARDUÑO, D. M.—Paragonimiasis: A Report of Three Cases with Pulmonary and Neurological Symptoms	253	MASILUNGAN, V. A. (See Pesigan)	
GATMAITAN, CLEMENTE S.—Recent Trends in Public Health in the United States and in the Philippines	367	MENDOZA, JUSTINIANO T.—Complete Inversion of the Uterus: A Case Report	512
GATMAITAN, CLEMENTE S.—A Study of Health Organization and Administration in the United States; Its Applicability to the Philippines	569	MEÑEZ, J. D. (See Santillan and Gorospe)	
GOMEZ, QUINTIN (See Tangco, Navarro, Villazor, Fang and Gozun)		MORALES, PABLO—Recent Concepts in the Physiology of the Kidney	397
GONZALEZ, RODOLFO P.—Inaugural Address	187	N	
GONZALEZ, RODOLFO P.—Problems of the Medical Profession (Special Article)	427	NAÑAGAS, PABLO J.—Observations Noted in the Practice of EENT in the Province	491
GOROSPE, A. A. (See Santillan and Meñez)		NAÑAGAS, VICTOR (See Salas-Curtin and Banuelos)	
GOZUN, BENJAMIN V. (See Tangco, Gomez, Navarro, Villazor and Fang)		NAVARRO, J. Y. (See Dizon, Luciano, Anselmo and Pesigan)	
GUIANG, RODOLFO V.—The Management of Status Asthmaticus	465	NAVARRO, REGINO J. (See Tangco, Gomez, Villazor, Fang and Gozun)	
I		NAVARRO, REGINO J.—Splenomegaly in Malaria	61
IBARRA, LEANDRO M. (See Gabino Sepulveda, Jr.)		NERY, PEDRO T. (See Estrada, Banson, Lizardo and Mann, Jr.)	
J		NERY, PEDRO T.—Stone and Pus in the Bile Passages	459
JESUS, JOSE C. DE (See Laqui and Duque)		O	
JESUS, PABLO I. DE—Is Chinese Ham a Public Health Menace?	113	OCAMPO, GEMINIANO DE—First Aid Management of Some Ocular Emergencies	177
JONGCO, ARTEMIO P. (See Eugene Stransky)		OCAMPO, GEMINIANO DE—Ideals and Problems of Philippine Ophthalmology	355
L		OCHOA, ENRIQUE—A Proposed Organization Chart of the Bureau of Hospitals	163
LAQUI, EMITERIO M.—“Ping-Pong Syphilis”—Report of a Case	475	OCHOA, ENRIQUE—For a Better Undergraduate Medical Training	271
LIZARDO, JESUS G. (See Estrada, Nery and Mann, Jr.)		P	
LOZANO, ANTONIO A.—Early Syphilis in Manila	213	PALILEO, LAURO G.—A Case of Cyclopean Fetus with Vestigial Mouth, Nose and Ears	177
LOZANO, ANTONIO A.—Penicillin-Oil-Beeswax Combined with Mapharsen and Bismuth in the Treatment of Early Syphilis. An Evaluation Study	75	PASCUAL, ARTEMIO A. (See Angel I. Reyes)	
LUCIANO, V. J. (See Dizon, Navarro, Anselmo and Pesigan)		PASTORAL, AQUILINO C. (See Reyes and de Vera)	
M		PECACHE, LEON V.—(See Stransky and Felix)	
MANN, BERNARD F. (See Estrada, Nery, Banson and Lizardo)		PESIGAN, D. E. (See Dizon, Luciano, Navarro and Anselmo)	
MANUEL, IDERLINA F. (See Mendoza and Romero)		PESIGAN, T. P.—Studies on Schistosomiasis: Experiments on the Che-	

	Page		Page
mical Control of <i>Oncomelania quadrasi</i> Snails	17	SANTILLAN, J. S.—Diseases Commonly Encountered in Tobacco Factories—Methods of Minimizing Them: Preliminary Report	116
PESIGAN, T. P.—Studies on Schistosomiasis: Progress Report on the Philippine Campaign as of June 30, 1950	339	SANTOS, HERMOGENES A.—Of Courage and Fidelity—A Contribution to Medical Education in the Philippines	87
Q			
QUINTOS, FLORENCIO N.—Intestinal Adsorbents as Adjuncts to the Chemotherapy of Infectious Infantile Diarrheas	155	SANTOS, VICTORINO T.—Drainage in Emergency Appendectomy ..	107
QUISUMBING, MANUEL SR.—The Practical Therapeusis in Pulmonary Tuberculosis	203	SEPULVEDA, GABINO JR.—The Treatment of Condulomata Acuminata with Podophyllin (A Preliminary Report)	81
R			
REYES, ANGEL I.—Acute Appendicitis in Children	325	STRANSKY, EUGENE—Blood Changes in Tuberculous Meningitis and Miliary Tuberculosis Following Streptomycin Therapy and Its Prognostic Value	423
REYES, ANGEL I.—Surgical Emergencies in Children	453	STRANSKY, EUGENE—Blood Findings Among Pregnant Women in the Philippines	461
REYES, ANGEL I.—Total Pneumectomy—Report of a Successful Case	243	STRANSKY, EUGENE—On Hemorrhagic Diseases in the Philippines	125
REYES, ARTURO L.—A Report of Cavernous Sinus Thrombosis Secondary to Furuncle of Upper Lip and Nose Successfully Treated with Dicumarol	9	STRANSKY, EUGENE — Hookworm Anemia in Filipino Children	561
REYES, GREGORIO L. (See Reyes, Velasco and Almeida)		T	
REYES, GUSTAVO U.—The VDRL Slide Test. Comparison with Kahn and Kolmer Tests for Syphilis (Preliminary Report)	31	TAMESIS, JESUS V.—Corneal Transplantation in the North General Hospital	145
REYES, ORDONIO (See Angel I. Reyes)		TAMESIS, JESUS—Tubed Iris Tongue Modification of Iridenclisis	555
RODRIGUEZ, JOSE N.—Epidemiological Studies on Leprosy in Cebu Province	37	TANCO, AMBROSIO—Surgical Treatment of Portal Hypertension	1
RODRIGUEZ, JOSE N. (See Uyguanco and Concepcion)		TOLENTINO, JOSE G.—Synergistic Action of Chaulmoogra and Sulfone Drugs	315
ROMERO, OSCAR Y. (See Mendoza and Manuel)		TOLENTINO, JOSE G.—Skin Lesions Benefited by Vitamin A	565
S			
SALAS - CURTIN, LETICIA—High Spinal Anesthesia at the North General Hospital (Preliminary Report)	101	TORRES, LUIS F., JR.—Urology in General Practice	514
SALCEDO, JUAN JR.—Health Work—A Common Concern (Special Article)	431	TORRES, LUIS F., JR.—Genito-Urinary Infections in General Practice	575
SANTIAGO, N. (See Regino J. Navarro)		U	
		UYGUANCO, MARIA LUISA G.—Studies on the Biochemistry of Leprosy: (1) Blood Chemistry in Different Stages of the Disease; (2) Effect of Promin, Diamidin and Diasone on the Blood Chemistry ..	65
V			
		VELASCO, ANANIAS L. (See Reyes, Reyes and Almeida)	

	<i>Page</i>		<i>Page</i>
VILLACORTA, O. L.—The Elevation of the Standard of Medical Education in the Philippines—The Purpose of Medical Associations. (Special Article)	219	niano de Ocampo)	
VILLADOLID, VICTOR (See Gemini-		VILLARAMA, ANTONIO—The Accomplishments of the Department of Health (Special Article)	385
		VILLASOR, ROY (See Tangco, Gomez, Navarro, Fang and Gozun)	

(Includes only titles of Original Articles that Appear in the Journal)

A

ANESTHESIA AT THE NORTH GENERAL HOSPITAL, HIGH SPINAL (PRELIMINARY REPORT) (Leticia Salas-Curtin, Victor Nañagas and Horacio Banuelos)	101
APPENDECTOMY, DRAINAGE IN EMERGENCY (Victorino T. Santos)	107
APPENDICITIS IN CHILDREN, ACUTE (Angel I. Reyes and Artemio A. Pascual)	325

B

B.C.G. VACCINATION IN THE PHILIPPINES, PROGRESS ON (Sofia Bona de Santos)	295
BLOOD BANKING (Romeo Y. Atienza)	267
BLOOD FINDINGS AMONG PREGNANT WOMEN IN THE PHILIPPINES (Eugene Stransky and Gloria T. Aragon)	461
BLOOD PROGRAM, A REPORT ON THE NATIONAL (Romeo Y. Atienza and Onofre Buensuceso)	349
BRONCHITIS, CONVENTIONAL MANAGEMENT OF (Moises Abad)	159
BUREAU OF HOSPITALS, A PROPOSED ORGANIZATION CHART OF THE (Enrique F. Ochoa)	163

C

CAVERNOUS SINUS THROMBOSIS SECONDARY TO FURUNCLE OF UPPER LIP AND NOSE SUCCESSFULLY TREATED WITH DICUMAROL, A REPORT OF TWO CASES OF (Arturo L. Reyes, Aquilino C. Pastoral and Juliana A. de Vera)	9
CHAULMOOGRA AND SULFONE DRUGS, SYNERGISTIC ACTION OF (Jose G. Tolentino)	315

CHINESE HAM, IS, A PUBLIC HEALTH MENACE? (Pablo I. de Jesus)	113
COLEGIO, AN OUTLINE OF THE FUTURE ACTIVITIES OF THE (SPECIAL ARTICLE) (Antonio S. Fernando)	45
COLLAGEN AND ALLERGIC DISEASES, SUMMARY OF EXPERIENCES WITH ADRENOCORTICOTROPIC HORMONE (ACTH) ON (Florante C. Bocobo)	499
CONDYLOMATA ACUMINATA WITH PODOPHYLLIN, THE TREATMENT OF (A PRELIMINARY REPORT) (Gabino Sepulveda, Jr. and Leandro M. Ibarra)	81
CORNEAL TRANSPLANTATION IN THE NORTH GENERAL HOSPITAL (Jesus V. Tamesis)	145
CYCLOPEAN FETUS WITH VESTIGIAL MOUTH, NOSE AND EARS, A CASE OF (Lauro G. Palileo)	177

D

DEPARTMENT OF HEALTH, THE ACCOMPLISHMENTS OF THE (Hon. Antonio Villarama)	385
DERMATOPHYTOSIS OF THE FEET AMONG FILIPINO HIGH SCHOOL STUDENTS, THE INCIDENCE OF (Florante C. Bocobo and David Garcia)	169
DIARRHEAS, INTESTINAL ADSORBENTS AS ADJUNCTS TO THE CHEMOTHERAPY OF INFECTIOUS INFANTILE (Florendo N. Quintos)	155
DISEASES COMMONLY ENCOUNTERED IN TOBACCO FACTORIES — METHODS OF MINIMIZING THEM: PRELIMINARY REPORT (J. S. Santillan, A. A. Gorospe and J. D. Meñez)	116

	<i>Page</i>		<i>Page</i>
E		CHEMISTRY, STUDIES ON THE	
EVENT IN THE PROVINCE, OBSERVATIONS NOTED IN THE PRACTICE OF (Pablo J. Nañagas)	491	BIOCHEMISTRY OF (Maria Luisa G. Uyguanco, Jose N. Rodriguez and Isabelo Concepcion)	65
F		LEPROSY—SUSCEPTIBILITY AND TRANSMISSION (Sulpicio Chiyuto)	363
"FLUMAMINE" A NEW SYNTHETIC ANALGESIC AND ANTI-FLU DRUG (Eusebio Y Garcia)	287	M	
G		MALARIA, SPLENOMEGALY IN (Regino J. Navarro and N. Santiago)	61
GENITO-URINARY INFECTIONS IN GENERAL PRACTICE (Luis F. Torres, Jr.)	575	MATERNAL DEATHS, REVIEW ON (Anonymous)	527
H		MAXILLA — REPORT OF A CASE, RADICAL RESECTION OF THE LEFT (Januario Estrada, Pedro T. Nery, Antonio Banson, Jesus G. Lizarzo and Bernard F. Mann, Jr.)	319
HEALTH ORGANIZATION AND ADMINISTRATION IN THE UNITED STATES, A STUDY OF; ITS APPLICABILITY TO THE PHILIPPINES (Clemente S. Gattaitan)	569	MEDICAL EDUCATION IN THE PHILIPPINES, OF COURAGE AND FIDELITY — A CONTRIBUTION TO (SPECIAL ARTICLE) (Hermogenes A. Santos)	87
HEALTH WORK — A COMMON CONCERN (Hon. Juan Salcedo, Jr.)	431	MEDICAL EDUCATION IN THE PHILIPPINES — THE PURPOSE OF MEDICAL ASSOCIATION, THE ELEVATION OF THE STANDARD OF (SPECIAL ARTICLE) (O. L. Villacorta)	219
HEMORRHAGIC DISEASES IN THE PHILIPPINES, ON (Eugene Stransky and Artemio P. Jongco)	125	MEDICAL PROFESSION, PROBLEMS OF THE (SPECIAL ARTICLE) (Rodolfo Gonzalez)	427
HOOKWORM ANEMIA IN FILIPINO CHILDREN (Eugene Stransky and Domiciana F. Dauis-Lawas)	561	MEDICAL TRAINING, FOR A BETTER UNDERGRADUATE (Enrique F. Ochoa)	271
I		O	
INAUGURAL ADDRESS (Rodolfo P. Gonzalez)	187	OBSTETRICS & GYNECOLOGY ABROAD, OBSERVATIONS IN (Honorio Acosta-Sison)	521
K		OCULAR EMERGENCIES, FIRST AID MANAGEMENT OF SOME (Geminiano de Ocampo and Victor Villadolid)	261
KIDNEY, RECENT CONCEPTS IN THE PHYSIOLOGY OF THE (Pablo Morales)	397	OPHTHALMOLOGY, IDEALS AND PROBLEMS OF PHILIPPINE (Geminiano de Ocampo)	355
IRIDENCELEISIS, TUBED IRIS TONGUE MODIFICATION OF (Jesus Tamesis)	555	P	
L		PARAGONIMIASIS: A REPORT OF THREE CASES WITH PULMONARY AND NEUROLOGICAL SYMPTOMS (D. M. Garduño and D. Carpio)	253
LEAD POISONING AMONG LEAD WORKERS (G. D. Dizon, V. J. Luciano, J. Y. Navarro, J. E. Anselmo and D. E. Pesigan)	417		
LEPROSY IN CEBU PROVINCE, EPIDEMIOLOGICAL STUDIES ON (Jose N. Rodriguez)	37		
LEPROSY: (1) BLOOD CHEMISTRY IN DIFFERENT STAGES OF THE DISEASE; (2) EFFECT OF PROMIN, DIAMIDIN AND DIASONE ON THE BLOOD			

	<i>Page</i>		<i>Page</i>
PHILIPPINE MEDICINAL PLANTS AS MATERIA MEDICA FOR OUR MEDICAL PRACTITIONERS, THE (Faustino Garcia)	199	U. Reyes, Gregorio L. Reyes, Ananias L. Velasco and Amelia Almeida)	31
PNEUMONECTOMY—REPORT OF A SUCCESSFUL CASE, TOTAL (Angel I. Reyes)	243	SYPHILIS IN MANILA, EARLY (Antonio A. Lozano)	213
PORTAL HYPERTENSION, SURGICAL TREATMENT OF (Ambrosio Tangco, Quintin Gomez, Regino Navarro, Roy Villazor, Edward Z. Fang and Benjamin V. Gozun)	1	SYPHILIS — REPORT OF A CASE, "PING-PONG" (Emiterio M. Laqui Amadeo U. Duque and Jose C. de Jesus)	475
PUBLIC HEALTH IN THE UNITED STATES AND IN THE PHILIPPINES, RECENT TRENDS IN (Clemente S. Gatmaitan)	367	SYPHILIS, SIGNIFICANCE AND EVALUATION OF THE SEROLOGIC TITER IN THE DIAGNOSIS OF (Ricardo C. Garcia)	121
RHINITIS, THE PERENNIAL (Edward A. Cleve)	503	T	
S		TOXEMIAS OF PREGNANCIES, THE RETINA IN (Herminia Bajapanlilio)	407
SCHISTOSOMIASIS: EXPERIMENTS ON THE CHEMICAL CONTROL OF ONCOMELANIA QUADRASI SNAILS, STUDIES ON (T. P. Pesi-gan and V. A. Masilungan)	17	TOXOPLASMOSIS AND SPARGANOSIS IN NATIVE FILIPINOS (CLINICAL) (CLINICAL NOTES) (Eusebio Y. Garcia)	225
SCHISTOSOMIASIS JAPONICA IN AMERICAN SOLDIERS IN THE PHILIPPINES (O. Whitmore Burtner)	537	TUBERCULOSIS, THE PRACTICAL THERAPEUSIS IN PULMONARY (Manuel Quisumbing, Sr.)	203
SCHISTOSOMIASIS: PROGRESS REPORT ON THE PHILIPPINE CAMPAIGN AS OF JUNE 30, 1950, STUDIES ON (T. P. Pesi-gan)	339	TUBERCULOUS MENINGITIS AND MILIARY TUBERCULOSIS FOLLOWING STREPTOMYCIN THERAPY AND ITS PROGNOSTIC VALUE, BLOOD CHANGES IN (Eugene Stransky, Leon V. Pecache and Natalia Felix)	423
SKIN LESIONS BENEFITED BY VITAMIN A (Jose G. Tolentino)	565	TUMORS, ROLE OF RADIOLOGY IN THE DIAGNOSIS AND TREATMENT OF MEDIASTINAL (Paterno S. Chikiamco and Carmen S. Chikiamco)	193
STATUS ASTHMATICUS, THE MANAGEMENT OF (Rodolfo V. Guiang)	465	U	
STONE AND PUS IN THE BILE PASSAGES (Pedro T. Nery)	459	UROLOGY IN GENERAL PRACTICE (Luis F. Torres, Jr.)	514
SURGICAL EMERGENCIES IN CHILDREN (Angel I. Reyes and Ordonio Reyes)	453	UTERUS: A CASE REPORT, COMPLETE INVERSION OF THE (Justiniano T. Mendoza, Oscar Y. Romero and Iderlina F. Manuel)	512
SYPHILIS: AN EVALUATION STUDY, PENICILLIN-OIL-BEESWAX COMBINED WITH MAPHARSEN AND BISMUTH IN THE TREATMENT OF EARLY (Antonio A. Lozano)	75	V	
SYPHILIS, THE VDRL SLIDE TEST. COMPARISON WITH KAHN AND KOLMER TEST FOR (PRELIMINARY REPORT) (Gustavo		VENEREAL DISEASE IN THE PHILIPPINES, THE JOINT CO-OPERATIVE PROGRAM FOR THE CONTROL OF (Florencio Z. Cruz)	307
		EDITORIALS	
		Annual Meeting in Cebu, The	231
		Code of Medical Ethics, International	181
		Community Health Council, The	389

<i>Page</i>	<i>(Includes inclusive pages by month)</i>		<i>Page</i>
Department of Health, The	437		
Hall of Notable Scientists, For a	91		
Medical Preparedness	581	No. 1 January	1-60
Mindanao Regional Medical Convention, The First	483	No. 2 February	61-100
Museum of Medicine and Pharmacy, The New	275	No. 3 March	101-144
Philippine Medico-Pharmaceutical Museum, For a	49	No. 4 April	145-186
President-Elect, Our New	234	No. 5 May	187-242
Restatement of Urgent Problems, A	133	No. 6 June	243-286
Teaching and Practice of Medicine, The	331	No. 7 July	287-338
World Medical Association, The Fourth General Assembly of the	531	No. 8 August	339-396
		No. 9 September	397-452
		No. 10 October	453-490
		No. 11 November	491-536
		No. 12 December	537-594

ANNOUNCEMENT

TO ALL MEMBERS OF THE PHILIPPINE MEDICAL ASSOCIATION:

It is hereby announced that the 44th Annual Meeting of the Philippine Medical Association will be held in Manila from May 1 to 5, 1951. Deadline for submitting titles of papers to be read at this convention with a 1/2 page abstract has been set by the Chairman, Committee on Scientific Assembly, Dr. Luis F. Torres, Jr., to be on February 1, 1951.

Guests from other South East Asia and Western Pacific countries have been invited to read papers in this convention. This will be the first South East Asia Medical Conference in this region of the world. For this reason, a levy of ₱5.00 per member has been authorized by the Council in order to defray expenses for the accommodation of our guests coming from our neighboring countries.

All Secretary-Treasurers of the daughter societies and Scientific Sections are requested to turn over their collection as soon as they can.

(SGD.) A. S. FERNANDO, M.D.
Secretary-Treasurer

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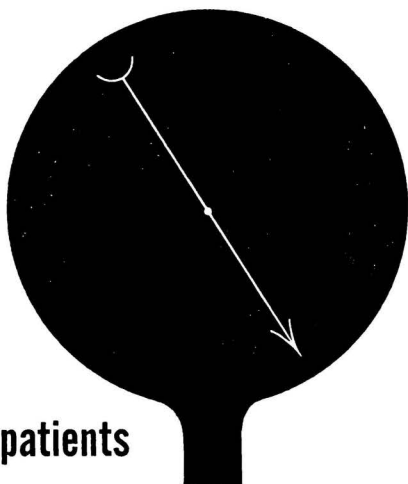
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1. Scudi, J. V., and Reinhard, J. F.: *J. Lab. & Clin. Med.* 33: 1304 (1948). 2. Carroll, G., and Allen, N. H.: *J. Urol.* 55: 674 (1946). 3. Simons, I.: *J. Urol.* 62: 595 (1949). 4. Butt, A. J.: *J. Florida M. A.* 35: 430 (1949). 5. Merricks, J. W.: *West Virginia M. J.*: 44: 157 (1948).



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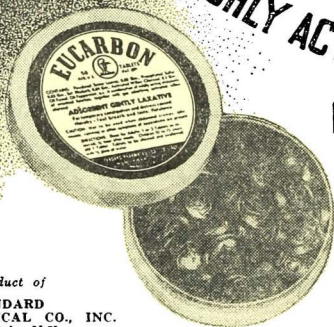
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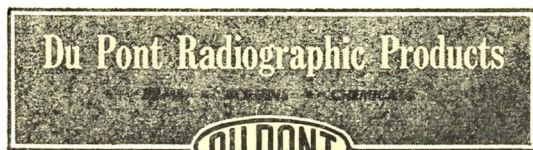
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2. There are at present 53 component medical societies already established in the different cities and in all the provinces throughout the Philippines, namely:

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3. Aside from this, the Association has 8 component specialty sections, namely:

- | | |
|-------------------------------|---------------------------------------|
| 1. AERO Medical Society | 5. Phil. Soc. of Hyg. and Pub. Health |
| 2. Phil. Pediatric Society | 6. Phil. Obst. and Gynec. Society |
| 3. Phil. Radiological Society | 7. Phil. Ophth. and Otolar. Society |
| 4. Section on Surgery | 8. Phil. Soc. of Psych. and Neurology |

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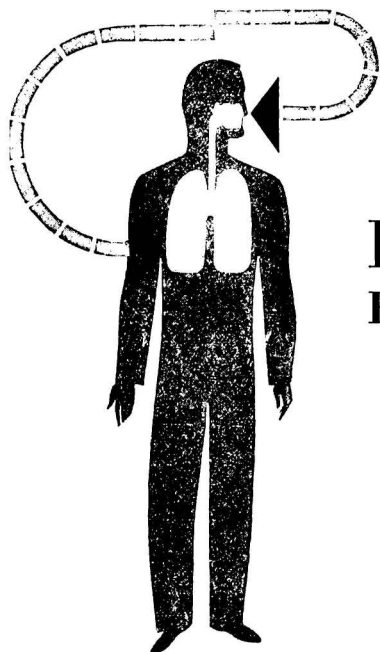
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