Some Recent Aspects of the Epidemiology of Clonorchis Infection in China.*

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Historical.

The Oriental bile-duct fluke, Clonorchis sinensis, was first discovered by McConnell, 1874 (1875), in the bile passages of a Chinese who died in a Calcutta hospital. It was described and named by Cobbold the following year. In 1883 Professor Baelz described a similar fluke from the vicinity of Okayama and Katayama, Japan,† which he designated under two varietal names, Distoma hepatis innocuum (attaining 20 mm. in length) and D. hepatis endemicum sive perniciosum (a smaller form). In 1907 Looss created the genus Clonorchis and recognized two species which he designated as Clonorchis sinensis (Cobbold) and C. endemicus (Baelz), in spite of the fact that he could demonstrate no real morphological differences between the two forms. Kobayashi (1911 et seq.,) first demonstrated the second intermediate host (various cyprinoid fishes) of the fluke and came to the conclusion that in Japan there was only one valid species, which he recognized as Clonorchis sinensis. In studying specimens of Clonorchis from man, the domestic cat, wild cat, dog, marten and badger, which had been collected for the Parasitology Museum of the Peking Union Medical College from representative areas in China and Korea, Chen Pang (1924) found them all to belong to only one species, Clonorchis sinensis (Cobbold). It is evident, therefore, from the study of the life cycle and from comparison of representative samples of adult worms from man and reservoir hosts, that we are dealing with a single species of trematode.

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†Y. Miyagawa (1924 : p. 255) states that Ishisaka and Scheube were the first to discover this parasite in Japan.
Map 2.—Outline map of Sino-Japanese areas showing known distribution of *Bythinia striatula* and closely related forms, and the incidence of clonorchiasis in man and reservoir hosts. (Faust).
The distribution of this fluke is widespread throughout the Far East including Japan, Korea, Formosa, China, and Indo-China, and is commonly reported from fecal examinations and autopsies of Chinese and Japanese in the Philippines, Malay States, Java, the South Sea Islands, India, Mauritius, South Africa, and of recent immigrants from China to America. It has not been proved to have become established in any of these latter countries either by experimental infection of mammals, or by fecal examination of large numbers of native Chinese, or of reservoir mammals (Wayson, 1923) in America.

**Epidemiology of Clonorchis Infection in China.**

The most interesting aspect of the entire problem of Clonorchis infection has to do not with its pathogenicity, for in most human cases that is relatively mild, but with the geographical distribution of the infection in man and reservoir hosts in the Sino-Japanese areas, where it is known to be established. In China occasional infections have been reported in man from Hunan, Hupeh, Anhwei, Kiangsu and Chekiang, but the majority of cases have always been reported from Kwangtung. I believe I am correct in stating that no case of infection in man has ever been diagnosed from north of the Yangtze Valley in which it has been proved, or even suspected, that the infection was incurred locally.

In reporting to the Research Committee of the C. M. M. A. in 1908, G. Duncan Whyte (1908) showed the heavy incidence of Clonorchis infection in Chaochowfu Prefecture in and about Swatow. The average infection for the total population examined was 16.7 per cent, yet students and business people had an incidence of 40.4 per cent. He likewise showed that high infectivity of clonorchiasis was correlated with only a moderate infective index for Ascaris, Trichuris and hookworm, the common helminth parasites of the farmer and coolie population of the area. Bell (1912) found only 13.25 per cent of the Sino-Japanese population examined in the Civil Hospital, Hongkong, parasitized by this fluke. Chen Pang (1923, 1925) physician to the National University, Peking, in routine examinations of the university matriculants from all over China, found isolated infections of clonorchiasis from Hunan and Chekiang but heavy infections from Kwangtung. His records for Kwangtung Prefectures are as follows: Yueh Hai Tao
Epidemiology of Clonorchis Infection in China.

The average infection for the Province is 37.39%. Dr. Chen Pang has kindly put at my disposal the unpublished results of his examinations for this year (1924) from Kwangtung students, giving an average incidence of 41.93%. The information is best presented in the form of an outline map of the Province showing the localities from which the infected students came (Map 1). A study of the map shows at least two important points not evident from the figures. (1) The Canton area is one in which the cases come from widely scattered centers throughout the Pearl River Delta, and the Swatow area appears to be one of a much more limited incidence, practically confined to the eastern half of the prefecture. (2) Hainan is
shown to be free from the infection in representative places almost around the entire shore line. Furthermore, these data are in close correspondence with the personal information furnished by the students examined. The Hainanese eat only salt-water fish, while the Cantonese and Swatowese eat fresh-water fish in a way similar to the Japanese, namely, without any cooking. These facts have a most important bearing on the entire question of infectivity, since they eliminate for all practical purposes all strictly salt-water fish as a possible source of infection.

In addition to human records of incidence valuable information on the potential human distribution of the disease is afforded from a study of the infective incidence in reservoir mammalian hosts. In the case of clonorchiasis this information is extremely suggestive. Data are available from the following centres: Canton, Shaohsing (Chekiang), Wuchang (Hupeh), Peking and Fenchowfu (Shansi), each place representative of a distinct type of habitat. In Canton none of the dogs and only 20 per cent of the cats which I examined in April, 1923, were infected. In Shaohsing (1923) 84.6 per cent of the dogs and 100 per cent of the cats were found infected. In Wuchang (1921) 80 per cent of the dogs and 100 per cent of the cats were found infected. In Peking in examinations covering a period of five years, dogs, cats, wild cats, a marten and a badger have been found infected. The dogs had an average incidence of 25 per cent infection and the cats, 37 per cent infection. Cats and dogs are uninfected in Central Shansi Province. I have never found the infection in mice or rats, which are reported to harbor the infection in Japan.

Analysis of these data involves no mental gymnastics. With the exception of the Canton area they represent the natural conditions of infection existing in a typical cross-section of the country, from the semi-tropical region of Canton, through the lower and central Yangtze Valley to North China, including the dry uplands of Shansi. On the other hand, human infection is conditioned by one additional (artificial) factor, namely, whether fresh-water fish consumed as food is eaten uncooked or insufficiently cooked. As far as I have been able to secure information, fresh raw fish is consumed in China only in Kwangtung. In Hunan, fish is smoked and frequently eaten uncooked. In all other parts of China all fish consumed by man is usually sufficiently cooked or treated to render it non-infective.
Why then, if infection is light in reservoir hosts in the Canton area, is it heavy in man in the same area and in the Swatow area? Here again the answer is much more readily found in comparative evidence than in a mere study of human infection. In the Shaohsing area, in the Yangtze Valley and in the North, wherever fishes are infected, the greater part of the infective material is found on the under side of the fish scales and only a negligible part in the flesh. The small fish unsuitable for human consumption and the scales from dressed fish are eaten by dogs and cats. In the Canton area, as far as I have had an opportunity to make examinations, the greater number of infective cysts are imbedded in the flesh, while the scales are seldom infected.* The reason for this difference is not easily explained but must lie in some very intimate host-parasite relationship requiring further careful study.

**The Molluscan Host.**

* A *sine qua non* for the life cycle of any digenetic trematode is the presence of a suitable species of snail which serves as the first intermediate host of the infection. Usually the snails which harbor this stage of a particular infection are closely related species of the same genus or at least closely related genera of the same family. In Fasciolopsis infection the closely related genera, Planorbis and Segmentina, serve in such a capacity; in Paragonimus infection species of the genus Melania are involved; in schistosomiasis japonica *Oncomelania hupensis*, *Katayama nosophora*, and *K. formosana* have been incriminated. In Japan and Korea, where the life cycle of Clonorchis has been previously studied, *Bythinia striatula* var. *japonica* has been found to serve as intermediate host (Muto 1919). The only recorded molluscan host in China is *Melania hongkongensis*, in which the cercarial stage of this form was found by Faust and Barlow in Shaohsing (1924). It seems likely, however, that the common mollusc harboring this infection in the greater part of China will ultimately be found to be a species of Bythinia. Thus far no natural infection of Clonorchis has been found in several species of Bythinia including the parent form, *B. striatula*, collected by me from Soochow, Canton, Shaohsing, Anking, Peking (2 regions) and

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* In Kwangtung, cats are at times given raw fish to eat, but dogs would get it only as scavengers.
Paotingfu, although the disease is common in man or reservoir hosts in all of these regions except Paotingfu.

All information at hand indicates that *B. striatula* Benson is common throughout China as in other parts of the Sino-Japanese area. Heude (1890: 171) states it is found “in all of the tributaries of the Yangtze River.” Annandale (1918: 305-306) has examined specimens collected from Canton, Swatow, Chusan, Soochow, the Tai Hu or Great Lake, west of Soochow, Peking and Mukden, as well as from Lake Biwa, Japan. Kobayashi (1924, 1924a) believes he has found it in Hangchow, Soochow, Hankow, and in Keiki-Do (Yeitoho 永登浦), South Chusei-Do (Ronzan 諸山), North Zenra-Do (near Riri 前里), South Zenra-Do (Shoteari 松江里 and Kampei 成平), and in South Keisho-Do (Kinkai 金海 and Shimei 進永). He likewise reports it from Kaiki-Do (Toto 鏡島). My own collection contains specimens of *B. striatula* from Canton, Soochow, Peking and Paotingfu.* Closely related species which may possibly serve as intermediate hosts of Clonorchis are known as follows:

*B. longicornis* Benson.—Entire Yangtze Valley (Heude); Soochow, and the Tai Hu, also Suigen [Korea] (Annandale); Soochow and Hankow (Kobayashi).

*B. spiralis* Heude.—Min River [Fukien] (Heude); Foochow, and Shanghai (author’s collection).

*B. subangulata* v. Martens.—Small tributaries of the Yangtze (v. Mollendorf); Foochow (author’s collection).

*B. chinensis* Heude.—Entire Yangtze Valley from the cataracts to the sea (Heude); Kinkow, near Wuchang (author’s collection, identified by Mr. Bryant Walker).

The distribution of these several species as far as is known for the Sino-Japanese region is shown on Map II.

The second intermediate host.

As early as 1910 certain cyprinoid fishes (top-feeders) were incriminated by Kobayashi as second intermediate hosts of Clonorchis infection by feeding kittens with fish flesh containing encysted larval flukes. Kobayashi (1924a) has likewise found infected fish in China as follows: *Pseudorasbora parva*, Shanghai, Hangchow, Soochow; *Sarcocheilichthys sinensis*, Shanghai, Soochow;

*Kindly identified by Mr. Bryant Walker.
Epidemiology of Clonorchis Infection in China.

S. sp. Hangchow, Soochow; Abbottina pseigma and Acanthorhodeus altranalis; Soochow. Of these forms *P. parva* is also incriminated in Japan and Korea; while *Abbottina pseigma* is involved in Japan.

I have successfully infected dogs and cats with cysts from *Pseudorasbora parva* from Soochow and Peking and with cysts from several types of fishes belonging to the families Percidae, Centrarchidae and Umbridae from Shaohsing (Faust and Barlow, 1924). In all of these cases the cysts were found on the under side of the fish scales and only exceptionally in the flesh. On the other hand, examination of fish scales in Canton for encysted Clonorchis larvae was negative. Thus far no feeding experiment has been attempted solely with the flesh of fishes in infected areas in China.

With respect to the resistance of Clonorchis cysts previous to the exposure of mammals to infection several significant facts are known. Muto (1921) found that the cysts resist putrefaction of the fish host and frequently fall out of the tissues of dead fish and are infective for man or mammals when swallowed in drinking water. I have found, however, that if the medium is attacked by the mycelial growths of certain saprophytic fungi the cysts as well as the fish flesh are attacked and soon become non-viable. Recent investigations carried on in our laboratories in Peking show that soaking of the cysts in strong salt brine for 54 hours causes partial plasmolysis of the larvae within, but that these cysts when washed in tap water and fed to dogs produce the usual infection. Similarly, cysts soaked in soy bean sauce (chiangyü) for several days proved afterwards to be viable. When strong native vinegar was substituted for the chiangyü the cysts ceased to be viable after six days. Kaoliang wine (ca. 25 per cent alcohol) when used as a medium in which the cysts were immersed was lethal in three days or less. Another batch of Clonorchis cysts found on the under side of Soochow fish scales was allowed to dry out at room temperature (22.5° C.) in Peking (relative humidity 647%) for 54 hours. Examination of the scales showed them to be exceedingly dry and brittle with splitting occurring along the scale ribs. The larvae within the cysts were found to be highly plasmolyzed, with a large air bubble inside the cyst wall. The cysts were then immersed in tap water for one hour (during which period deplasmolysis slowly took
place), and were then given to a dog mixed with the food. After 16 days viable Clonorchis eggs appeared in the dog's feces. These experimental dogs had all been carefully examined daily for a month previous to exposure to infection and fed on vegetable diet prepared in the laboratory so that any possibility of previous infection or from other food sources during the experiments had been guarded against. Salt and desiccation are therefore shown to be poor lethal agents to the cysts even when the latter are directly submitted to these media.

Further study along this line and on other phases of the epidemiology of clonorchiasis is in progress and is expected to throw additional light on the problem of human infection.

**Summary.**

1. Experimental study by Kobayashi and morphological study by Chen Pang of an extensive series of specimens from man and reservoir hosts of Clonorchis have demonstrated that a single species, *Clonorchis sinensis* (Cobbold), is present throughout the Far East.

2. This parasite is present in a relatively large percentage of the coolie class as well as in the better classes of the native population in South China, but it is fairly uncommon in the indigenous population in the Central Provinces and is unknown as a parasite of man in North China. On the other hand, dogs and cats are lightly infected in South China. In Central China they have an infection of 75 to 100 per cent. In North China the infection in the mammalian reservoir hosts ranges from 25 to 37 per cent. These varying incidences of infection are accounted for by the following facts:

   (1) Uncooked or insufficiently cooked fish is eaten by man only in South China.

   (2) The fishes of Central and North China harboring the encysted larva have the greater part of the infection on the underside of the scales and seldom in the flesh. In South China the limited examinations made justify the belief that the infection is mostly confined to the flesh.
Epidemiology of Clonorchis Infection in China.

3. Although the only snail found infected in Japan, Korea and Formosa is described as *Bythinia striatula*, var. *japonica*, the parent form in China, *B. striatula*, collected from Soochow, Anking, Paotingfu and Peking has not yet been found naturally infected. On the other hand, *Melania hongkongensis*, collected near Shaohsing, has been found to harbor the fluke.

4. Various fishes, both top— and bottom-feeders have been found to harbor cysts of a fluke, proved experimentally to be *Clonorchis sinensis*. These cysts are resistant to drying, salting, and putrefaction of the medium, but are killed in a short time by soaking in Chinese wine or vinegar.

Literature Cited.


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**MAXILLARY SINUSITIS: REPORT OF TWO ANATOMICAL ANOMALIES**


According to Schaeffer¹ the maxillary sinusitis in adults was known to Galenus (A.D. 130-201). The first to give a detailed description of it, however, was Nathaniel Highmore. In 1651 his attention was drawn to it by the condition of a lady patient in whom an abscess of this cavity was drained by the extraction of the left canine tooth. The sinus must have been unusually large, for the canine tooth does not as a rule come into relationship with it.

During a period of about two years thirty-one patients were received in the hospital here with maxillary sinusitis. The operations performed during the same period were ethmoidectomy in thirty-one patients; sphenoidectomy in 11 patients, and in six patients an intranasal operation for removal of the middle turbinate with an anterior ethmoidectomy for frontal sinusitis.

**Age.**—Most of the patients were young, the ages ranging from 17 to 40 years. Eighteen were married and thirteen were single.

**Occupation.**—Students, 19; house-wives, 4; officers, 2; merchants, 2; Y.M.C.A., secretary, 1; evangelist, 1; maidservant, 16. No occupation, 1.
On the Diagnosis and Treatment of Maxillary Sinusitis.

Symptoms and Signs

According to frequency, the symptoms and signs presented by the patients were nasal discharge, 19 cases; oropharyngeal conditions, 11; headache, 10; subject to colds, 8; nasal obstruction, 7; chronic tonsillitis, 6; dizziness, 3; fever, 5; productive cough, 3; haemoptysis, 3; epistaxis, 3; dry nose, 3; pyorrhoea, 3; tinnitus, 3; conduction deafness, 2; eczema of external nares, 2; loss of appetite, 2; carious teeth, 2; acute tonsillitis, 1; want of mental concentration, 1; tenderness on the side and base of the nose, 1; disturbed sleep, 1; bitter taste in mouth, 1; general weakness, 1; myalgia, 1; unilateral lacrimation, 1.

Duration of symptoms.—The duration of their symptoms is recorded of sixteen patients only. They ranged from 3 days to 10 years. The average duration in acute, sub-acute, and chronic sinusitis was respectively 7 days, 2\(\frac{1}{2}\) months, and 4 years.

Discussion of Symptoms

Nasal discharge.—This was the commonest sign. In three patients only was it malodorous.

Abnormal oropharynx.—An abnormal condition of the oropharynx should lead one to suspect sinusitis, though the patient's chief complaint may be sore throat or cough. The oropharynx may be congested (5 cases), or show hypertrophy of the lymphoid tissue (2 cases), or dilated blood vessels (1 case), or crusts (1 case), or pus (1 case).

Headache.—The headache was frontal in three patients; fronto-parietal temporal in one; bi-temporal in one, and occipital in one. Five of the ten patients who suffered from headache also complained of dizziness and two had fever. Thus in the majority of these cases the headache was not due to fever.

Acute rhinitis.—Susceptibility to colds was noted in 8 patients. It should always lead one to examine the sinuses. In infants and children sinusitis is said to be often cured by the enucleation of the tonsils and adenoids.

Nasal obstruction.—This symptom may be one-sided, or it may be alternate as was recorded of three patients though only one of these had bilateral sinusitis (No. 23-1919).
Tonsillitis.—The presence of tonsillitis, either acute or chronic, may be deceptive as it is apt to focus the doctor's and the patient's attention on the throat instead of the nose. Of eight patients with tonsillitis three had pus in the crypts, in two the anterior faucial pillars were adherent, one presented acute tonsillitis, in one the tonsils were large and in another they were congested. If the tonsils in an adult require enucleation the sinusitis ought to be attended to first; for when we study the oro-pharyngeal condition noted above, and when aphonia is found in a patient aged 15 years (O. P. D. No. 3558) after a tonsillectomy which was performed on account of a cough with hoarseness and a dry sensation in the throat, and in whom maxillary sinusitis was at a later date discovered, then we are led to believe that the patient's first line of defence is his naso-and oro-pharyngeal lymphatic tissues and that the tonsils are his second line of defence. The tonsils in this patient (G. 3558) were reported by Dr. H. B. Rollins to show very slight hyperplasia, very slight increase in the lymphoid tissue, and no evidence of acute infection or of tuberculosis. The protection which the tonsils offer may be mechanical, for Mullin and Ryder have shown that lymphatic absorption from the antrum is by way of the submaxillary and internal jugular nodes, and that the tonsils do not appear to receive drainage from any area beyond their own surface with their crypts. Clemkinson reports the case of a girl, aged five years, who had her tonsils and adenoids enucleated when she was two years old, in whom recurrent attacks of rhinitis were severe and the antra were dark to X-rays. Such a case, he observes, leads one to wonder whether the tonsils and adenoids may not have a protective function in preventing systemic infection though at the cost of their inflammation and enlargement.

Cough.—If a patient with sinusitis has a cough his attention may not be at once drawn to the condition of the nose. Thus one patient (No. 2066) had a cough for three years and the nasal discharge appeared only six months before admission. Another patient (No. 23-1919), a medical student, had a sensation of fulness in the nose, and a cough with mucopurulent sputum for several years. He said the expectoration seemed to come from the posterior nares. Ultimately he was found to have a bilateral sinusitis due to infection with a haemolytic streptococcus. Another patient
(No. 1677) had a cough with obstruction of the nose and slight fever for fifteen days; she was operated on because she did not like the lavage.

**Haemoptysis.**—When haemoptysis occurs tuberculosis should be at once suspected. Yet one patient (No. 3991 who had frequent colds for 10 years, alternate obstruction of his nose for 6 years, who had undergone some slight operation elsewhere about 6 years ago and had been admitted to the hospital three years previously as a tuberculosis patient because of haemoptysis, was discovered on his latest visit to hospital to have a sinusitis. Another patient (No. 2102) gave a history of haemoptysis and epistaxis. On admission he was hoarse owing to laryngitis, the vocal cords were pink in colour and both antra contained pus. Another patient (No. 3069) said that ten months before admission to hospital he had haemoptysis which consisted of a few mouthfuls of blood and the haemoptysis lasted several days. These three patients had no signs of tuberculosis of the lungs.

**Dry nose.**—Two patients who complained of a dry nose had actually a slight discharge. In one patient (No. 3331) there was no discharge, the condition present resembling ozaena though pus was found in the right antrum.

**Conduction deafness.**—Two patients (Nos. 231915, 2177) had conduction deafness. If the tuning fork tests were done in all cases of sinusitis perhaps conduction deafness would be noted more frequently. Brose mentions non-suppurative and suppurative otitis media as complications, but says that the suppurative type is rare.

**Myalgia.**—It is remarkable that rheumatic pain troubled only one patient (No. 5366).

**Defective teeth.**—Caries of the teeth was present in two patients only. Dutrow considers that in America most cases of maxillary sinusitis (65-70%) are due to defective teeth.

**Abnormal temperature.**—A rise of temperature was recorded in 6 patients. The lowest reported temperature was 37.3° C., the highest, 39.8° C. The average temperature was 38° C.

The above symptoms and signs were discovered whilst making the routine examination of the patients. However, the symptoms for which the patients in the first instance came to the hospital are
noted in 26 cases and are of interest in that some of the patients did not think their nasal condition was of much importance. These symptoms were as follows: nasal symptoms, 14 cases; cough with nasal symptoms, 3; sore throat, 2; headache and discomfort over sinus, 1; headache, fever, and general body pains, 1; tinnitus and deafness, 1; stuffiness of the ears, 1; hoarseness, 1. Two patients, students, did not notice any symptoms, the nasal condition being discovered at the routine examination.

**OBJECTIVE EXAMINATION OF NOSE.**

The examination consists in finding out the condition of the middle turbinate, the bulla ethmoidalis, the septum, and the location of the pus, using transillumination and performing a proof puncture. Maxillary antrum disease, says Heitger, is diagnosed by puncture, aspiration and culturing.

*Middle turbinate.*—To ascertain the condition of the middle turbinate is a great assistance in diagnosis. If the turbinate is neither oedematous nor hypertrophied it is not likely that maxillary sinusitis is present. In 8 of our patients the condition of the turbinate was recorded. In 7 it was hypertrophied. Of these, in one patient with bilateral sinusitis it was hypertrophied on both sides; in another, the left side was hypertrophied, and on the right there was a polypus; in another there was also hypertrophy with a polypus; in another the middle turbinate was covered with polypoid growth. A nose with an abnormal turbinate should not be considered to have been fully examined until the mucous membrane has been shrunk with cocaine (20% solution).

*Bulla ethmoidalis.*—In three cases the bulla ethmoidalis was hypertrophied. In one patient (No. 4344) it was so large that it resembled a middle turbinate so that ethmoid disease alone might have been diagnosed. The puncture of the maxillary sinus revealed pus. According to Dutrow, the middle turbinate or ethmoid may be covered with pus, and there may be polypoid degeneration of the membrane which is in constant contact with the secretion, but these symptoms may all clear up after a Caldwell-Luc operation.

*Septum.*—In one case (No. 5214) oedema of the septum following a resection suggested the presence of the sinusitis. It is generally believed that if the septum is deviated at the level of the
middle turbinate that it predisposes to sinusitis. Among seven patients with deviation of the septum three had bilateral sinusitis. In two of these the septum was deviated to one side, and in one there was an S-shaped deviation. Of the others, three (Nos. 3069, 2177, 5214) showed the deviation and sinusitis on opposite sides, whilst in one only was the sinusitis and deviation on the same side. Hence it is my impression that in maxillary sinusitis the septum is not usually deviated to the side on which the sinus is infected.

Location of the pus.—The pus is usually under the middle turbinate (11 patients); it may lie between it and the septum as well as under it (2 patients); or it may only be seen between the middle turbinate and septum (2 patients); whilst in one patient it was seen on the posterior end of the inferior turbinate. If pus is found above the middle turbinate in a diseased maxillary sinusitis one ought to think of a duplication of the sinus, for the dorsal section representing a posterior ethmoid cell almost always communicates with the superior nasal meatus.

Transillumination.—This is generally useless in the Chinese. The test helped only in one case in which the base and lateral aspect of the nose was dark on one side and bright on the other. Cases are on record in which the antra were clear on illumination, yet they were found to contain pus. E.W. Williams says that the test in a series of 209 cases failed to reveal 20 per cent of the cases of gross disease, 34 per cent of all cases of disease, and more than 50 per cent of cases of antra disease without discharge. Irregularities in the thickness of the bony walls may lead to all sorts of errors in diagnosis. If the symptoms point to maxillary sinus disease and the test is positive, well and good; if negative, it is no proof of the non-existence of the affection. On the contrary, I would say that in the Chinese the antra are usually dark, so that if one relied exclusively on this test most of them would be considered to have sinusitis. In frontal sinus disease illumination is useful in Chinese, but if one frontal sinus is dark an X-ray examination should be made, for there is the possibility that one may operate and find the frontal sinus absent (No. 4131).

Proof Puncture.—The puncture is made through the inferior meatus. An examination of a large number of specimens leads Schaeffer to believe that it is impossible, clinically, in the vast
majority of cases, to sound the maxillary sinus through its normal ostium; and the normal ostium, even after the removal of the anterior portion of the middle turbinate, can only be sounded or catheterised in a very small percentage of cases. In two cases of this series it was found difficult. In one of these the sinus was absent (No. 3141) and in another it was sub-divided (No. 3608). In 24 patients, 29 antra revealed pus on making a proof puncture.

Owing to the expense of X-ray examinations we rely on a proof puncture as a final diagnostic procedure, excluding the frontal sinus by transillumination. If one frontal sinus is dark then we advise an X-ray examination, as already stated. Unless the frontal sinus is first excluded one may operate on an antrum which is merely acting as a reservoir for the pus from the frontal sinus (No. 4001). A patient who came to me in Mukden had his maxillary sinus opened first, but finally had to submit to both operations as the frontal sinus was found to be the source of the pus. During the Great War, when I was in Malta and relied on X-ray examination more than on proof puncture, I opened several normal antra which appeared to be pathological on the X-ray plates. As a rule, we can depend upon the roentgenogram to determine the presence or absence of a sinus, its shape, size and general contour, but it does not always reveal the nature of its contents, and so the diagnosis of sinus disease has often been mistakenly made, resulting in operations performed in good faith but with bad judgment.

**TREATMENT OF SINUSITIS.**

Among the Chinese, treatment other than operation is usually ineffective, as the patients have nearly always been to Chinese doctors and the condition has been present for a long time. So it does not seem advisable to spend time washing out the sinus. The disease, writes Sluder, may make such headway that even after a radical operation the cure may not be complete and the chronic catarrh may persist. However, he advocates lavage over a long period with normal saline solution till the discharge is reduced, and then he advises the injection of an alcohol or silver nitrate solution in gradually increasing strength, up to pure alcohol, and to 25 per cent silver nitrate.

Mithoeffer considers it poor surgery to operate when there is a large quantity of pus present and would first treat such a case
conservatively. Sluder says a radical operation is indicated if the
disease has lasted a long time with frequent acute exacerbations, or
if the origin is dental, or if there is resistance to the inflow of fluid
indicating either swollen mucous membrane or the presence of
polypi, or if the pus is malodorous in spite of irrigation, or if there
is no diminution of the X-ray shadow after lavage, or if the bone is
diseased as shown by oedema or tenderness over the antrum, or if
there is a foetid crumbling discharge persisting in spite of treatment
with silver nitrate.

Anaesthesia.—The anesthesia consisted in inducing twilight
sleep according to the methods adopted by many obstetricians.\textsuperscript{12,13} Usually morphia (gr. $\frac{1}{4}$) with atropine (gr. $\frac{1}{120}$) and scopolamine
(gr. $\frac{1}{120}$) for young adults; or scopolamine (gr. $\frac{1}{100}$) for older
and heavier people, is injected hypodermically an hour before the
operation. If the mind is still active and apprehensive the
scopolamine is repeated an hour later $\frac{1}{200}$ gr. being given to young
adults, but gr. $\frac{1}{120}$ or $\frac{1}{100}$ to older or heavier people. The
larger dose is especially indicated in nervous students and opium
addicts. I have seen no ill-effects from administering the larger
dose. After the drugs are injected, each eye should be covered
with a ball of cotton wool and the eyes bandaged. The bandage
should not be removed until the operation has been completed.
For most patients twilight sleep is a very happy anesthesia, and it
is very convenient for the operator. Once only was a patient
restless. One female patient (No. 23 : 2031) got lobar pneumonia
after operation, due, I believe, to being operated on whilst she was
menstruating, and catching cold while she was sleeping heavily
after operation from the effects of the drugs. If the dose of
scopolamine is insufficient some patients may cry out during the
operation. It is important to commence operating between three-
quarters to an hour after the scopolamine has been administered.

I commenced to use this form of anesthesia in Salonika, in
1917, when I found that soldiers who had been in mortal danger
in the trenches were averse to the introduction even of a nasal
speculum into the nose. In Malta, in 1916-1917, I operated on 16
patients with maxillary sinusitis under general anesthesia. With
general anesthesia post-nasal plugs are necessary and the
hemorrhage is troublesome. Septic pneumonia following an antrum
operation under general anesthesia has been reported\textsuperscript{14}. Whilst in
Peking, in 1915, I lost one patient from gangrene of the lung due to the aspiration of the post-nasal plugs into the larynx during a fit of coughing under the general anesthesia. At present I am unwilling to operate under general anesthesia as I find the twilight sleep safe and efficacious, and it allows the free use of cocaine thus giving a full view of the field of operation. Furthermore, in introducing nasal operations into a Chinese town where nasal work has not previously been done the patients are naturally afraid of such operations and cocaine alone would not suffice.

Besides the induction of twilight sleep, cocaine is applied to the mucous membrane on gauze soaked in 20 per cent solution and squeezed dry. This is applied about ten minutes before operation and left in situ for 5 minutes. The plugs are then removed and "block anesthesia" is induced. The probes armed with cotton are moistened with adrenalin and then dipped in pure cocaine crystals. One probe is placed under the posterior tip of the middle turbinate; the other is passed up, using the anterior limit of the nose as a guide, till it reaches the roof of the nose. In this way the nasal ganglion and the internal nerves of the nose are "blocked." Sluder also uses morphia (gr. ½) and scopolamine (gr. ½α). In inducing block anesthesia he uses one drop of 95 per cent solution of cocaine in water, and he changes the position of the posterior probe after it has been in position for five minutes by removing it from under the posterior tip of the middle turbinate, and placing it so that it rests just back of the posterior tip in an upward and backward direction, and he leaves it there for five minutes and at the same time inserts the anterior probe.

After the intranasal operation has been completed, novocaine (0.5 per cent solution) is injected under the mucous membrane and into the tissues overlying the canine fossa. In referring to the general shock caused by the operation in old people, or in those with internal disorders, Sluder says that we have a sheet anchor in local anesthesia and novocaine (2 per cent solution).

Operative Treatment.

The two principal operations practised at the present time are the intranasal antral operation, and the radical antral or Caldwell-Luc operation. An outline only of each operation is given as a full description may be found in all textbooks on rhinolaryngology.
Intranasal antral operation.—The anterior third or half of the inferior turbinate is removed; an opening is then made in the anterior part of the inferior meatus through the antro-nasal wall into the antral cavity; the opening is enlarged backward, forward and downward so as to level down the partition between the nose and the antral cavity. The antral cavity is then inspected and if necessary the lining is curetted. After-treatment consists in passing a curved canula into the antrum and washing it with mild antiseptic or alcoholic solution.

Caldwell-Luc operation.—An incision is made in the mucous membrane over the canine fossa; an opening is made into the antrum and enlarged downwards and forward; the cavity is mopped out and inspected; diseased membrane is then thoroughly curetted or removed; an opening is next made between the nose and the antrum in the anterior part of the inferior meatus, much the same as in the intranasal operation.

Choice of Operation.—Twenty-nine of the thirty-one patients were operated on; four patients had a bi-lateral operation.

In 21 patients, 22 antra were submitted to the Caldwell-Luc procedures. Two patients had bilateral Caldwell-Luc operations; in one the operations were separated by some months, and in the other they were performed together. In ten patients an intranasal antral operation was performed on one side; in 3 of these a Caldwell-Luc operation was performed at the same time. In one patient the intranasal operation failed to drain the sinus and so a Caldwell-Luc was performed at a later date. One patient had only the canine fossa opened, as she was nervous and was operated on before she was fully under the effect of the scopolamine. In two patients no operation was performed. Thus we see the Caldwell-Luc was the commonest procedure adopted. It is because the Caldwell-Luc is a radical operation which requires only a few days in hospital, does not require much after treatment, and because it fulfils various other requirements that it is the operation of choice. The opening in the canine fossa we enlarge peripherally, but not downwards, so as to avoid injury to the dental nerves.

The intranasal operation we adopted was either that of Mikulicz,20 which was performed in four cases, or an operation somewhat resembling Sluder’s. In all we followed Sluder’s ideal of preserving the inferior turbinate intact, and either cut its anterior
attachment and then elevated it by fracturing its base; or, somewhat like Sluder's more recent operation, we incised and temporarily detached the anterior one-third or even two-thirds and then removed the bone above and below the point of attachment, but less bone was removed than in Sluder's operation. In future we shall follow Sluder's\textsuperscript{1} or McKenzie's technique.\textsuperscript{19}

**After Treatment.**

The after-treatment consisted in putting ribbon gauze boiled in vaseline, or covered with b.i.p., into the sinus for twenty-four hours. On removing it the day following the operation the sinus is syringed with Dakin's fluid or saline. Whilst one is syringing the sinus, the patient must forcibly phonate "Ah-h-h", else the solution will enter the larynx and cause a violent spasm. The sinus is syringed for the four days the patient is in hospital. While attending as an out-patient dichloramin-T (2 per cent in chlorocosane) can be introduced into the sinus on cotton-covered bamboo sticks. Three or four such sticks can be left in the sinus for twenty minutes. This treatment can be repeated daily till the discharge ceases. Meanwhile, silver nitrate (20 per cent) can be applied to the edges of the intranasal opening to prevent oedema of the mucous membrane. For home use, to decrease the viscosity of the pus, the patient is given oleum menthae piperitae (two per cent in liquid paraffin)\textsuperscript{22}. This is dropped into the nose with a medicine dropper. Intramuscular injection of colloidal manganese is of benefit in sub-acute and chronic infection of the maxillary antrum especially when an indolent discharge persists\textsuperscript{21}. As it has been proved on rats that a diet without fat-soluble (A) vitamins favours sinusitis\textsuperscript{22}, all our patients are given cod liver oil with Chinese malt.

*Time spent in hospital.*—The average time spent in hospital was 7.25 days.

*Post-operative temperature.*—After operation the temperature on an average rises to $38^\circ C$. It usually falls to normal on the fourth day.

*Anatomical peculiarities.*—Three sinuses were notable for their anatomy. One was very small (No. 4066) and when operating in the canine fossa it appeared to be high up, probably owing to the facial
On the Diagnosis and Treatment of Maxillary Sinusitis.

The wall being more oblique than usual. In the second case (No.4131) the sinus was absent. A proof puncture was attempted but failed, and an X-ray report by Dr. Ota Walters confirmed its absence. Davis\(^1\) says that the sinus maxillaris is the most constant of the nasal accessory sinuses and only four instances of its absence have been reported. In a third patient (No. 3508) the sinus was sub-divided into an anterior and posterior compartment by a bony partition which did not reach to the roof of the sinus. The anterior section did not contain pus and the mucous membrane seemed to be healthy, whilst that of the posterior section seemed to be thickened. Proof puncture on the first occasion was negative. Presumably the needle entered the anterior compartment. At a later date a puncture revealed pus.

**Summary.**

During a period of little more than two years, 31 patients came to the hospital with maxillary sinusitis. All but two were operated on.

Twenty-eight of the patients were Chinese and three were foreigners.

The age of the patients ranged from 17 years to 40 years.

The symptoms were mostly those that can be accounted for by upper respiratory tract infection. Few showed general symptoms, though such symptoms as cough, dizziness, haemoptysis, rheumatic pains, tinnitus and others render a general physical examination necessary. When there is tonsillitis the sinusitis may be overlooked. Hoarseness and aphonia may be due to sinusitis. The fever in acute cases averaged 38\(^\circ\) C. Few patients complained of ear trouble. If present it is due to infection travelling via the Eustachian tube and resulting in conduction deafness induced by chronic non-suppurative otitis media.

In the objective examination transillumination is not of much assistance with the Chinese, whilst X-ray photographs are too expensive for routine work.

The sinusitis is not usually influenced by either a deflected septum or carious teeth.

Although acting as a reservoir for pus from the frontal region the antrum itself may not be diseased.
Bilateral sinusitis may exist, and if the signs on one side are more manifest than on the other at first only one side may be diagnosed.

The presence of polypi signifies concurrent ethmoid disease.

Operations were performed during the condition of twilight sleep, with cocaine or novocaine as the local anesthetic. The best operation is a Caldwell-Luc in which the anterior end of the inferior turbinate is not removed but merely temporarily detached and elevated.

The average time spent in hospital after operation was 7.28 days.

The temperature after operation rises on an average to 38° C. It is usually normal on the fourth day.

The maxillary sinus may be absent, small, or subdivided into two.

References.

1. Schaeffer. "The Nose and Olfactory Organs".
19. McKenzie D. "Diseases of the Throat, Nose and Ear."
23. Davis, "Nasal Accessory Sinus Diseases."
Symblepharon is not an infrequent complaint among the patients seen in ophthalmic practice in China. All degrees of the condition are seen, varying from a simple localized cohesion between the eyelid and eyeball to the more marked cases in which there may be a complete obliteration of either upper or lower, or both conjunctival sacs of one or both eyes. The extreme cases of ankylosymblepharon in which there is also union of the lid margins are fortunately very rare.

From the etiological standpoint cases of symblepharon can be classified into four groups. The individual case, however, may present etiological factors belonging to more than one group. The first group comprises those cases which result from the introduction of irritants into the conjunctival sac. These irritants may act by setting up an inflammation with later ulceration of the conjunctiva or cornea, or may, by the ulceration subsequent to a direct destruction of tissue, provide the necessary granulating surfaces in apposition. In either case, there is a later cohesion between the conjunctiva of the eyelid, and the bulbar conjunctiva of the cornea. Under this heading can be grouped those cases due to burns, lime, acids, alkalies, certain native medicines, caterpillar hairs and other irritants of a similar character. Burns due to molten metal or steam are very uncommon in China since modern industrialism is, outside of a few large centers, largely undeveloped. Accidents with strong acids and alkalies are also very infrequent. Isolated cases due to lime, irritating native medicines, and irritants such as caterpillar hair furnish the examples met with in China that are characteristic of this group. In the type of cases met with in this condition, the cohesion has a tendency towards extensive involvement of the lower conjunctival cul-de-sac.

The second group comprises those cases which are found as sequelae to a diseased condition of the conjunctival sac. Trachoma is frequently the initial affection in these cases. The resulting condition of symblepharon may follow corneal ulceration with the rapid proliferation of a type of tissue resembling that found in a succulent pterygium to form a protective covering for the
ulcerated area. Unlike pterygium, this tissue usually connects the lid and the cornea by a band which on subsequent contraction may greatly impair the motion of the globe, or may, in some cases, cause a rotation of the globe in the direction of attachment of the cohesion. The conjunctival bands, as described by Herbert and referred to by Elliot, are the result of opposing ulcerating conjunctival surfaces in acute trachoma or similar conditions but are rarely of a sufficient degree to produce symptoms. More extensive cohesions are described as following the ulceration of pemphigus and of membranous conjunctivitis which, if not properly treated, will result in a later symblepharon.

The third group of cases includes those following penetrating injuries of the eyelids and conjunctiva. They are not uncommon in civil practice although they are usually associated with injuries of the eyelids and orbital content received in military service. Their extent varies according to the original injury and its lack of proper repair. Neglected cases of this type tend to a marked deformity because of the large amount of late contraction following the healing of the earlier injury.

In the last group in this classification are those cases in which there is a shrinkage of the conjunctival sac. This is frequently met with in long standing cases of trachoma. A similar condition is seen in some cases of xerophthalmia associated with keratomalacia; a condition the etiology of which is much better understood since the investigations of Blegvad. In either condition, the shrinkage may be so extreme that the conjunctival sac is practically obliterated. Both conditions are met with in Chinese patients and this type of trachoma as well as the condition of xerophthalmia may be associated with marked malnutrition. Some authorities do not classify this group of cases under the various forms of symblepharon, but since the terminal results and the operative correction are so similar, it has been thought advisable to consider them under this heading.

The chief complaints of the patient when he presents himself for the correction of this condition are based on the limitation of ocular motion and on the cosmetic disfigurement. In the cases in which contraction is marked, diplopia may be the chief symptom. Many cases of partial symblepharon are met with in the course of
routine examination and the patients frequently consider the condition as undesirable and wish it corrected once their attention has been drawn to the possibility of the condition being relieved.

The correction of symblepharon varies with the type and degree of attachment. As in all plastic work, careful technique and close attention to details are productive of the best results. In cases of partial cohesion of the eyelid to the eyeball, a very satisfactory result can frequently be obtained by dissecting the symblepharon free from the globe and suturing the tip of the bulbar portion in the conjunctival fornix, passing the suture from within outward and tying it on the skin surface. Excess tissue should be removed before this suture is placed. The resulting conjunctival defect can be readily obliterated by the use of sliding conjunctival flaps. The usual postoperative treatment of conjunctival plastic operations is indicated, but cases with a previous history of trachoma do best with a minimum of bandaging.

The impetus given to plastic work during the recent war focused fresh attention on the treatment of the more complete forms of symblepharon. Gillies by his modification of the Esser inlay paved the way for the production of a technique especially adapted to these cases. He showed that an epithelial lined sulcus can be produced by a free dissection of the sulcus to the depth desired, followed by the insertion of a stent of dental modeling compound which was wrapped in a dermic graft with the epithelial surface in contact with the stent, and the stent and graft secured in position by closing the cavity at the outer margin of the sulcus. At the end of ten days, the stent can be removed and an epithelial lined cavity will result. The nearer the inlay is placed to the conjunctival sac, the less raw surface there is left for later healing.

Wilder in his admirable essay on the treatment of symblepharon and the restoration of the orbital socket calls attention to the early treatment of injuries which tend later to produce a symblepharon. He emphasizes the necessity of covering granulating surfaces, such as are produced by burns, with an epithelial layer to prevent subsequent adhesion and contraction. His technique is applicable to both old and recent cases. He prefers mucous membrane grafts and uses as his stent, block tin, one millimeter thick, cut to the required shape and covered with paraffin by
repeated instillations until the desired thickness is attained. The tin may be hinged in the center, or a hole left for the cornea in cases where there is an extensive surface involved. The graft is wrapped around the plate with the raw surface outward and placed in position. His article outlines certain fundamentals to be observed in order to secure a good result. Briefly summarized, these are:—

1. Early operation to cover raw surfaces in order to avoid late deformity more difficult of correction.

2. To avoid a thickened lid, the new cul-de-sac should be kept close to the tarsus.

3. A larger graft should be used than the area needs. The excess can easily be trimmed off at subsequent dressings.

4. The dissection should be carried down to the periosteum of the orbit.

5. All scar tissue should be dissected away.

The writer has had very satisfactory results in the correction of marked degrees of symblepharon by the use of dermic grafts. The technique followed has been that of Gillies, and the cul-de-sac has been constructed according to the principles advocated by Wilder. Dental modeling compound has been used as the stent because it can be quickly molded into any desired shape and thickness, and is non-rusting and fairly non-irritant. It can be paraffined if desired. The following case report is selected to illustrate the technique followed as well as to record the interesting history of the condition treated.

Hospital No. 842.

C.D.M., Chinese, female, age 24,

Entrance complaint: limitation of lateral and vertical movements of eyes.

Patient states that six years ago, after handling caterpillars that were found on plants in the field in which she was working, she rubbed both eyes with her fingers. The following day a violent ocular inflammation developed. This inflammation slowly subsided leaving both lower lids adherent to the eyeballs. It is the patient's impression that there was practically no interference with vision
The Etiology and Treatment of Symblepharon.

except from a rather marked photophobia at that time. General health has always been excellent. Past medical and family history negative.

Lateral rotation of both eyes restricted to five degrees from the midline. Vertical movements only possible up to the horizontal line. Beginning immediately below the lower corneo-scleral margin, the lower conjunctival culs-de-sac of both eyes are practically obliterated by the cohesion of the lower lids to the eyeballs. Remaining ocular examination negative. General physical and laboratory examinations negative.

Under ether anaesthesia, after routine irrigation of the conjunctival sacs, both lower lids were dissected free down to and exposing the orbital periosteum. Very little scar tissue was found. There was moderately free hemorrhage which was controlled by pressure. Using sterilized dental modeling compound, a stent was made to conform to the cavity of each lower cul-de-sac. Large thin Thiersch grafts were then taken from the inner surface of the left arm, wrapped around the stent, raw surface outward, and buried in the cul-de-sac formed. To aid in stabilizing the lower lid in order to prevent extrusion of the graft and stent, the edges of the lower lids and the conjunctiva were united by sutures at points midway between the canthi and the cornea of each eye. Atropine sulphate and liquid paraffin were instilled and vaseline dressings were applied.

The postoperative course was uneventful except for the occurrence on the sixth day of a corneal abrasion at the lower edge of the right cornea due to the edge of the stent being too thick and rubbing on the corneal edge. This abrasion promptly healed after this stent was removed on the seventh day. The left stent was removed on the ninth day. The final result was very good, there being no restriction of ocular motion in any direction of either eye at the time of the patient's discharge from the hospital.

Bibliography

CHEMICAL ANALYSIS AND PHYSIOLOGICAL PROPERTIES FUH-LING.*


Fuh-ling (茯苓); Pachyma cocos, Fries, (Fungi); Lycoperdon solidum, Gronovius; Indian Bread or Tuckahoe.

A fungus growth upon the roots of fir-trees which is used both as a food and medicine. Morphologically described by Hanbury who is of the opinion that these tuber-like bodies are an altered state of the root of the fir-tree occasioned by the presence of a fungus, the mycelium of which traverses and obliterates the wood and bark. It occurs in large masses often weighing many pounds. As found in the retail shops it is sold in small granular cubes (Figs. 1,2), and in very thin slices (Fig. 4). In Peking, at the Ch'i Sheng T'ang, there is a specimen of this drug weighing twenty catties (12.1 kilos). It is 77.7 centimeters at its greatest diameter, 47 centimeters long, 29.5 wide, 17.7 thick (Fig. 3).

The Chinese Drug, Fuh-ling.

It is claimed to be the largest specimen ever found. It was originally purchased from Chichow and kept in the Imperial Palace. Later it was placed upon the market and came into the possession of the above mentioned store. The native habitat of this drug is Yunnan. In Anhwei and Szechwan it is artificially produced by cultivation of branches of pinetrees which have been dipped into a particular kind of rice paste and subsequently buried. The artificial variety is lighter and more spongy and is considered of less value than the natural product which is of a close texture of slow growth. The exceptional specimen above mentioned was estimated to be of more than twenty years growth. Fuh-ling should not be confused with T'u-fuh-ling (土茯苓) which is the proper root of Smilax lanceaefolia.

According to Stuart, Fuh-ling regarded very highly as a nutrient, a diuretic and a nerve sedative.
The China Medical Journal.

Table 1. Chemical Analysis of “Fuh-Ling.”

<table>
<thead>
<tr>
<th></th>
<th>Winterstein</th>
<th>Read and Wang</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ash</td>
<td>0.06%</td>
<td>0.25</td>
</tr>
<tr>
<td>Moisture</td>
<td>16.86</td>
<td>12.09</td>
</tr>
<tr>
<td>Albuminoids (N x 6.25)</td>
<td>0.56</td>
<td>1.00</td>
</tr>
<tr>
<td>Pachymose</td>
<td>76.21</td>
<td>79.84</td>
</tr>
<tr>
<td>Cellulose</td>
<td>2.25</td>
<td>3.24</td>
</tr>
</tbody>
</table>

The drug was investigated chemically by Champion in 1873 who first isolated the sugar, pachymose. Later, Winterstein made a further analysis and examination of this sugar which he showed to be very similar to the paraisodextran, the carbohydrate from *Polyporus betulinus*. Other analyses are reported by American workers.

Adopting the methods of analysis used by Winterstein we find our specimens to be similar in composition to those worked upon by him. (See Table 1). It is of particular note that no starch, glucose, or other reducing sugar was found in any of the many samples examined.

Pachymose.—This is a substance \( \text{C}_{30}\text{H}_{48}\text{O}_{38} \) practically insoluble in water or alcohol. It is soluble in sodium hydrate or carbonate from which it is thrown out of solution as a thick jelly by mineral acid or alcohol. Repeated solution, four times or more, in alkali and precipitation with alcohol yields a solution in alkali which spontaneously gels over night. A 2% solution in alkali was found to give in a 220 mm. tube a rotation of + 0.690 \( \alpha_D \). Repeated precipitation yielded solution of a greater degree of rotation, which fact suggests gradual hydrolysis. Winterstein claimed that pachymose is an anhydride of d-glucose yielding on hydrolysis
The Chinese Drug, Fuh-ling.

97% of that sugar. Our material heated for two days with 10% sulphuric acid yielded simple sugars corresponding to 90% of glucose, as estimated with Fehling’s solution. The osazone obtained was glucosazone; m.p. 205°C.

Our analyses suggest that the various sugars obtained by other workers are probably hydrolytic substances produced on long standing during the experiments, or possibly the existence, in old samples of the drug, of a small percentage of degradation products. According to the Dispensatory, Fuh-Ling is “an exceedingly variable ratio of cellulose, pectose, gum, glucose, and a little albuminoid.” The many samples examined by us show a fairly constant composition, so we consider that the above statement either refers to a substance different from Fuh-Ling or it includes analyses of old and decomposed specimens.

Nitrogenous Compounds.—A small amount (1.12%) of a nitrogenous substance was obtained by simple extraction of Fuh-ling with water. This substance was found to contain 0.076% of nitrogen. When hydrolysed with sulphuric acid a reducing sugar was obtained. This was undoubtedly what Winterstein regarded as a chitin-like substance, and estimated by him at 1.00%.

Normal sulphuric acid was used to extract a further portion of the drug. The extract contained 0.106% of nitrogen, also a small amount of hydrolysed carbohydrate material in the form of glucose 8.43%. The extract gave a faint biuret reaction. It was examined with negative results for the presence of alkaloids; muscarine, betaine, neurine and choline were not present, though a precipitate was obtainable with phosphotungstic acid. It was probably the substance classed by other workers as an albuminoid. Being present in such small amount, we regard it as a negligible factor, both from a nutritional and a physiological standpoint, unless it be of the nature of a vitamine body, which is improbable.

Various methods of extractions were tried out in an attempt to prepare a crystalline product. The following method proved satisfactory.

1. One kilogram of the crude drug ground to a fine powder was placed in a mixture of two volumes of two percent hydrochloric acid and one half a volume of 95% alcohol. The mixture was stirred vigorously and filtered immediately. After evaporating the filtrate upon the water bath to 100 cc. it was neutralized with caustic soda. Neutralization produced a fluffy precipitate which was filtered off and redissolved in acid and alcohol,
decolorized with charcoal, concentrated to a small volume from which there crystallized out 1.24 grams of a white crystalline substance: Substance “A”.

The original filtrate was precipitated with phosphotungstic acid. The precipitate was treated with barium to remove the phosphotungstic acid and the final solution, freed from reagents, was concentrated on a water bath to 100 cc. Concentrated to a very small volume no crystalline product was obtained but the thick syrupy liquid acted physiologically in a manner exactly similar to the crystalline Substance “A”.

The filtrate from the phosphotungstic acid precipitation concentrated upon the water bath yielded an insignificant residue. The solution showed no physiological action.

The acid extract after alkalising was shaken out with chloroform, and the chloroform solution evaporated to dryness at room temperature which left a very small amount of brown amorphous residue. This did not crystallize, nor did it form a crystalline salt with hydrochloric acid. It gave no precipitate with Mayer’s reagent, nor with phosphomolybdic acid.

Physiological Experiments.

1. Nutrient Properties.—A long series of experiments was conducted to test the digestibility of both Fuh-ling and pachymose, the polysaccharide from it. The Fuh-ling was first cooked in boiling water in a manner similar to its preparation in food. Digestions were made at 40° C. for three hours. There was conducted a number of control experiments upon the plain material digested in acid and alkaline solutions at 40° C. for a similar period of time.

(a). Salivary digestion.—This was undertaken in neutral solution in physiologic alkaline solution, and in physiologic acid solution. Both substances in all cases yielded negative results as judged by the degree of hydrolysis, and the amount of glucose present.

(b). Peptic digestion.—Ten grams of good pepsin (Merck) were used in each 250 c.c. of a digestion mixture. Seven tests were conducted on each substance in a medium of acidity varying from faintly alkaline to 0.15 N hydrochloric acid. The results were all negative except for the very slight process of glucose produced by the hydrolytic action of the acid solutions. Control experiments without the addition of pepsin yielded exactly similar results.
The Chinese drug, Fuh-ling.

(c). Pancreatic digestion.—Similar experiments were conducted using 10 grams of Merck's pancreatin in every 250 c.c. of the digestion mixture. Trials were made with mixtures the acidity of which varied from slightly acid to 0.15 N. sodium carbonate. The results were entirely negative.

2. Diuretic and nerve sedative effects.—Watery and alcoholic extractions were made of the crude drug and the resulting extractives were used upon frogs and dogs. No important effects were obtained with pachymose upon the nervous system, circulation or kidney function. Dr. Carl Schmidt undertook a number of animal experiments with pachymose prepared from Fuh-ling and obtained no effect other than a mechanical rise in blood pressure. Large doses, 50 c.c., or more of the watery extracts injected intravenously in anesthetized dogs caused a sustained rise in blood pressure but this was quite analogous to the effects of a similar injection of any colloidal substance such as acacia or starch, which is probably entirely mechanical. Applied directly to the frog's heart simple extracts of the drug produce slight depression but do not slow the rate. It has no digitalis action.

The crystalline substance "A" was quite active on the frog heart, so further experiments were undertaken upon dogs. Small doses of the extracts or of the crystalline principle showed practically no effect. However, when given in relatively large amount consistent results were obtained. The concentrated original filtrate from substance "A" produced a marked fall in blood pressure in the dog. The mother liquid from substance "A" produced a strong stimulant action upon the vagus. This effect was neutralized by a small dose of atropine.

The total effect of Fuh-ling is so slight that the results obtained may be disregarded when considering the amount of the drug taken by the patient and the relative effect which it would be possible to produce upon the system. Therapeutically speaking, Fuh-ling is apparently inert. There appears no rational basis for the assumption that it possesses diuretic and nerve sedative properties. Fuh-ling may be termed a colloidal demulcent comparable to starch or some of the pectins. Commercial extractives are nutritive.
SUMMARY.

The results of chemical analysis of Fuh-ling differed from those obtained from American "Indian Bread". They confirm the work of Champion and Winterstein who first isolated pachymose. The drug contains 91 per cent of pachymose; the glucose and other sugars reported present by other workers are considered to be decomposition products of pachymose.

About one per cent of a crystalline nitrogenous compound was obtained by simple water extraction. It does not yield positive tests for any of the commonly known natural bases like muscarine, betaine, etc.

When Fuh-ling and its polysaccharide "pachymose", are submitted to salivary, peptic and pancreatic digestion, entirely negative results are obtained. Hydrolysis by mineral acid shows that pachymose is a simple anhydride of glucose. Hence household jellies or extractives from Fuh-ling are of nutritive value.

The "nitrogenous compound" produces a slight depression upon the frog heart. It has no digitalis-like action. Other physiological experiments upon the nervous system, circulation or kidney function, yielded negative results. There appears no rational basis for the old assumption that it possessed diuretic and nerve sedative properties.

Fuh-ling is a colloidal demulcent, comparable to acacia or starch. Commercial extractives are nutritive.

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7. Braun, R. 1909. List of Medicines from Hankow, etc.

CHINESE USE OF FUH-LING.—In China, Fuh-ling is ground up, mixed with rice flour, and made into small square cakes, which are sold hot by hawkers on the streets of most cities in the central provinces. Medicinally, it is considered to be peptic, nutrient, diuretic, and quieting, especially in the nervous disorders of children. It is prescribed in wasting diseases. The red variety is specially recommended in diarrhoeas and disorders of the bladder, while the skin of the tuber is considered useful as a diuretic in dropsy.—Stuart.
THE TREATMENT OF SCHISTOSOMIASIS JAPONICA*


Since Christopherson's publication on the successful treatment of Egyptian schistosomiasis with tartar emetic appeared in 1918, a number of authors have tried it out on the Oriental variety of the disease with equally good results.

In China, Tyan claimed to have thus used the drug with success in 1920. In 1921, Sanders and Priston reported a number of cases apparently cured by tartar emetic. More recently, Faust and Meleney, in their exhaustive monograph gave an account of the case of an American naval officer, who, after an intensive course of antimony, made a complete recovery. Tootell, of Hunan, in a series of 24 cases treated with tartar emetic obtained cures in fifty per cent and improvement in twenty-nine per cent of the remainder. In the experience of Libby, of Wuhu, the drug proved effective in mild cases, though it did not stay the progress of the disease in severe cases in which the liver and spleen were extensively diseased. Kau, of Kashing, also had good results in three cases. These results seem to show fairly conclusively that antimony is a specific for schistosomiasis japonica as for the other types of schistosomiasis.

With regard to dosage, it varied considerably with different authors. Kau secured his results with a total dosage of 0.54 gm. the maximum single dose being 0.1 gm; while Libby used in one case as much as 2.31 gms. with a maximum single dose of 0.18 gm. This case, however, succumbed either from the disease or from the energetic treatment. None of the others gave more than 2.0 gms. Faust and Meleney recommend the intensive method of treatment, in which the drug is pushed rapidly up to the limit of the patient's tolerance and then kept up in doses just below it. A course of 2.0 gms can thus be completed in eighteen days.

While antimony is to be regarded as the drug of choice in all cases of schistosomiasis, the importance of having at our command

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another drug approaching it in potency becomes apparent when individual susceptibility and tolerance to antimony are taken into consideration. In certain cases, e.g., children or fat women, where intravenous injection is a difficult procedure, emetine has the decided advantage of being more easily administered than antimony. Cawston\textsuperscript{12}, of Egypt, even prefers emetine to antimony in children and young adults but warns against its severe depressive action on the heart, which is said to occur during the second or third week of the treatment. It is interesting to note that emetine was first tried by Hutcheson\textsuperscript{7} in schistosomiasis japonica in 1913, and then by Chastang\textsuperscript{8} in 1914, before its therapeutic value became known in the Egyptian type of the disease. Within more recent years, however, it has been quite extensively tried in Egypt by Diamantis\textsuperscript{5}, Erian\textsuperscript{10}, Tsykalas\textsuperscript{11}, and Cawston\textsuperscript{12}. All these authors concur in holding that emetine, either intravenously or intramuscularly, has a curative action on the disease.

Tyau\textsuperscript{13} was recently quoted by Faust and Meleney as having used emetine in one case of schistosomiasis japonica with apparent success, and suggested giving two courses of 1.00 gm. each, separated by an interval of one week.

Cawston\textsuperscript{14} referred to a verbal report made to him by a certain Japanese medical officer, who successfully treated three cases with emetine. These seem to be the only recent records of the use of this drug in Oriental schistosomiasis in the literature.

As the number of reported cases of schistosomiasis japonica successfully treated with antimony or emetine is still small, the following two typical cases so treated may be of some interest.

Owing to our patients speaking neither Chinese nor English, the data obtained were not as precise as could be desired, but were sufficiently accurate to determine the date of infection and duration of the disease.

**History of Family Infection.**

In about the middle of May, 1924, a party of Roumanian gypsies, including J.M., M.M. (the two brothers who later came under our care) their mother, and M.M.'s wife, started from Harbin in Manchuria on a wandering trip in inland China. After stopping for a few days in Tientsin, they spent a month in Peking,
whence they journeyed to Shanghai by train. In the second week of July, they embarked at Shanghai for Hankow, breaking their journey at Nanking where they stayed for two days, and at Kiukiang for one night.

While at Kiukiang, on or round about the 11th of July, the above mentioned members of the party bathed in the water on the flooded banks of the Yangtse river. Upon their arrival in Hankow, five days after the bathing incident, the said members with the exception of M.M. developed a skin affection in the form of itchy red papules distributed over various parts of the body, unaccompanied by febrile reactions and lasting for one or two days. In the case of J. M. the eruption affected chiefly the back of the hands and forearms, and shortly after its subsidence he began to have looseness of the bowels which persisted but did not trouble him much.

After a month's stay at Hankow, the party left for Peking by train, making a short stay at Cheng-chow in the Province of Honan, on their way up. On about the 11th of August, while at Cheng-chow, the two brothers and their mother developed pain and discomfort in the epigastric region, radiating to the right flank and back, accompanied by daily attacks of fever, malaise and gradual loss of weight. Six days later, blood and mucus were noticed in the stools of M.M. and the mother. This mild dysenteric attack, however, lasted only two days and was followed by a tendency to constipation. J.M. had no history of dysentery but his diarrhoea continued. After a few days the mother apparently recovered but the condition of the two brothers gradually got worse. Neither the sister nor M.M.'s wife developed any symptoms apart from the transient skin eruption.

The party reached Peking on the 21st of August and the two brothers were seen in the Out-patient Department of the P.U.M.C. Hospital the next day. The illness of M.M., being more severe, he was immediately admitted into the hospital and a diagnosis of schistosomiasis japonica was made on discovering the characteristic ova in his stool. J.M. joined his brother in the hospital six days later and his stools also showed the presence of schistosoma ova. The stools of the mother, the sister, and M.M.'s wife, were then carefully searched but only in that of the mother were a few ova
found. As she apparently suffered no inconvenience from her infection, she could not be induced to come into the hospital.

<table>
<thead>
<tr>
<th>Member of party</th>
<th>Skin eruption</th>
<th>Fever</th>
<th>Epigastric pain</th>
<th>Intestinal symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>Dysentery</td>
</tr>
<tr>
<td>J. M.</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>Diarrhoea</td>
</tr>
<tr>
<td>M. M.</td>
<td>—</td>
<td>+</td>
<td>+</td>
<td>Dysentery</td>
</tr>
<tr>
<td>Sister</td>
<td>+</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>M. M.'s wife</td>
<td>+</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

In the absence of evidence indicating possible contact with infected water at other points along the Yangtse River, our conclusion was that all the five were infected at Kiukiang, but to varying degrees. While the mother did show some reaction to her infection, she was not ill enough to demand treatment. It would have been interesting to follow her case, if it had been possible. The two younger women were apparently very lightly infected and suffered no more inconvenience than a transient skin rash.

Case Reports.

The chief complaints of the two brothers at the time of admission were of daily attacks of fever, accompanied by pain and distension in epigastric region. Their past history was negative regarding syphilis, malaria and dysentery. They first visited China in 1922, having been to Shanghai and Hankow, but between that time and the onset of present condition they gave no history of any illness.

The history of their present illness having already been gone over it is only necessary here to recapitulate the important points. On about the 16th of July, five days after bathing at Kiukiang, J. M. developed a transient skin eruption, with a glove-like distribution. Shortly after, on or about the 20th of July, a mild diarrhoea set in, which persisted but caused little inconvenience. Daily attacks of fever with malaise, headache and, prostration dated from the 11th of August, about a month after infection. About this time, the patient also began to complain of epigastric pain, and as the condition progressed some loss of weight was noted.

His brother, M.M., apparently suffered from no symptom until the 11th of August, when he developed fever and epigastric pain, followed six days later by a mild attack of dysentery lasting two days. Fever continued and the patient became progressively weakened.

Upon admission, the clinical findings were as follows:
J. M. was a well developed and well nourished adult of forty years of age with an earthy complexion and dark areolae round the eyes. He had an intermittent temperature with a daily afternoon rise of two or three degrees Centigrade above the normal. In the early part of the day, when his temperature was down, he appeared fairly comfortable, but looked pretty ill during the height of the fever in the afternoon. Physical examination revealed nothing abnormal in the chest. On examination of the abdomen there was a fullness in the epigastric region, and on palpation a soft, smooth mass was felt extending downwards to a distance of 11.5 cm. from the tip of the xiphoid cartilage in the middle line. Pressure over this mass caused pain. This obviously was an enlarged left lobe of the liver. The spleen could not be felt. There was no evidence of ascites being present, nor was there oedema in any part of the body. The reflexes were present and equal on the two sides.

Examination of the blood showed haemoglobin 84 per cent; red cells, 4,800,000; and a leucocytosis of 18,500 with polymorphonuclears, 42 per cent; lymphocytes, 5 per cent; large mononuclears, 3 per cent; and eosinophiles 50 per cent. The Wassermann test was negative; the serum globulin test was negative on admission but faintly positive a few days later.

Faeces showed the presence of Giardia, Trichomonas, and ova of Schistosoma japonicum, and occasionally of Fasciolopsis buski. The urine was negative.

With reference to his Fasciolopsis infestation, the patient admitted having eaten one or two water chestnuts (Eliocharis tuberosa) on one occasion during his stay in Hankow in the month of July.

The clinical findings in M.M. were very similar. He was a man twenty-one years of age, of much slighter build and looked more worn out by his illness. He also showed a temperature of see-saw type with an evening rise to 40° C.

His chest was without any abnormal physical signs. Examination of the abdomen showed, as in the case of his brother, the presence of a mass in the epigastrium, extending downwards to a distance of 9 cm. from the tip of the xiphoid process in the middle line. Pain and tenderness were marked over this area and for a little distance below. Neither ascites nor oedema was found. Reflexes were normal.

Blood showed hemoglobin 94 per cent; red blood cells 4,860,000; white blood cells 22,730, with polymorphonuclears 22 per cent; lymphocytes 6 per cent; large mononuclears 2 per cent and eosinophiles 70 per cent.

The Wassermann test was negative. Globulin test was definitely positive. Microscopic examination of the faeces revealed the presence of Trichomonas, and ova of Ascaris and Schistosoma japonicum.
TREATMENT AND PROGRESS OF CASES REPORTED.

In the case of M.M., treatment with potassium antimony tartrate (Table 2) was instituted on the 27th of August. A daily, freshly prepared 2% solution of the drug in distilled water was used. At first, intravenous injections were given daily, beginning with 2 c.c. (0.04 gm.) gradually increasing up to 5 c.c. (0.10 gm.). On account of slight dizziness after a total amount of 1.35 gm. had been given, the treatment was continued on alternate days until the total dosage reached 2.00 gm. The whole course took thirty-four days. The patient tolerated the drug well.

Table 2.—Treatment and Progress of Case of M.M.

<table>
<thead>
<tr>
<th>Days after beginning of antimony treatment</th>
<th>Total amount of drug used</th>
<th>Fever</th>
<th>Presence of eggs in faeces</th>
<th>Distance of lower border of liver from tip of xiphoid process</th>
<th>Leucocyte count</th>
<th>Degree of eosinophilia</th>
<th>Serum globulin test</th>
</tr>
</thead>
<tbody>
<tr>
<td>On admission</td>
<td>—</td>
<td>39.8</td>
<td>* + + V</td>
<td>9 cm.</td>
<td>18,200</td>
<td>70%</td>
<td>++</td>
</tr>
<tr>
<td>8</td>
<td>0.35</td>
<td>39.4</td>
<td>* + + V</td>
<td>9 cm.</td>
<td>18,400</td>
<td>72%</td>
<td>++</td>
</tr>
<tr>
<td>16</td>
<td>0.95</td>
<td>37.5</td>
<td>** + V</td>
<td>9 cm.</td>
<td>34,000</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>22</td>
<td>1.45</td>
<td>37.8</td>
<td>** + V</td>
<td>9 cm.</td>
<td>22,800</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>32</td>
<td>1.95</td>
<td>37.4</td>
<td>** + D</td>
<td>9 cm.</td>
<td>10,600</td>
<td>57%</td>
<td>+</td>
</tr>
<tr>
<td>Treatment stopped</td>
<td>2.00</td>
<td>38.5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>On discharge...</td>
<td>—</td>
<td>37.2</td>
<td>—</td>
<td>5 cm.</td>
<td>10,800</td>
<td>27%</td>
<td>±</td>
</tr>
</tbody>
</table>

* = eggs easily found
** = eggs found with difficulty
*** = subsequent examinations all negative
V = Viable
D = Dead

As a result of this treatment he made a slow but uneventful recovery. The fever gradually subsided and became normal after a total of 0.95 gm. of antimony had been given during a period of sixteen days. About this time, the ova in the stools also began to diminish in number, though still viable. The last few ova that
hatched were recovered on the twentieth day of the treatment after a total dosage of 1.45 gm. Thereafter the stools became persistently negative except on one occasion just before the termination of the treatment when a few dead ova were found. Five repeated examinations after the completion of the course all proved negative not only for the ova of Schistoma, but also for the ova of Ascaris and for Trichomonas.

The leucocytosis and eosinophilia showed a continued rise during the first part of the treatment, but came down gradually to 10,800 and 27 per cent respectively.

At the time of his discharge, the patient felt perfectly well, the pain and tenderness in the epigastrium being entirely gone, and the lower border of the liver measuring 5 cm. from the tip of xiphoid cartilage.

In the treatment of J.M., (Table 3) it was thought worthwhile to try the effect of emetine on the course of the disease. Accordingly, a course of emetine hydrochloride was started on the 2nd of October, using Burroughs Wellcome's tablets. Daily intramuscular injections were given, beginning with 0.022 gm., gradually increasing the dose to 0.076 gm. After a total amount of 0.726 gm. had been given, it became apparent that the drug was exerting some depressing influence on the patient, though the condition showed slight improvement in that the eggs in the stools diminished in number and the swing of the temperature became less. On the other hand, there was a distinct drop in weight and blood pressure, with general depression. The patient became restive at not getting on so well as his brother, who, by this time, was making a good recovery.

From the patient's point of view and from our lack of previous experience with emetine in this disease, and the absence of animal experimentation, it did not seem justifiable to continue the experiment and we were compelled to resort to the standard treatment with antimony.

After a week's rest, daily intravenous injections of potassium antimony tartrate were begun. Beginning with 2.5 c.c. of the 2% solution (0.05 gm.), the dose was gradually increased to 4 c.c. (0.08) per day. A total amount of 2.00 gms. in twenty-six days completed the course.
Table 3. Treatment and Progress of Case of J. M.

<table>
<thead>
<tr>
<th>Days after beginning of emetine treatment</th>
<th>Days after beginning of antimony treatment</th>
<th>Total amount of drug used</th>
<th>Fever</th>
<th>Presence of eggs in faeces</th>
<th>Distance of lower border of liver from tip of xyphoid process</th>
<th>Leucocyte count</th>
<th>Degree of eosinophilia</th>
<th>Serum globulin test</th>
</tr>
</thead>
<tbody>
<tr>
<td>On admission</td>
<td>—</td>
<td>—</td>
<td>38.9</td>
<td>*</td>
<td>11.5 cm.</td>
<td>18,500</td>
<td>50%</td>
<td>—</td>
</tr>
<tr>
<td>1</td>
<td>—</td>
<td>0.022</td>
<td>39.9</td>
<td>*</td>
<td>11.5 cm.</td>
<td>19,900</td>
<td>55%</td>
<td>+</td>
</tr>
<tr>
<td>10</td>
<td>—</td>
<td>0.422</td>
<td>38.7</td>
<td>**</td>
<td>11.5 cm.</td>
<td>29,000</td>
<td></td>
<td>±</td>
</tr>
<tr>
<td>14 Emetine stopped</td>
<td>—</td>
<td>0.726</td>
<td>38.0</td>
<td>**</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>21</td>
<td>—</td>
<td>—</td>
<td>37.3</td>
<td>**</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>22</td>
<td>1</td>
<td>0.05</td>
<td>37.6</td>
<td>**</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>26</td>
<td>5</td>
<td>0.32</td>
<td>37.4</td>
<td>**</td>
<td>11.5 cm.</td>
<td>20,000</td>
<td>71%</td>
<td>+</td>
</tr>
<tr>
<td>35</td>
<td>14</td>
<td>1.04</td>
<td>37.8</td>
<td>**</td>
<td>10 cm.</td>
<td>8,560</td>
<td>44%</td>
<td>+</td>
</tr>
<tr>
<td>47</td>
<td>26</td>
<td>2.00</td>
<td>37.5</td>
<td>—***</td>
<td>7 cm.</td>
<td>7,760</td>
<td>36%</td>
<td>+</td>
</tr>
</tbody>
</table>

* = eggs easily found.
** = eggs found with difficulty.
*** = subsequent examinations all negative.
V = Viable.

Under the administration of antimony his condition gradually improved. The eggs disappeared from the stools on the fourteenth day of treatment after a total dosage of 1.00 gm. The leucocytosis, having shown a rise during emetine treatment, steadily declined under antimony. The eosinophilia from 71% shortly after the commencement of antimony therapy came down to 36% at the completion of the course.

At the time of discharge the patient was quite well, complaining no more of pain in the epigastric region. The lower border of the liver now measured 7 cm. from tip of xiphoid process. Repeated examinations of his stools were all negative for ova of Schistosoma and Fasciolopsis, as well as for Giardia and Trichomonas.
The Treatment of Schistosomiasis Japonica.

It may be noted that during treatment every stool was first examined by direct smear for the presence of ova. It was then placed in a large flask and stirred with tap water. After sedimentation the supernatant fluid was decanted off and more water was added. This process was repeated several times till the fluid became perfectly clear. The ova, being thus concentrated, could be found easily in the sediment, if present in any number. Whether ova were found or not, the treated specimen was allowed to stand over night at room temperature and examined with a hand lens for hatched out miracidia the next morning. This is the method described by Faust and Meleney and I am indebted to Dr. Faust for reports on all the stools of these patients during their treatment.

Conclusions.

These two cases present several points of interest:—

(a) The fact that the infection occurred through bathing in the water on the flooded banks of the Yangtse River suggests that a flood in any endemic area tends to heighten the incidence of the disease among the general population.

(b) The development of a transient papular skin eruption occurring shortly after bathing in the infested water is noteworthy.

(c) The interval between infection and onset of febrile reaction was about four weeks, probably the time required by the parasites to attain maturity.

(d) Some of the typical clinical manifestations such as urticarial rash and pulmonary involvement were lacking in these cases.

(e) The remarkably high degree of eosinophilia and absence of splenic enlargement may be important features in the early stages of the disease and of prognostic value.

(f) Antimony is well tolerated, at least in the early stages of the disease as shown by these two cases.

(g) Whether or not the absence of Schistosoma ova in the stools is permanent, and, if permanent, whether it means death of the parasites and cure of the disease, remains to be seen. We hope to have an opportunity to ascertain these points in the two cases in the future.
Although emetine was not pushed to a point to establish its therapeutic value in this disease, yet there are evidences to show that it does influence its course. It certainly deserves to be more extensively tried, especially in children and young adults, as recommended by Cawston.

The disappearance from the stools after treatment of not only ova of *Schistosoma japonicum*, but also ova of *Ascaris lumbricoides* and of *Fasciolopsis buski*, *Giardia*, and *Trichomonas*, must be of some significance.

References.

Bacteriology of Ear Infections.


BACTERIOLOGY OF EAR INFECTIONS.*

A. M. Dunlap, M.D. Peking.

There is apparently wide divergence of opinion regarding the value of bacteriological studies of acute ear conditions. A visit, made by the writer in the summer of 1923 to most of the large clinics of the United States, disclosed the fact that in some of the most popular no attempt was made to determine the organisms involved in infections of the middle ear, and no interest shown in culturing the discharge from the mastoid cells, should it become necessary to open them subsequent to middle ear infection. In other clinics, all mastoids opened were cultured but no examination of discharges from the middle ear prior to operation was made. Comparatively few insisted on routine examinations of middle ear discharges and operated mastoids.

A real conviction exists among many men that bacteriological studies not only do not add to our information in making diagnoses, but that they may be actually misleading. The great frequency with which the staphylococcus is found in the normal ear canal, as well as its facility of growth, is enough to discourage many. Again, some are convinced that even though we may know the invading organism, we have no means of determining its virulence and the probable destruction it is causing within the middle ear or mastoid cells. Similar arguments are advanced by workers in practically all parts of the United States, but the fact remains,

*From the Department of Otolaryngology, Peking Union Medical College, Peking. Read before the Section on Otorhinolaryngology, Hongkong Medical Conference, January, 1925.
that should it be demonstrated that real assistance can be secured in the management of these cases by determining as soon as possible the causative agent, these objectors would be the first to resort to this examination as a routine measure.

It is not the purpose of this paper to debate this question, but to relate as simply as possible our experience at the Peking Union Medical College with regard to the assistance which the laboratory has given us in diagnosing and treating infected ears. For this purpose we have taken the laboratory records just as they stand, covering a period roughly of four and a half years. The table given below indicates the type of organism found, either in the discharges from the middle ear, or in cultures from the mastoid at the time of operation or at some time during convalescence.

<table>
<thead>
<tr>
<th>BACTERIA</th>
<th>Cultured from middle ear discharges</th>
<th>Cultured from mastoid wound at time of operation and during convalescence</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Streptococcus haemolyticus</em></td>
<td>67</td>
<td>100</td>
<td>167</td>
</tr>
<tr>
<td><em>Streptococcus</em>, non-haemolytic</td>
<td>5</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td><em>Streptococcus</em>, unclassified</td>
<td>6</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>41</td>
<td>30</td>
<td>71</td>
</tr>
<tr>
<td><em>Staphylococcus albus</em></td>
<td>36</td>
<td>13</td>
<td>49</td>
</tr>
<tr>
<td><em>Staphylococcus</em>, unclassified</td>
<td>18</td>
<td>25</td>
<td>43</td>
</tr>
<tr>
<td>Gram-negative bacillus</td>
<td>8</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Gram-positive bacillus</td>
<td>32</td>
<td>19</td>
<td>51</td>
</tr>
<tr>
<td><em>Bacillus proteus</em></td>
<td>8</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td><em>Bacillus pyocyaneus</em></td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Gram-positive diplococcus</td>
<td>3</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Diphtheroid organisms</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><em>Bacillus diphtheriae</em></td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><em>Bacillus coli</em></td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Gram-positive coccus</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Gram-negative coccus</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><em>Pneumococcus</em>, Type I</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><em>Pneumococcus</em>, Type II</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><em>Pneumococcus</em>, Type III</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><em>Pneumococcus</em>, Type IV</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

*Streptococcus haemolyticus*.—As indicated in the above table, *Streptococcus haemolyticus* was by far the most common organism found in these infections. With an ear discharging freely, it has been extremely simple to find this organism as the predominating one in the discharge. The positive cultures found in swabbing of mastoid wounds at the time of operation or subsequent to operation
were practically always pure. At least seventy-five per cent of these swabs were taken at the time of operation, while the other twenty-five per cent were from swabs taken at some time during convalescence. It is interesting to find the *Streptococcus haemolyticus* present in pure cultures in these postoperative cases from a month to six weeks following operation. This fact has been pointed out by a number of observers, especially by Whiting, of New York, who reports a case where the streptococcus was present for a very considerable period after operation, with finally a closing of the mastoid wound and meningitis as a complication.

The discharge from *Streptococcus haemolyticus* ears is characteristic. It is profuse, straw-colored, and blood-tinged. The quantity during the twenty-four hour period is considerably more than in any other ear infection, with the possible exception of the pneumococcus. With free drainage through an incised ear drum, the temperature, if it has been at all above normal, immediately returns to normal and continues so for a number of days until there is some involvement of the mastoid cells which are not being perfectly drained. Leucocytosis in these cases ranges from 12,000 to 21,000, depending upon the severity of the condition.

This is a type of infection which one finds following scarlet fever. We know that a specific type of *Streptococcus haemolyticus* is responsible for scarlet fever, as demonstrated by Dochez and Dick, and it is possible that this is the organism which invades the middle ear and causes the destruction subsequent to scarlet fever. Of all the infections of the middle ear, this, to my mind, is the most serious, both from the point of view of hearing and of the production of chronic mastoid disease. Frequently one is able to see melting of the ear drum in cases where the organism is of the virulent type, a condition which progresses until the entire ear drum and ossicles are partially or completely destroyed, with a production of a chronic condition, should there be no acute complication of mastoid or middle ear disease to end the life of the patient.

*Streptococcus non-haemolyticus* and *Streptococcus unclassified.*— During an epidemic, when the *Streptococcus haemolyticus* was the causative agent in many middle ear infections, with mastoiditis in practically every case, we took a great deal of consolation from reports from the laboratory, which were returned to us indicating that either the *Streptococcus non-haemolyticus* or *Streptococcus*

unclassified was the predominating organism. In our experience, these organisms which had invaded the mastoid cells were far less destructive than the *Streptococcus haemolyticus*, and clinically they tended to clear up much more rapidly after incision of the ear drum than the *Streptococcus haemolyticus* group. In the table above, it will be noted that swabs were positive for non-haemolytic streptococci in mastoid wounds. These swabs were taken, for the most part, from convalescent mastoid cases, and probably the streptococci were not causative agents. The discharge may be profuse at first, but tends to decrease rapidly when good drainage is secured through the ear drum.

**Staphylococcus.**—This group includes the *Staphylococcus aureus*, *S. albus*, and unclassified staphylococci. Someone has said that if a swab of the discharges from the middle ear shows the presence of the staphylococcus, one can be sure that it is not the causative organism, as it is always present in the canal. In the table presented here it will be seen that the staphylococcus was found in by far the greater number of the discharges from the middle ear. It is highly probable that many of these positive cultures were of organisms which originated within the canal alone. On the other hand, a fair number of cases have been found in which the staphylococcus was obtained not only in the middle ear discharges, but in pure culture upon opening up the mastoid cells. The positive cultures of staphylococcus from mastoid wounds, indicated in the table are for the most part from swabs of healing wounds, and are no doubt contaminations from the skin surface immediately surrounding it. The discharge is thin and watery at first but becomes mucoid in character within a few days. With good drainage the inflammation runs its course in ten days or two weeks as a rule.

**Gram-negative bacillus and Gram-positive bacillus:**—This group comprises infections which are characterized by a moderately profuse discharge which tends to become mucoid at a fairly early time in the course of the disease, with very little attempt on the part of the middle ear to control the infection. Many of these cases, as will be seen from the positive cultures indicated in the chart, came to operation and were not controlled by simple incision of the ear drum. There may be some difference in the action of these two organisms, or very large groups of organisms, but we have not been able to determine it.
Bacteriology of Ear Infections.

Bacillus proteus.—This organism is found in many of the chronic cases of ear disease, both before and after operation. There is more or less discharge, which is practically always mucoid in character.

Bacillus proteus is not considered to be a virulent organism, and in the case of these chronic ear cases I suspect that it is a secondary invader.

Bacillus pyocyaneus, Gram-positive diplococcus, Gram-positive coccus, and Gram-negative coccus.—These organisms have not presented anything which is characteristic. They are for the most part the cause of low-grade infections, but sufficient in the case of the cocci to produce acute infections of the mastoid. The majority of these cultures were from chronic middle ear cases and may have been secondary invaders.

Diphtheroids.—Diphtheroids in the ear rarely produce acute inflammations. They are, generally speaking, secondary invaders. If the infection is primarily due to the diphtheroid, the discharge is characterized as bright, straw-colored, with considerable serum. On running out of the ear it dries quickly and hardens in a yellow crust about the ear canal. It is a discharge which is quickly reduced in amount after the first twenty-four hours. I have never seen mastoid disease produced by it. I have, however, witnessed its entrance into a healing mastoid with an exacerbation of the inflammatory process in a child with double mastoid disease. In this particular case, the organism produced a very foul odor, characteristic of necrotic bone. This diphtheroid, when cultured, gave off an odor similar to that from the wound.

Bacillus diphteriae.—While there are reported cases of primary infection of the middle ear with Klebs-Löffler bacillus, we have not seen such cases in Peking. In all our cases the organisms were secondary invaders. The two cases in which the cultures were made from middle ear discharges were of children who had had chronically discharging ears for a number of weeks. In one case, Bacillus diphteriae was found in the nasopharynx, in the other, no focus could be determined in the throat. The three positive cultures from the mastoid were from cases during convalescence of mastoiditis following infection with other organisms.
Bacillus coli.—A number of surgeons have reported that the Bacillus coli has been found in the discharges from cases of middle ear disease, but I think everyone is convinced that it is a secondary invader, probably a contamination by the individual by means of soiled fingers. All of the cases reported in this table in which the bacillus was found were cases of chronically discharging ears. It is doubtful if the Bacillus coli ever becomes virulent enough to cause acute infection of the middle ear, to say nothing of the mastoid cells.

Pneumococcus.—There is undoubtedly some variation in the manner in which the organisms of the four types of pneumococci infect the ear. We have not had sufficient experience with them in Peking for full observation. We do know, however, that Type II pneumococci are much more likely to produce a serious infection of the mastoid cells. In practically all of these infections with the pneumococcus, there is a profuse discharge which reminds one of the Streptococcus haemolyticus reaction, but it is not as long sustained. The middle ear returns to a more normal condition at a much earlier time. The high incidence of mastoids opened, as shown by this Table, to my mind indicates a lack of early drainage of middle ears. The reaction which one sees with the pneumococcus is apparently very soon over, and one has the feeling that if he can get his case sufficiently early and make ample drainage through the ear drum, there need not be serious extension into the mastoid cells.

Aspergillus niger.—The fungus, Aspergillus niger, is added to this list primarily because it is frequently encountered in the Orient. Not uncommonly one finds it in connection with discharges from ear canals where the drum is intact, but the reaction is sufficient to cause a mild, low-grade infection with the production of a moderate amount of discharge. One such case came under our observation a short time ago. An elderly man, who had been under treatment for some three years or more for so-called middle ear condition, came to our clinic; and Aspergillus niger was found by simply swabbing the discharges on a cover glass without resorting to culture methods. The case cleared up within a very few days with the use of the alcohol treatment. Not infrequently we have found this fungus present in old exhausted purulent ears or in middle ear disease subsequent to radical mastoid operations.
Another case comes to my mind in this connection: that of a man who had an exhausted middle ear condition following scarlet fever, which for a number of years had been giving trouble. The ear had been examined by various otologists in New York, Baltimore, and other centers in the States, but probably because mycosis is not a common disease in those parts, no attempt had even been made to determine whether or not *Aspergillus niger* might or might not be the causative agent. It was readily found in this particular case, first by means of the swabbing method, and subsequently by culturing, and the condition cleared up without any difficulty through ordinary methods.

These remarks regarding the bacteriological findings of cases treated in our clinic are given in the hope that they may be of assistance to the physician who is attempting to make an accurate diagnosis of his case and to determine whether or not he is giving adequate treatment. There is no doubt in our own minds that a knowledge of the causative agent is invaluable in helping one to determine what course to follow. There are other clinical symptoms which one takes into consideration, as well as X-ray examinations, in coming to a final decision regarding a case; but just as the internist makes sputum examinations to determine what the organism is, which is involved in any particular lung condition, so should we make our special examinations, to determine what the causative agent is, in any particular ear infection. We are learning, just as the internist has learned, that organisms usually act in a characteristic manner, in spite of the fact that their virulence varies from time to time.

The assistance, therefore, which a knowledge of the type and virulence of the invading organism may give, is invaluable in the diagnosis and treatment of these cases. For instance, with the laboratory report of a *Streptococcus haemolyticus* before one in a given case of otitis media, the seriousness of the infection is immediately realized, since this organism is one which not infrequently causes mastoiditis. On the other hand, an infection with a diphtheroid as the causative agent need not cause great concern, as it is under control as soon as free drainage is established through the ear drum, and has rarely been known to cause destructive lesions of the mastoid cells.
DR. SUN YAT-SEN.

It is hardly within the scope of a medical journal published in China to comment on the careers of Chinese politicians unless they have shown an active interest in medical education or in questions relating to public health. To some extent the life of Sun Yat-sen comes within this category as he was trained for the medical profession, and to members of the C.M.M.A. there is the additional interest that he was educated in part by medical missionaries and was baptized as a Christian by the London Missionary Society, though later in life it is doubtful whether he ever belonged to any particular church or denomination. It is deemed appropriate, therefore, that a few words should be said concerning his remarkable career.

Sun Yat-sen was born November 12th, 1866, in a remote village of Kuangtung, about thirty miles north of Macao. His father was a Christian preacher in the service of the London Missionary Society. During his youth, Sun Yat-sen made two long visits to the Hawaiian Islands. For a time he studied medicine under Dr. John G. Kerr, of Canton, the American Presbyterian missionary who helped to found the John G. Kerr Hospital for the Insane and other institutions. In 1887, Sun Yat-sen entered the Hongkong School of Medicine (Alice Memorial Hospital, L. M. S.), from which institution he graduated five years later as a Licentiate of Medicine and Surgery. One of his teachers was Sir James Cantlie, now of London, who became his faithful friend.

After graduation, Dr. Sun started to practice medicine in Macao with a branch office in Canton. Evidently his practice was not very lucrative for he went to Tientsin to try to obtain a medical position at a salary of Taels 100 per mensem. He was not successful and he began to turn his attention to politics. Had he been fortunate in possessing sufficient means to tide over the struggles of the early years of his professional life, the recent political history of China might have been very different. On a second visit to Tientsin he carried with him the political resolutions
passed by a progressive group of young men in Hongkong who sought to influence Li Hung-chang, the famous Viceroy, to reform the government after China's failure in the Sino-Japanese war of 1895. Dr. Sun waited nearly six months but the Viceroy declined to see him. Disappointed and embittered he now became a revolutionist, abandoning the practice of medicine.

After the failure of a conspiracy in Canton in 1895, Dr. Sun was forced to flee to Hongkong, Japan, Honolulu and America, spending short periods of time at each place. From America he went to England, arriving there in 1896. On October 11th, the same year, he was kidnapped outside the Chinese Legation by the agents of the Imperial Government (which had offered a reward of half a million taels for his capture, dead or alive) and detained at the order of the Chinese Minister. Dr. Sun managed to make his perilous plight known to Dr. Cantlie, then living in London, who was instrumental in effecting the captive's release after twelve days' imprisonment. Afterwards Dr. Sun stayed for a short time in England, and subsequently visited Europe, America and the Far East as a revolutionary propagandist. He was abroad when the Chinese revolution started at Wuchang in 1911. As soon as possible he returned to China and helped to establish the Provisional Government at Nanking. He had the honour of being China's first President, to which office he was elected at the end of 1911.

Limited space will not permit giving the details of Dr. Sun's subsequent political career, which was extremely diversified. He made many friends, especially among the young men of China, and was regarded by them as a true and courageous patriot, the Mazzini of China. He also made many enemies, notably during the last year or so of his life when his physical powers perhaps were waning from disease. History has yet to be written from the medical point of view. Still, those opposed to him hold that his great influence was never used with success for any useful purpose; that he was a destroyer but could not reconstruct. Various explanations of his failure are given. Perhaps it is safe to say that, in common with many other reformers in China and abroad, he did not sufficiently grasp the fundamental truth of human betterment, long ago expressed by Lord Morley, the great political thinker and writer: "No permanent transformation of
society, we may be sure, can ever take place until a transformation has been accomplished in the spiritual basis of its thought."

Dr. Sun personally had many attractive qualities and exerted a marvellous influence over his countrymen. It is greatly to his credit that he died a poor man, for immense sums of money passed through his hands: His friends say that he was humble and honest in purpose, lovable and forgiving, unselfish, animated throughout his life by no other purpose than to serve and save his country. Their grief is deep and sincere. "Our leader is dead and the country weeps. The earth cries, the heavens are sad and the winds, the mountains, and the seas are agitated with sorrow."

Certainly a very remarkable man has passed away.

C.M.M.A. EXECUTIVE COMMITTEE

Excerpts from Minutes of Meeting held on February 6th, 1925.

In the absence of the President, Dr. S. Cochran, the meeting was called to order by the Vice-President, Dr. Grosvenor, at 9 a.m. and was opened with prayer by him.

The following members were present: Drs. Grosvenor, Cousland, Davenport, Fowler, Maxwell, Merrins, Iva Miller, W. S. New and Morris.

Minutes of the last meeting.—The minutes of the meeting of January 21st, 1925, held at Hongkong, were read and approved.

Business

China Medical Journal.—After some discussion on the business affairs of the Journal, a committee consisting of Drs. Merrins, Fowler, Davenport and Tucker, with power to add to their number, was appointed to study the whole question.

Members of Medical Missionary Division.—

(1) It was moved and carried that all present members of the C.M.M.A., shall be regarded as members of the Medical Missionary Division of the C.M.A., unless a desire to the contrary is expressed.

(2) It was moved and carried that new members should be asked to state on their application for membership [in the C.M.A.] whether they desire to be enrolled in the Medical Missionary Division, which consists of "members of the Association who are actively engaged in the work of medical missions and those working in sympathy with them."

(Const. & By-laws, Art. V. Section 2.)
C.M.M.A. Executive Committee.

Cod of Medical Ethics.—After some discussion it was moved and carried that action on this be delayed until next July, when the new Constitution comes into force.

Seal for the C.M.A.—The Secretary was asked to procure designs for a seal to be presented to the Executive for consideration.

Voluntary registration of Hospitals.—It was voted to form a committee to study the question of grading, method of registration, etc., of hospitals, to report later to the Executive. The committee appointed was as follows: Drs. Fowler, Maxwell, A. W. Tucker and Davenport.

Diplomas for Midwives.—Remit from Conference. This matter was referred to the Council on Medical Education.

Resolutions: Hongkong Conference

The following resolutions, adopted by the Hongkong Conference, were referred to the Executive Committee for further consideration and action.

Conference Resolutions on Salaries of Hospital Assistants.

"(a) In view of the complexity of the factors concerned in the salary scale this Committee [on Salaries of Hospital Assistants] requests that the matter be referred to the Executive Committee for consideration and recommendation to the next Conference. The problems will be greatly simplified when hospitals are standardized and graded.

"(b) In order to eliminate the disadvantages of doctors and hospitals competing for the services of Chinese doctors, it is the opinion of the Committee that before negotiations are opened there should be complete understanding between the Superintendents of the two hospitals concerned."

The Executive Committee referred the resolutions to the Council on Hospital Administration.

Conference Resolutions on Standards of Medical Education.

"That the standard of Medical Education be not further raised until it is possible for the large bulk of existing schools to obtain full recognition according to the present standards.

"That in general the present standards be maintained subject to such minor modifications as the Council on Medical Education and the Executive Committee, after careful consideration, find desirable to make it more easy for schools to register."

The Executive Committee referred these resolutions to the Council on Medical Education.
Conference Resolution on Health in Chinese Industries.

"That the C.M.M.A. express its deep interest in the work and report of Dr. C. T. Maitland on the subject of Health in Industry. We realize the importance of the problem which he has outlined, and pledge our support to any organization which may be working for the study or alleviation of the conditions brought about by modern industry."

The Executive Committee sent a copy of this resolution to the National Christian Council for consideration and action.

Conference Resolution on Health Conditions in Schools.

"That the C.M.M.A. in conference assembled has heard with deep interest the paper of Dr. E. W. Wallace and the report of the recent Conference on School Health.

"We would urge our members to give their support and encouragement in carrying out these recommendations of the Conference."

The Executive Committee decided to send to members of the C.M.M.A. the Report of the Conference on School Health, and to print Dr. Wallace's paper with the discussion thereon in the China Medical Journal.

Conference Resolution on Teachers and Doctors for Public Health Work.

"That the C.M.M.A. urge the Home Boards to co-operate in sending out teachers and doctors prepared to do Public Health Work."

The Secretary was instructed to send copies of this resolution to the Home Boards, the Mission Bodies in China and to the Council on Health Education.

C.M.M.A. Representative on the Council on Health Education.—Dr. Fowler was appointed to serve on this Council as representative of the C.M.M.A.

Biennial Conference, 1926.—It was decided to accept the invitation to hold the next Conference in Peking in September, 1926.

Conference Sectional Meetings.—The question of uniting various Sections at the next Conference was left in the hands of the local committee and the Executive Secretary to adjust.

In connection with the preparation of the work of the Sectional Meetings of the next Conference, it was voted that the Peking local committee be requested to make nominations for the chairmanship of sections at as early a date as possible and to submit the same to the Executive Committee before final action is taken.
Since the previous report of this institution, written by Dr. Wilbur, appeared in the China Medical Journal (September, 1924), there have been a few changes and developments which are worth recording.

**Co-education.**—After much discussion spreading over a number of years the Board of Governors has at last consented to the admission of women students to the University. Among the eight women matriculants last September two registered for the pre-medical course.

**Registration, 1924-1925.**—The medical students registered this year are as follows: Pre-medical course (first, second and third years), 43. Medical course: first year, 12; second year, 8; third year, 7; fourth year 5; fifth year, 0. Total number of medical and pre-medical students, 75. Dental students, 22. Total in medicine and dentistry, 97. The following comparison of the number of medical students with the number in other departments of the University may be interesting: Medicine, 75 (31.7%); Science, 42; Education, 42; Arts, 31; Religion, 19; special students, 27. Total 236.

**Changes in Staff.**—Dr. R. A. Peterson has decided to return to Nanking. Dr. E. R. Cunningham is in charge of the Eye,
Ear, Nose and Throat Department. Mrs. Cunningham (Gladys Story, B.A., M.D., C.M.) will commence teaching in the near future. The Church Missionary Society recently appointed Dr. Harold G. Anderson in place of Dr. C. C. Elliott who resigned some time ago. Dr. Crawford is coming to reside in Chengtu in connection with the work of the Council on Public Health Education, and will continue his teaching on Public Health to the medical students.

Canadian Methodist Hospital for Men, Chengtu.

General.—Dr. W. W. Peter of the Council on Public Health recently visited Chengtu and organised the West China Council on Health Education. General Yang Sen, the Military Governor of Szechwan, continues to hold friendly relations with the University and shows interest in our medical work. On sending him a reprint of the previous report, Dr. Wilbur, the writer, asked the Governor if he objected to the use of his name. The following reply, written in English, was received:

"Many thanks for your kind letter and the reprint from the Medical Journal of Shanghai. In perusing its contents I greatly appreciate what you have done in this line and wish you a success in the near future. As to what you have written I have no objections at all. Hope I shall be of service to you."

Later, in reply to a request for material for the Anatomy Department the Governor replied:
"Thank you very much for your kind letter of the 13th inst., asking me to get some dead men for dissecting for you. I am very glad to comply with your wishes, and will send some dead men over to the University as soon as they are gotten."

**PRESBYTERIAN HOSPITAL, CHANGTEH, HUNAN.**

*Hospital staff*: Drs. W.L. Berst, G.T. Tootell and Bao Wei Liang. Foreign nurses: Mrs. E. J. Bannerman, r.n. and Miss Lalah Zink, r.n. Chinese: ten male nurses and five female nurses.

A very satisfactory year's work is recorded. As in other disturbed districts of China many of the in-patients, who numbered 11,013, were wounded soldiers. Probably the general attendance would have been much larger but when there is fighting and other disturbances people in need of medical attention are reluctant to leave their homes, or even to enter a hospital where there are many wounded soldiers as they live in constant fear of the soldiery. During the year a "walk-out" or strike of the girl nurses occurred without notice, which left the women's section of the hospital without adequate help for some weeks. A number of ladies in the foreign community, however, volunteered their assistance until other nurses could be obtained.

Recent additions to the hospital plant include a two-storey annex to the main hospital, containing dressing rooms, bath rooms, etc., for the patients. Several interesting clinical cases are recorded. In obstetrics, one woman with ruptured uterus was brought to the hospital. No history of external injury. Operation revealed a three months' fetus in abdominal cavity. The fetus was removed and uterine rupture repaired. After transfusion and the usual methods of stimulation the patient was eventually discharged cured. There was also a case of pseudocyesis. The patient, forty-three years old, was examined abdominally several times during the fifth, sixth and seventh months of what was supposed to be her pregnancy, but no fetal heart sounds could be heard. The abdomen continued to enlarge and a bloody discharge appeared. When the patient was anesthetized in order to make a vaginal examination the abdominal tumour disappeared and it was found that she was menstruating. The doctors in the hospital were accused of having killed the baby and thrown it away, and the woman was made to stay indoors the usual forty days. Such is the result of superstition, and the husband’s "loss of face" when the condition was discovered to be a false pregnancy.
The laboratory details are very full and instructive, and statistics are given of cases of schistosomiasis which received treatment by intravenous injection of tartar emetic and were discharged as cured. The report is well compiled.

**CHINCHEW GENERAL HOSPITAL (E.P.M.), AMOY, FUKIEN.**

*Hospital Staff:*—Dr. J. H. Montgomery, Dr. C. H. Lim, three dispensers and clerks.

Definite plans have been prepared for the erection of a large new block of buildings that will replace many of the older, unsuitable structures and bring this hospital more into line with the requirements of a modern institution. The needs of the work are carefully stated with the amount of money required, and an appeal is made for help. Considering the large and important work done by the hospital in the city the appeal ought to meet with a generous response.

The report contains interesting notes on various diseases. In the treatment of leprosy intravenous injections of sodium hydno-carpate have proved very successful. The various types of plague were seen during the spring and early summer. The pneumonic and septicaemic cases died within a few hours, or three or four days at the most. The bubonic type was very fatal also. This year, and also last year, the bubo usually appeared in the neck, and experience shows this condition is more fatal than when the bubo appears in the axilla or groin; it is hoped that soon a definite curative serum will be found as present methods of treatment are not very successful. Malaria and dysentery are common diseases in the district and the incidence of typhoid fever is steadily increasing. Tuberculosis is very rife, especially among the young. The victims of cancer seem more numerous than ever but seldom come until it is too late for operative interference. In commenting on the diseases and injuries of the eyes a case of horrible cruelty is described.

The whole report is very interesting, and the hospital plans it contains may be very useful to physicians in China who are preparing to erect hospitals.

**HEALTH OF SHANGHAI.**

The report of the Commissioner for Public Health takes up a considerable amount of space with a variety of interesting and
valuable information. The health problem of the Port of Shanghai, says the Commissioner, is obviously a complicated one, and its solution will need the closest co-operation between the authorities concerned. Bound up with this problem is the urgently needed establishment of comprehensive public health legislation for Shanghai.

"The state of public health throughout the year was satisfactory in spite of menacing conditions and events. The death rate among resident foreigners, including Japanese, was 17.1 a thousand, compared with 17.2 last year, and among the Chinese 11.2, compared with 10.3 a year ago. Nearly half the deaths among foreigners were caused by communicable disease, and nearly half of these deaths were among the Japanese. Fewer deaths occurred from typhoid, indicating greater attention to the hygiene of the kitchen and serving room, and increasing resort to inoculation. There was one Chinese death from bubonic plague, the first for 10 years."

The changes rapidly taking place in the character of Shanghai occasions a significant note in the Health Inspection Report. It is observed that there are now a number of poorer residents, principally in the Northern and Eastern districts, with no fixed income or regular employment and living under conditions similar to those in the slums of Europe and America. In the Chinese quarters, overcrowding is still as bad as ever, and it is unlikely, says the Report, that there will be any permanent improvement until compulsory powers are obtained to suppress the evil. Numbers of Russian and Chinese refugees occupy foreign houses throughout the Settlement under deplorable conditions of overcrowding, and in the absence of compulsory powers the advice and assistance of the Health Inspectors are usually ignored.—*North China Daily News*, March 26, 1925.

**JOINT MEDICAL CONFERENCE, HONGKONG, 1925.**

**REPORT OF SECTION ON PHARMACOLOGY AND THERAPEUTICS.**

The following are the titles and abstracts of the papers read before the Section on Pharmacology and Therapeutics during the Hongkong Conference, January, 1925.

Ma Huang has been identified as Ephedris vulgaris, var. Helvetica, Gnetaceae. Description of shrub. Active principle, ephedrine. Its action on circulation, smooth muscle, and secretions. Absorption and toxicity of drug. Ephedrine in experimental shock and haemorrhage. Clinical uses: (a) in hypotension of blood pressure; (b) in asthma. Advantages of ephedrine as compared with certain other drugs: (1) ephedrine is chemically stable; age, exposure to light, or boiling, does not alter its action. (2) It has a persistent and uniform action in contrast with that of adrenaline. (3) It has a low toxicity. The margin of safety is unquestionably very wide. (4) It can be given very conveniently, either by mouth or by intra-muscular injection. No local irritation following injection has ever been noticed. (See Jour. Pharm. and Therap., 1924. xxiv : 339.)


Published in China Medical Journal, April, 1925.


The Chinese drug, Huang Chi, was found to yield no alkaloid, glucoside or other potent principles. Physiological experiments conducted upon frogs and dogs yield no evidence that the drug can improve the circulation or cause diuresis. Nothing is known of its effects upon nephritic animals.


5. The Autonomic Rhythm of the Turtle Heart, as Influenced by Various Conditions. By Hung Pih Chu, and Torald Sollmann, Cleveland, Ohio. Presented by Peter Kiang, Tsinanfu, Shantung.

The following phenomena were observed on strips of the ventricular muscle of the turtle, suspended in saline solution.
(a). Increase of temperature shortens the dormant (pre-rhythmic) period, quickens the rhythm, and shortens the endurance. These phenomena occur under all the conditions to be discussed.

(b). Aeration of the solution shortens the dormancy, diminishes irregularities in the curves, and prolongs the endurance.

(c). Oxygen deficiency acts in the opposite direction. With moderately high temperatures, the muscle often fails to initiate contractions in non-aerated isotonic (0.7%) NaCl.

(d). The addition of the plasma concentration (0.025%) of calcium chloride to isotonic NaCl shortens the dormant period, quickens the rhythm, and prolongs the endurance, standing the greater work that is performed by the muscle. It counteracts the deleterious effects of the heat and therefore permits the full development of the stimulant effects of higher temperatures.

(e). The plasma concentration of KCl (0.03%) generally renders the ventricle non-rhythmic. With 0.015% KCl, the dormant period is prolonged; the rate is slower and cannot follow the quickening effect of higher temperatures; the endurance is not materially altered.


Spleneless animals after injection with mesenteric lymph gland extracts obtained from spleenless animals show a leucocytosis. The majority of spleenless animals when injected with the gland extract of normal animals show an increase in leucocyte count.

While the saline extracts of the mesenteric gland of normal rabbits sometimes cause on injection a leucocytosis in the peripheral circulation of normal rabbits it more often does so when injected into spleenless rabbits. The saline extracts of spleenless rabbits injected into normal animals usually cause a leucopenia.

Hence the mesenteric lymph glands in the absence of the spleen may, by an internal secretion, stimulate the bone marrow so as to influence the number of leucocytes in the circulation.


A description of the work conducted by the Central Epidemic Prevention Bureau, Peking, in the preparation of vaccines and
serums for use in China which include:—smallpox vaccine; triple-
typhoid, cholera, plague, pneumococcus, gonococcus and autogenous
vaccines. Pasteur's rabies vaccine, Semple's rabies vaccine, and
rabies vaccine for dogs. Tuberculin and mallein. Diptheria
antitoxin, Schick toxin, diphtheria toxin-antitoxin mixture; and
tetanus antitoxin. Anti-pneumococcus, anti-meningococcus, anti-
streptococcus and anti-dysentery serums. Many types of diagnostic
serums and bacterial suspensions as well as normal horse serum,
may also be obtained from this Bureau.

A technical study of Chinese Cinnamon. Detailed descriptions
of the radial and tangential longitudinal sections of the bark.
Also cross section of the leaf.

9. The Effect of Ephedrine on Experimental Shock and
Read, Peking.
a. Ephedrine raises blood pressure in hemorrhages and in
experimental shock induced by histamine, peptone, anaphylaxis,
surgical violence and trauma.
b. The rise in blood pressure is permanent under favorable
conditions and its effect is due to cardiac stimulation and not to
arterial constriction.
c. Ephedrine fails to act when the heart beat becomes
impaired, or respiration ceases, or the degree of shock is too
extensive, or when hemorrhage exceeds 25 per cent of total
quantity of blood. It has, however, no harmful effects.

SYMPOSIUM ON LEPROSY
Abstracts of Papers on Pharmacology of Chaulmoogra oil
1. Further Experiments upon Preparations from Chinese
The mixed ethyl esters prepared from the oil from Chinese
"Ta Feng Tzu" were submitted to fractional distillation for the
production of pure ethyl hydnocarpate, the more active fraction
from chaulmoogra.
Metabolism experiments conducted upon rabbits and dogs
show that ethyl hydnocarpate is a "transporter of calcium" in the
system. A large hyperexcretion of calcium was obtained in the urine of rabbits, though prolonged administration in therapeutic doses to dogs produced calcium retention.

It is considered that the effects of chaulmoogra oil upon metabolism are largely responsible for its therapeutic activity in the treatment of leprosy, it being well known that leprosy is intimately related to calcium metabolism.

Discussion:

Dr. Duncan Maine, Hangchow: Is there not some way of treating the esters so as to lessen the pain of injection?

Prof. B. E. Read, Peking: It is noticed that the pain of injection is more acute after prolonged treatment. It is the opinion of some that a hypersensitivity naturally follows chaulmoogra treatment. However, it has been found that the pain can be considerably lessened by removing from the ethyl esters certain irritable principles. This can be done in three ways. The best method, adopted by Dr. Muir of Calcutta, is that of washing the product with sodium carbonate. The workers in the Philippines blow steam through their preparations. In Peking we find that on triple distillation most of the irritant is removed in the first distillates.


The hemolysis previously observed after the administration of toxic doses of chaulmoogra oil and its preparations was found after therapeutic doses to be negligible and insignificant.

However, there is observed a leucocytosis accompanied by a large number of monocytes in the circulating blood, both after large and small doses of the various preparations of this drug.

Coincident with the occurrence of large monocytes in the circulating blood, showers of giant macrophages were found in blood from the right heart. These macrophages are known to be histiocytes, originating in the liver and possibly other organs; they travel into the right heart bearing stained fat, and seem to be filtered off in the lungs and from thence migrate to the lymph stream.
SOME OBSERVATIONS ON HYDROGEN PEROXIDE*

JOHN CAMERON, M.P.S. (LOND.). PEKING.

Liquor hydrogenii peroxidii (solution of hydrogen peroxide) is official in most of the pharmacopoeias in the world to-day. It is a solution which is in almost constant use in all hospitals in China and throughout the world, and one which requires care in handling and storing. Most of the hydrogen peroxide we are at present using in China, in fact almost all, is manufactured abroad and shipped out to us by various wholesale agents in America or in Europe. We understand, however, that some of the more enterprising firms in Shanghai contemplate preparing peroxide solution in China soon. Hydrogen peroxide (H₂O₂) was discovered by Thénard in 1818 as a product of the action of acids on barium peroxide. The original process of Thénard is still that most generally followed by manufacturing firms. Pure hydrate of barium peroxide, BaO₂, 8 H₂O is added gradually to dilute sulphuric acid (20 per cent), kept cool (below 10° C.) until the liquid is only very slightly acid. The product contains about 3 per cent H₂O₂ and constitutes the "10 volume" article of commerce, which means that when this 3 per cent solution is treated with solution of copper ammoniac-sulphate in a brine-charged nitrometer each c.c. of the solution should yield 10 volumes of oxygen. As very few of our hospitals in China possess a nitrometer, this method of testing the supplies received from abroad is restricted to only a few institutions in this country. In the Peking Union Medical College we use the Lunge nitrometer for the estimation of all samples of hydrogen peroxide we purchase, and during the past four years we have carefully checked all shipments of this product which we have received from representative chemical houses in America and Europe. Our experiences may be of interest to others in China who are faced with the problem of purchasing this rather expensive item from abroad. We are of the opinion that where drugs and chemicals are being purchased in fairly large amounts it is a wise proceeding, and not a foolish waste of time and money, to check systematically all supplies before passing them into stock. Either the British or United States Pharmacopoeia...
Some Observations on Hydrogen Peroxide.

Some Observations on Hydrogen Peroxide.

poëia (in the absence of a Chinese official publication) should be consulted and there one may find a monograph giving the necessary details for testing the product. The monograph on hydrogen peroxide may be found in the B.P. 1914, page 224, and in the U. S.P. 1916, page 246. A method of assay is given in the U.S.P. which does not require the use of a nitrometer. Stated briefly it is as follows: Take a small, accurately weighed amount of the solution to be assayed and dilute with a small amount of diluted sulphuric acid. Titrate this solution with tenth-normal potassium permanganate solution until a permanent pink colour is obtained. For each c.c. of N/10 potassium permanganate solution used, 0.558 c.c. of oxygen (measured at N.T.P.) is liberated from the hydrogen peroxide. Assuming that the dispenser understands the titration of a solution like “Carrel-Dakin” the assay of hydrogen peroxide should present no difficulties at all. If for any reason Liquor hydrogen peroxide has remained on the stock shelves for a long time it is advisable to re-assay it before issuing it to the wards of the hospital. Some authorities suggest that Liquor hydrogen peroxide should not be stored longer than one year, as in this time the major portion of the oxygen will have gone, and the solution may only contain one-half per cent of hydrogen peroxide.

The writer remembers dispensing in 1914 a prescription calling for Liquor hydrogen peroxide and water, equal parts. The stock bottle had been filled from a shipment received in the hospital at least two years previously. On testing the prescription for the presence of hydrogen peroxide not a trace could be found. In China we have purposely laid aside one or two bottles from our various shipments of this product and have tested them out from time to time for their respective strengths of H₂O₂. In only three lots have we found a drop below 2 per cent H₂O₂ after twelve months storage. The monograph in the B.P.C. (British Pharmaceutical Codex, 1923) is of interest. It states that “solution of hydrogen peroxide is a colourless liquid without odour and with a slightly acid taste. When heated it is decomposed into water and oxygen. The stability of the solution is ensured by the presence of a slight excess of acid. The amount should not exceed 0.040 per cent calculated as sulphuric acid.”

In North China where we have great variation in the temperature it is necessary to exercise care in storing Liq. hydrogen peroxide.
If possible it should be stored in a cool place in the summer months. Failing this its content of H₂O₂ will drop even in a slightly acid solution. One shipment we received from an American drug firm in 1922, which contained about 2 per cent of acetanilid added as a preservative, lost steadily in the summer months and after 16 weeks the 3 per cent solution only contained one per cent H₂O₂. Ordinary corks are gradually bleached and rotted and therefore should not be used in bottles containing H₂O₂ unless the solution is for immediate use. In the U.S.P. monograph it is stated that Liquor hydrogen peroxide is prone to deteriorate upon keeping, or upon protracted agitation, and is rapidly decomposed by contact with many oxidising as well as reducing substances. If the stopper of the bottle is coated with paraffin, or replaced by a pledget of purified cotton, deterioration is retarded. Original bottles of "Perhydrol" are of about 60 c.c. capacity and are fitted with a grooved glass stopper which has been dipped in paraffin. This American chemical firm is seemingly of the opinion that this is the best method of packing concentrated peroxide solution for foreign shipment. Bottles containing hydrogen peroxide should not be filled up to the neck; it is advisable to leave a space of approximately one-sixth of the cubic capacity of the container in order that any oxygen which may come off from the solution in warm weather may expand without causing the bottle to burst. This remark applies particularly to the more concentrated solutions of hydrogen peroxide. When dealing with 30 per cent solution great care should be exercised in opening the container for the first time upon delivery of the goods. Some chemical houses issue a warning to this effect on the labels of their concentrated hydrogen peroxide bottles. On opening a large carboy, which had come to Peking from Germany via the Suez Canal we were surprised to find no trace of oxygen under pressure and the strength of the peroxide solution worked out at about 30.2% H₂O₂. We use a special bottle for storing our peroxide solution. It has a porcelain cap fixed to the neck of the bottle by a wire and has a thin rubber layer between the porcelain cap and the neck of the bottle. Bottles of this kind are ideal for storing the solution as they prevent undue decomposition. The firm of Merck of Darmstadt, Germany, prepares Liq. hydrogen peroxide 3%, and issues this in special bottles such as we have described. The bottles hold 10 and 20 ounces respectively. The 20 ounce size cost us Mex.
Some Observations on Hydrogen Peroxide.

$1.00 per bottle, delivered in Peking. This is a fair price, but still a little expensive for an item in every day use in an hospital. The price in Shanghai is approximately Mex. $0.85 (October, 1924.) It occurred to the writer that there was only one possible way of reducing the price of this product, while still maintaining the desired strength and other qualities within the specifications of the Pharmacopoeias, and that was to purchase a more concentrated solution from abroad and dilute it down to the required strength on its arrival in China. This has been done and the price per 20 ounce bottle now works out at a little less than Mex. $0.20, showing a saving of $0.80 per bottle delivered to us in Peking. Hydrogen peroxide is prepared commercially in the following strengths: 10, 20, 30, 50, and 100 volume solutions. We suggested to the German firm of Merck that it should ship us a quantity of 30 per cent hydrogen peroxide in a carboy. Our intention was that when this solution reached Peking we would dilute it down sufficiently to meet our special requirements here. On October 27th, 1924, we received delivery of a 60 kilo carboy of 30% hydrogen peroxide. On arrival at the College we immediately tested the solution by the gravimetric method and found that one volume yielded 105.00 volumes of oxygen at N.T.P. The average room temperature during the period of experimentation was 20° C. We transferred aliquot portions of the solution to well-washed and boiled bottles and diluted the solution with distilled water to 3 per cent $H_2O_2$, and with common tap water to 3 per cent $H_2O_2$, the usual pharmacopoeial grade. To test the efficiency or otherwise of various kinds of bottles for storage purposes we transferred

Table 1. Using Distilled Water as Diluent.

<table>
<thead>
<tr>
<th>Date</th>
<th>Ordinary Cork</th>
<th>Special Cork</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 2</td>
<td>11.0 Vol. Oxygen</td>
<td>14.7 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 3</td>
<td>11.0 Vol. Oxygen</td>
<td>14.5 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 4</td>
<td>11.0 Vol. Oxygen</td>
<td>14.5 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 5</td>
<td>11.0 Vol. Oxygen</td>
<td>14.5 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 8</td>
<td>10.5 Vol. Oxygen</td>
<td>14.5 Vol. Oxygen</td>
</tr>
</tbody>
</table>

Average temperature, 22° C.
aliquot portions of the diluted solution to ordinary glass bottles with common corks and to the special bottles referred to earlier in this note. Freshly distilled water was used as the diluent.

In a second series of experiments we used as our diluent ordinary tap or well water which gave the following analysis.

**Table 2. Analysis of Well Water, P.U.M.C., Peking.**

<table>
<thead>
<tr>
<th>Grains per U.S. Gallon</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dissolved solids</td>
<td>19.488</td>
</tr>
<tr>
<td>Total hardness</td>
<td>14.825</td>
</tr>
<tr>
<td>Alkalinity to methyl orange</td>
<td>12.744</td>
</tr>
<tr>
<td>Suspended matter</td>
<td>1.566</td>
</tr>
</tbody>
</table>

**Table No. 3. Using Peking Well Water as Diluent.**

<table>
<thead>
<tr>
<th>Date</th>
<th>Ordinary Cork.</th>
<th>Special Cork.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 3rd.</td>
<td>11.00 Vol. Oxygen</td>
<td>10.0 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 4th.</td>
<td>10.50 Vol. Oxygen</td>
<td>9.8 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 5th.</td>
<td>10.40 Vol. Oxygen</td>
<td>9.7 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 7th.</td>
<td>10.20 Vol. Oxygen</td>
<td>9.5 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 8th.</td>
<td>10.10 Vol. Oxygen</td>
<td>9.4 Vol. Oxygen</td>
</tr>
<tr>
<td>Nov. 9th.</td>
<td>10.00 Vol. Oxygen</td>
<td>9.2 Vol. Oxygen</td>
</tr>
</tbody>
</table>

Average temperature, 22° C.

On opening the glass stopper of the original carboy there was no concentration of oxygen present—probably due to the coldness of the weather. We transferred about 500 c.c. of the original solution to a bottle with a porcelain stopper and Table No. 4 gives the volumes of oxygen released when examined gravimetrically.

**Table No. 4. Original 30% Solution.**

<table>
<thead>
<tr>
<th>Date</th>
<th>Volume of Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 3rd.</td>
<td>105.0</td>
</tr>
<tr>
<td>Nov. 4th.</td>
<td>104.5</td>
</tr>
<tr>
<td>Nov. 5th.</td>
<td>104.5</td>
</tr>
<tr>
<td>Nov. 6th.</td>
<td>104.0</td>
</tr>
<tr>
<td>Nov. 7th.</td>
<td>104.0</td>
</tr>
<tr>
<td>Nov. 8th.</td>
<td>104.0</td>
</tr>
<tr>
<td>Nov. 9th.</td>
<td>104.0</td>
</tr>
</tbody>
</table>

We took from our stock a 50 grammie glass stoppered bottle of Merck's "perhydrol" which is issued as containing 30 per cent. H₂O₂ by weight and which had been stored for more than one year at a constant temperature of 10° C. and in darkness in a special
Some Observations on Hydrogen Peroxide.

storage room. This solution consistently yielded 100 volumes of oxygen over a period of two weeks when tested daily in the usual manner.

Bloxam¹ says that in the preservation of concentrated solution of hydrogen peroxide, one must carefully avoid over-heating, alkalinity, traces of heavy metals, suspended particles, dust, etc. otherwise rapid decomposition sets in, sometimes so suddenly as to cause energetic explosion. The weaker solutions are in no sense dangerous although the writer has known of several instances where bottles supposed to contain Liquor hydrogen peroxide B. P. have burst, probably as a result of higher concentration and undue exposure to the sun in the summer months in France and England. The writer remembers unpacking a case containing bottles of Liq. hydrogen peroxide at a depot medical store in France during the late war. These bottles were fitted with ordinary corks and had seemingly been in stock for a number of years. On opening the case it was discovered that nearly all the corks had been rotted away and those still remaining were a distinct yellow colour. More than half the bottles were empty and the solution which remained only gave the slightest reaction for the presence of hydrogen peroxide.

A ready means of detecting the merest trace of hydrogen peroxide in a solution is the following. Add a little of the unknown solution (supposed to contain hydrogen peroxide) to a weak solution of potassium dichromate acidified with 5 per cent sulphuric acid. Then add a little ether. If hydrogen peroxide is present the beautiful blue colour of perchromic acid appears in the ethereal layer.

The next Table shows the acidity of the various solutions we have been experimenting with.

<table>
<thead>
<tr>
<th>Solution examined.</th>
<th>N/10 NaOH</th>
<th>Acidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3% D.w.R.s.</td>
<td>0.6 c.c.</td>
<td>0.0117%</td>
</tr>
<tr>
<td>5% D.w.O.c.</td>
<td>0.5 c.c.</td>
<td>0.009%</td>
</tr>
<tr>
<td>5% T.w.R.s.</td>
<td>0.0 c.c.</td>
<td>Nil.</td>
</tr>
<tr>
<td>5% T.w.O.c.</td>
<td>0.0 c.c.</td>
<td>Nil.</td>
</tr>
<tr>
<td>30% Carboy 5 c.c.</td>
<td>0.9 c.c.</td>
<td>0.088%</td>
</tr>
<tr>
<td>30% Perhydrol 5 c.c.</td>
<td>0.4 c.c.</td>
<td>0.039%</td>
</tr>
<tr>
<td>T. W.—Tap water.</td>
<td>O. C.—Ordinary cork.</td>
<td></td>
</tr>
</tbody>
</table>
Table No. 6. Showing Acidity of Solution Using N/10 NaOH and Phenolphthalein as Indicator.

<table>
<thead>
<tr>
<th>Solution examined</th>
<th>N/10 NaOH</th>
<th>Acidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3% D.w.R.s.</td>
<td>2.4 c.c.</td>
<td>0.047%</td>
</tr>
<tr>
<td>3% D.w.O.c.</td>
<td>2.5 c.c.</td>
<td>0.049%</td>
</tr>
<tr>
<td>3% T.w.R.s.</td>
<td>1.2 c.c.</td>
<td>0.023%</td>
</tr>
<tr>
<td>3% T.w.O.c.</td>
<td>1.0 c.c.</td>
<td>0.019%</td>
</tr>
<tr>
<td>30% Carboy 5 c.c.</td>
<td>2.9 c.c.</td>
<td>0.284%</td>
</tr>
<tr>
<td>30% Perhydrol 5 c.c</td>
<td>2.3 c.c.</td>
<td>0.225%</td>
</tr>
</tbody>
</table>

As a check we volumetrically examined the various solutions using a method detailed in Squire's Companion to the B.P. (1916, page 745). Briefly this method is as follows: 10 c.c. of Liquor hydrogen peroxide are diluted with sufficient distilled water to measure 100 c.c. Of this liquid (containing 1.69 c.c. of hydrogen peroxide solution) 10.9 c.c. are transferred to a beaker, mixed with 5 c.c. of diluted sulphuric acid, and tenth-normal volumetric potassium permanganate solution is slowly added from a burette with constant stirring until a faint pink tint is just retained. 1 c.c. of N/10 potassium permanganate represents 0.1 per cent of absolute H₂O₂ or 0.329 volume of oxygen.

Table No. 7 shows the results of titrating the various solutions volumetrically by the above method.

Table No. 7. Titrations of Various Solutions Volumetrically.

<table>
<thead>
<tr>
<th>Solution</th>
<th>Cc. N/10 KMNO₄</th>
<th>Vol. of O.</th>
<th>Abs. H₂O₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.w.R.s.</td>
<td>44.9</td>
<td>14.77</td>
<td>4.49%</td>
</tr>
<tr>
<td>D.w.O.c.</td>
<td>34.2</td>
<td>11.25</td>
<td>3.42%</td>
</tr>
<tr>
<td>T.w.R.s.</td>
<td>29.5</td>
<td>9.63</td>
<td>2.93%</td>
</tr>
<tr>
<td>T.w.O.c.</td>
<td>27.0</td>
<td>8.88</td>
<td>2.70%</td>
</tr>
<tr>
<td>Carboy</td>
<td>336.5</td>
<td>110.70</td>
<td>33.6%</td>
</tr>
<tr>
<td>Perhydrol</td>
<td>331.6</td>
<td>109.09</td>
<td>33.1%</td>
</tr>
</tbody>
</table>

An extemporaneous method for the preparation of a ten per cent solution of H₂O₂ suitable for hospital use has been suggested by Hague².

By separately dissolving—NaBO₃ (sodium perborate.) 170 gm. and H₃C₆H₅O₇ (citric acid) 60 gm. in 870 c.c. water, and filtering through glass wool or asbestos a ten per cent solution of H₂O₂ is obtained. Sodium perborate is listed in some wholesale price lists at 1/5 per lb. This method of extemporaneously preparing a stronger solution of hydrogen peroxide than the
official solution listed in the Pharmacopoeias may be of some service in our inland hospitals in the summer months. Its great advantage lies in the fact that the solution need not be made until actually required, and therefore the loss due to decomposition or deterioration in strength should be reduced to the absolute minimum. We prepared solution of hydrogen peroxide by the above method using the quantities stated. The total volume of filtered solution was 820 c.c. On estimating this solution gravimetrically, each volume yielded 11.5 volumes oxygen at 22° C. On estimating volumetrically with potassium permanganate the yield was 12.1 volumes. This method gives approximately 30 ounces of liquor hydrogen peroxide.

An interesting and rapid method of estimating solutions of \( \text{H}_2\text{O}_2 \) colorimetrically and which the author M. L. Isaacs states compares favourably with the results obtained by direct titration with \( \text{KMNO}_4 \) is the following: 1 c.c. of a 1:10 solution of ammonium molybdate is slowly added to a mixture of about 30 c.c. water, 10 c.c. of a 1:20 solution citric acid, and 1 c.c. of the \( \text{H}_2\text{O}_2 \). Water is added to make the volume 50 c.c. The whole to be well shaken. A yellow colour develops immediately. The solution is then compared with a standard \( \text{K}_2\text{Cr}_2\text{O}_7 \) solution (0.4 gm. per litre) in a Duboscq colorimeter. When the standard is set at 20 the amount of \( \text{H}_2\text{O}_2 \) is given by the equation
\[
x = 0.05467 \times \gamma,
\]
where \( \gamma \) is the colorimeter reading and \( x \) the number of grams of \( \text{H}_2\text{O}_2 \) in the 50 c.c. of solution.

**Summary:**

The results of these experiments appear to indicate:

1. That it is quite possible to ship 30% hydrogen peroxide from Europe to China without any decrease in the concentration of the solution.
2. That if a sufficiently large space is left at the top of the carboy no loss will ensue due to the expansion of oxygen.
3. That only freshly distilled water should be used when diluting the concentrated solution down to the required strength for hospital use.
4. That ordinary corks should not be used in bottles containing solutions of hydrogen peroxide.
5. That all solutions of hydrogen peroxide should be stored in a cool place, for otherwise the percentage of absolute \( \text{H}_2\text{O}_2 \) will rapidly decrease.
6. That it is much more economical to purchase the concentrated solution from abroad and dilute it down with distilled water in China.
7. That our Chinese dispensers should learn to titrate the stock solutions of $\text{H}_2\text{O}_2$ with deci-normal potassium permanganate before issuing the solution to the wards of the hospitals.
8. That if no cold storage is available only the smallest possible amount of $\text{H}_2\text{O}_2$ should be stocked during the summer months in China.
9. That the dilute solution should have an acidity (phenolphthalein indicator) of about 0.04 per cent.
10. That the concentrated solution should have an acidity (phenolphthalein indicator) of about 0.25 per cent.

REFERENCES

VACCINES AND SERUMS AND THEIR PRODUCTION IN CHINA.*
Tsefang F. Huang, S.M., M.D.,
Central Epidemic Prevention Bureau, Peking.

The biological products at present used for therapeutic and prophylactic purposes are composed, in the main, of two general groups, namely, vaccines and antiserums.

VACCINES.
Vaccine therapy is directly based upon the principles of "active immunization" just as serum therapy is based on the principles of "passive immunization".

It is well-known that many a disease process confers more or less lasting immunity after one has recovered from its attack. Among the most notable may be mentioned plague, cholera, yellow fever, typhus, poliomyelitis, small-pox, chicken-pox, scarlet fever, measles, mumps and typhoid. Vaccine therapy is the attempt, as-

*A paper read before the Section on Pathology, C.M.M.A. and B.M.A., Joint Conference, Hongkong, January, 1925.
it were, to produce a disease in a relatively mild form in an effort to protect the subject from its serious attacks. To this end, the pathogenic culture or poison is first killed, attenuated, or neutralized (as in the case of diphtheria toxin-antitoxin mixture), and single or repeated doses of it are then introduced into the human tissues by what experience teaches to be the most appropriate route. The methods of preparing these poisons (vaccines), the dosages, and the modes of administration, all vary according to the individual circumstances.

The vaccines introduced, under specific conditions, serve to incite the tissues of the host to the active production of antibodies, or substances antagonistic to the pathogens or their products, so that future infections with the same organisms become completely or relatively harmless. The immunity thus produced lasts in some cases for life and, in others, for a period of months or years.

The important points about a vaccine are (1) that it is innocuous to the subject, except in certain cases of chronic disease, acute fever, pregnancy, etc.; (2) it should produce sufficient immunity in the subject against the disease to prevent, at least partially, subsequent infection (it is a preventive rather than a curative agent, except in certain chronic conditions where some maintain that it may serve to light up reactivities in the tissues); (3) it should be administered sufficiently before the expected infection to allow immunity to be established; and (4) the protective effect of vaccines, as a rule, should be much more lasting than anti-sera.

Vaccines, like antisera, have of late been subjected to a good deal of commercial exploitation. It must be emphasized that only relatively few micro-organisms can be made into vaccines of prophylactic value, of which typhoid, the paratyphoids, cholera and perhaps type pneumonias, are the most notable. Moreover, organisms which produce antisera of therapeutic value, such as diphtheria, tetanus and dysentery, may not be suitable for making vaccines; conversely, organisms which yield prophylactic or therapeutic vaccines, such as typhoid, cholera and staphylococcus, may not produce effective antisera.

In this connection should be mentioned cowpox vaccine for the prevention of small-pox, and immunization against rabies with brain-tissues from hydrophobic rabbits, inasmuch as these two measures are also based upon the principles of active immunization...
Making use of the same principles there arise, on the one hand, the toxin-antitoxin immunization in diphtheria and, on the other hand, the various skin tests namely, Schick test, Dick test, tuberculin and Mallein tests, and the various protein and pollen tests, and so on. Space does not permit discussion of these subjects.

**Antisera.**

The process of antiserum therapy is, as already indicated, based on principles of passive immunization. Suitable animals are "actively" immunized with bacteria or their toxic products and the immune sera thus produced are then injected into human beings for either preventive or curative purposes. Horses are most commonly used for antiserum production for several reasons: 1. The large size of the horse makes it possible to obtain a relatively large quantity of immune serum. 2. Horse serum is relatively well borne by man as well as lower animals. 3. Horses yield antisera of relatively high potency.

The antisera on injection into the human circulation presumably serve to neutralize or destroy the invading micro-organisms, or poisons, and help, therefore, to cut short an existing infection or to prevent such an infection for a certain period of time. However, these foreign antibodies soon disappear from the tissues of the host and the immunity conferred by antisera (passive immunity) is consequently only a temporary one. This method of immunization is made use of (1) in warding off acute infection with short incubation period and (2) in arresting or curing an infectious process.

Unfortunately, just as in the case of vaccines, this field of therapy is as yet quite limited and aside from a few remarkable instances the wide commercial exploitation of antisera is unjustified. The best known example of therapeutic, passive immunization is that of diphtheria antitoxin. Other antitoxins of probable value are tetanus antitoxin, anticober venin (Calmette), botulinus antitoxin, gas gangrene antitoxin, and anti-dysenteric serum.

Anti-bacterial sera are also effective in certain infections, notably anti-meningococcus serum. Among the other antibacterial serums of probable value may be mentioned anti-anthrax serum, anti-pneumococcus type I serum, anti-cholera serum (Salimbeni), and anti-gonococcus serum.
Vaccines and Serums Produced in China.

Taking advantage of the same principles is the recently developed biologic therapy of scarlet fever and poliomyelitis convalescent sera, anti-pollen sera and antiserum for yellow fever (Noguchi).

The Production of Vaccines and Serums in China.

The production of biologic products in China is still in its early stage. Outside of a few private establishments making small-pox vaccine for the market, the number of reliable laboratories manufacturing biologic products for therapeutic and prophylactic use may indeed be counted on the fingers of one hand. In Hongkong there are the Government Bacteriological Institute and Dr. Heanley's Laboratory, where reliable small-pox vaccine, autogenous vaccine, rabies vaccine and anti-meningococcus serum may be obtained. In Shanghai there is the Municipal Laboratory which also produces a small number of biological products, namely, rabies, small-pox and autogenous vaccines.

Hitherto it has been necessary in most cases, therefore, for those who desired biologic products for preventive and curative purposes, to purchase material imported from either Europe, America or Japan. This has of course many disadvantages.

First, it is well-nigh impossible for the local agents of foreign manufacturers to keep a stock which will satisfactorily meet the extremely fluctuating demand for these products. For who can foretell in good time the advent of an epidemic?

Secondly, these biologic products from abroad are far from being stable substances and can hardly be expected to withstand the necessarily unfavorable and uncontrollable physical conditions through the weeks and perhaps months of travel from a distant country without losing some of their active properties.

Thirdly, different strains of the same type of organism may be the cause of a disease known under the same name in different parts of the world. Thus, bacillary dysentery may be caused by Flexner's organism in one locality, and by Shiga's or the Y types in another; certain strains of streptococcus or staphylococcus may prove to be virulent in this country, while in Europe entirely different strains have the day; moreover, anti-meningococcus serum prepared from American strains may not effectively combat meningitic infections in the Orient where perhaps other strains predominate.
Fourthly, the high prices charged for these imported products are to be expected, not merely because of the additional cost incidental to over-sea transportation, but also because of the uncertainty of being able to dispose of these goods and their limited duration of potency.

In the interest of science and public health, the Ministry of Interior of the Chinese Government founded the Central Epidemic Prevention Bureau in 1919, with the surplus of the fund raised for the suppression of the epidemic of pneumonic plague which occurred in North China in the previous year. The Bureau is now supported with funds derived from the Maritime Customs revenue and its expenditure is closely supervised by an International Finance Board composed of leading Chinese and foreign physicians in Peking.

At present the Bureau is under the directorship of Doctor Shisan C. Fang, formerly Surgeon-general of the Chinese Army. Doctor Edgar T. H. Tsen, formerly Associate Professor in Bacteriology in the Peking Union Medical College, is at the head of the Technical Department, the staff of which is composed of five technical experts and six technical assistants, mostly men who received special training abroad.

The Bureau now prepares most of the biologic agents of established clinical value, the methods used for their preparation being such as are adopted by the leading government laboratories in Europe and America. Standard antitoxins are supplied regularly to the Bureau by the United States Hygienic Laboratory, Washington, D. C., for the standardization of its toxins and antitoxins. The following is a list of the products at present obtainable from the Bureau: small-pox vaccine; triple-typhoid, cholera, plague, pneumococcus, gonococcus and autogenous vaccines; Pasteur's rabies vaccine, Semple's rabies vaccine, and rabies vaccine for dogs; tuberculin and mallein; diphtheria antitoxin, Schick toxin, diphtheria toxin-antitoxin mixture, and tetanus antitoxin; anti-pneumococcus, anti-meningococcus, anti-streptococcus and anti-dysentery serums. Many types of diagnostic serums and bacterial suspensions as well as normal horse serum, may also be obtained.

In addition, the Bureau maintains a chemical and a diagnostic laboratory which stand ready to serve the medical profession not
Dangerous Drugs: International Control.

only in Peking but also throughout the country. Samples for Wassermann, Widal, and other tests are being received from as far as I-chang and Hankow. The Bureau has agencies in Tientsin, Shanghai, Nanking, Hankow, Szechuen, Mukden and Peking. Other agencies are being arranged.

In presenting this paper it is our purpose to acquaint you with the work of the Bureau and to solicit your active support to this young and growing institution so that some day it may mean to China what the Pasteur Institute is to France. The Bureau, it is to be remembered, is established in the interest of science and public health. Only a nominal price is charged for its products or services. The confidence shown in the Bureau and its products by the medical profession has been a great stimulus to its rapid development during the last few years. A much greater future will largely depend on this professional support and increasing interest in the Bureau.

DANGEROUS DRUGS: INTERNATIONAL CONTROL.

Geneva Convention Signed.

The Second Opium Conference held its last sitting, and the International Drug Convention and Protocol were signed at Geneva, a month or two ago.

The International Drug Convention is a complement to that drawn up by the First Opium Conference. The first Convention, signed on February 10, 1925, dealt with the question of opium used for smoking and received the signatures of all the countries (except Russia and China), within whose possessions the smoking of opium is still temporarily permitted under the terms of The Hague Convention of 1912.

The second or International Drug Convention deals with measures to suppress the contraband trade in dangerous drugs. Chapters 5 and 6 contain the core of the convention, since they lay down the regulations and prescribe the machinery by which the international trade in dangerous drugs and their raw materials is to be controlled and the contraband trade suppressed. By Chapter 5 the signatories undertake that the import or export of dangerous drugs shall only be made from or to their respective countries on
the production of export or import certificates, which are to be exchanged between the respective Governments before any deal can take place. A separate article is designed to prevent leakage of dangerous drugs in the course of transit or transhipment.

Chapter 6 deals with the permanent Central Board of Control, which is to consist of eight persons to be appointed by the Council of the League of Nations, the United States, and Germany. The Board is to be independent as to technical matters, but subject to the Secretary-General of the League as regards administrative control of staff. The duty of the Board is to collect from the signatory Governments estimates of drugs required in the year following for internal consumption and within a prescribed period, full statistics of the production of the raw materials of the drugs, the amounts manufactured, stocks held, the internal consumption, the amounts of drugs confiscated, and the amounts of imports and exports. If on the basis of this information the Board concludes that excessive quantities of drugs are accumulating in any country and that there is in consequence danger of their diversion to illicit channels, it shall have the right to notify the signatory Governments and the Council of the League, and recommend that exports of drugs to that country should be suspended till a satisfactory position is reached. The Board has also the right of taking the same steps in regard to a country which is not a signatory, if there is a danger of that country becoming a centre of the illicit traffic.

The convention will not come into force until it has been ratified by ten Powers, including seven of the States who nominate the Central Board, of whom two must be permanent members of the Council of the League.

By the terms of the Protocol attached to the convention the countries which produce opium undertake so to reduce their production as within five years to satisfy an impartial commission of the League of Nations that smuggling from their territories is no longer a serious obstacle to the enforcement of the restrictions on opium smoking applied by the countries signatory to the first Convention. These countries have agreed that when the League of Nations Commission reports that this stage has been reached, they on their part will abolish entirely the practice of opium smoking within their territories within 15 years.
TREATMENT OF ANGINA PECTORIS DURING AN ATTACK

Hay, The Lancet, November 8, 1924.

In many instances the inhalation of amyl nitrite rapidly diminishes the severity of the pain and relieves the distress. This is, however, not always the case, nor, even when the pain is mitigated, is the effect persistent. If the vaso-dilators fail and the pain persists then there is no drug comparable to morphia. It should be given in sufficiently large doses to bring relief and should be combined with gr. 1/50th atropine. It is essential that the pain should be eased. In persistent angina the action of the hypodermic should be sustained by opium given as a draught. Chloral (gr. x to xv) combined with this draught is also useful, or chloral may be taken twice a day instead of the opium for a few days at a time. If the pain is agonizing and resistant to morphia, a general anaesthesia by the administration of chloroform is justifiable. In the earlier stages of the attack a rapid carminative is often most comforting. Brandy or whiskey taken only slightly diluted will often be followed by the eructation of wind and consequent relief. A strong menthol draught is often more efficient. For example:

R. Mentholis... ... ... ... ... gr. viii.
   Spts. ammon. co.... ... ... ... ... |n
   Spts. chloroformi.... ... ... ... ... aa 1 oz.,
   Tr. zingiberis .... ... ... ...

S. Two teaspoonfuls in water taken as strong as possible.

The tendency to nocturnal attacks is often obviated by a draught of nepenthe washed down with an ounce of whiskey in water before retiring.

TREATMENT FOR TAPEWORMS


During the 21 years the writer has been in charge of an 85-bed hospital in Copenhagen, he has treated 132 patients with tapeworms, which in 125 cases were due to infestation with the Taenia mediocanellata. Only in 7 cases was the Bothriocephalus latus found, and there was not a single case of infestation with Taenia solium.

Aperients are given for a couple of days. On the morning of the first day of the treatment the patient is given tea and rusks followed by egg and clear soup. Fish is given for the mid-day meal, and herring salad with onions for the evening meal. At 7 next morning the extract of flix mas (10 gm. for an adult) is given in a little wine. At 8.30 the patient is given a powder
containing 50 cgm. calomel and 2 gm. of jalap. At 10 a.m. he is given a strong infusion of senna leaves, another dose being given after an hour if necessary. The preliminary administration of aperients for 2 days is useful for two reasons: it makes the contact between the drug and the parasite more intimate, and it facilitates the search for its head in the stools.

The causes of failure, apart from severe vomiting, are inferior quality of the filix mas and unusual tenacity on the part of the parasite. To get over the first difficulty the writer gives veronal and phenacetin three evenings in succession before giving the filix mas. The quantity of each powder given on each occasion is 40 cgm. for an adult. Veronal is effective not only in the vomiting of seasickness but also in that of pregnancy, and the writer has found it very useful in aborting the vomiting due to an anthelmintic. He has found that treatments, which were abortive without veronal, were successful when repeated with it. But it is necessary to give veronal only when troublesome vomiting is anticipated as, for example, in the case of nervous and dyspeptic persons, and, above all, in children. In the period 1903-1914, the treatment of 46 cases was successful only in 30, or 66 per cent. In the period 1922-1924, when more extensive use was made of aperients and veronal before giving the extract of male fern, 40 out of 49 cases, or 82 per cent, were treated successfully, as judged by finding the head of the parasite in the stools.

**INFANT FEEDING**


The author states that the "percentage method of feeding infants" has failed under the stimulus of the Great War. As a direct consequence of the upheaval of economic conditions and existing thought, a sudden forward movement in infant feeding has been accomplished, mainly due to von Pirquet and Schick in Vienna and to Finkelstein in Berlin. It is now held that the character of the stools is not the immediate determining guide to the feeding of the infant; that many infants thrive only when they receive concentrated milk mixtures; that many infants require not less than 150 to 200 calories per kilogram of body weight, and, finally, that milk fermented with the lactic acid producing group of bacilli is more easily digested by many infants than is sweet milk.

**QUININE IN CASES OF ERYSIPELAS**

Wishart, The Lancet, November 22, 1924.

In a letter to The Lancet Wishart states that in cases of erysipelas quinine acts like a charm, the patients feeling so well
generally that their sole desire is to resume their duties irrespective of appearances. The local lesion is treated by quickly brushing over the affected area (and 1 inch beyond, if possible) an application made up of one part of tincture of iodine to seven parts of Keith’s anaesthetic ether, once daily. The general treatment consists in giving orally, every two hours, 10 grains of sulphate of quinine undissolved, 10 minims of spirit of chloroform, and ½ minim of essence of peppermint in 4 oz. of cold milk. When the temperature and pulse become normal, or nearly so, reduce the dosage to every six hours. Erysipelas is fortunately a rare disease nowadays and it is impossible to give statistics as one can do in other diseases. Nevertheless, the results obtained during the past 11 years seem to justify anyone trying the above treatment, and the author is convinced that they will not be disappointed.

CINCHONA ALKALOIDS OTHER THAN QUININE

Lane, Tropical Diseases Bulletin, November, 1924.

There is considerable evidence that the general disregard of cinchona alkaloids other than quinine is therapeutically unjustified and economically unfortunate. MacGilchrist (Indian Jour. Med. Res., 1915,) working in Calcutta from September to December, determined on 113 prisoners the weight in grammes of the various alkaloids required to produce a negative blood examination, presumably in a thin film. Dosage was at the rate of 1 gramme per 70 kilos body weight, at each of 3 doses daily, a blood film being taken at the time of every dose. For quinine, cinchonine, quinidine and cinchonidine the respective average figures were for benign tertian malaria, 4.7 gm. 5.5 gm. 5.6 gm. and for sub-tertian malaria 6.1 gm. 5.6 gm. 4.85 gm. and 4.3 gm. In this series quinine acted most rapidly upon Plasmodium vivax, cinchonidine upon P. falciparum. It would not necessarily follow that their capacity for complete disinfestation would lie in the same order.

Judging by the minimum therapeutic dose, the relative curative values for the cinchona derivatives were, without distinction of the two parasites, hydroquinine hydrochloride; next, and of practically equal value, the sulphates of cinchonine, quinine and quinidine; then in order, optochin hydrochloride (ethyl-hydrocuprein), cinchonidine sulphate, and lastly, quinoidine.

Acton holds (Lancet, June, 12, 1920, 1257-1261) that the laevo-rotatory quinine and hydroquinine are specific for P. falciparum, whilst the dextro-rotatory quinidine acts more powerfully on P. vivax. He puts the cure rate of the cinchona alkaloids for P. vivax as—quinine 20 per cent, cinchonine 40 per cent, cinchona febrifuge 50 per cent, cinchonidine and quinidine 60-
par cent, and quinoidine, o. Rogers (Brit. Med. Jour., October 26, 1918, 459-461) finds that in rabbits cinchonine is absorbed after intramuscular injection more completely than is quinine; and that in man its use is less painful and causes more rapid disappearance of plasmodia than does quinine. Bini (Policlinico Sez. Prat., 1921. xxviii. 919) advocates cinchonine. Silvestri (Policlinico. Sez. Med., 1923, xxx : 601-610) reports a few experiments in which cinchonine bihydrochloride injected intramuscularly gave less local precipitation and greater visceral accumulation of the drug than did the corresponding quinine salt, while in oral administration more of the former was excreted by the urine than of the latter. Cordes (Arch f. Schiffs-u. Trop. Hyg. 1924. xxviii. 120-123) finds cinchonine less satisfactory for subtertian malaria than quinine. Quinoidine, in opposition to the conclusion of Acton (see above), in daily doses of 6 grains (Waters, Ind. Med. Gaz., 1916, 335-338 : 437); 9 to 18 grains (Telang, Ind. Med. Gaz. 1916, li. 474-475); 12 gr. (Razzak, Ind Med. Gaz. 1917, lii. 179), is commended as equal in action to quinine. Row (Observ. on Malaria by Med. Officers of the Army and Navy, 1919) found quinoidine incapable of eradicating the parasites or preventing the relapses. The contradictory evidence suggests that quinoidine varies in composition and that some of the amorphous alkaloids are valuable, others worthless.

It is of no little economic importance that further investigation, taking cognizance of the sources of error above mentioned, should put the relative value of the cinchona alkaloids on a satisfactory footing.

ETIOLOGY OF EGYPTIAN SPLENOMEGALY AND HEPATIC CIRRHOSIS.


Chronic enlargement of the spleen associated with hepatic cirrhosis is a very common disease in Egypt, though the literature on the subject is scanty. As to its cause the author excludes alcoholism, syphilis, malaria and kala-azar. He holds the tentative opinion that the disease is of bilharzial origin. The following are his conclusions: (1) Bilharzial cirrhosis of the liver and splenomegaly is extremely prevalent in Egypt. (2) Cirrhosis is a special feature of B. mansoni infection, and is often the main lesion produced. (2) Peri-portal cirrhosis results from gross infestation of the liver; moderate infection is much commoner, and gives rise to a multilobular cirrhosis. (4) In advanced cases of multilobular cirrhosis in Egypt, the bilharzial origin is difficult to recognise, owing to the death and destruction of the ova. (5) Bilharzial disease of the pancreas often accompanies the condition.
THE VALUE OF URINARY EXAMINATION IN THE DIAGNOSIS OF MALARIA


As regards positive findings, it can at once be stated that no individual urinary test was found to have any real value as an aid in the diagnosis of malaria, one and all occurring with considerable frequency not only in diseases other than malaria, but also in the normal individual. So far, therefore, as any single test is concerned the results obtained are in accordance with the views expressed by Lane (1923) who remarks: “There emerges from all this the conclusion, old but needing as much emphasis as ever it did. In any particular case the finding of parasites is the only justification for a positive diagnosis of present malarial infection; but the failure to find them by the ordinary techniques cannot justify a confident diagnosis that malaria is certainly absent.” Investigations show, however, that a combination of urobilin and albumin in the urine, although no certain proof, is at least strong evidence in favour of malarial infection; whether such evidence is strong enough to warrant immediate treatment with quinine is a matter which can only be decided by the exigencies of the case and the opinion of the physician.

MENTAL DISEASES ASSOCIATED WITH CHILDBEARING


The author analyses 118 cases of mental diseases associated with childbearing which came under his personal observation. The cases were divided into seven groups.

The first group comprised 52 patients who suffered from manic depressive psychosis, a condition in which heredity plays a predominant rôle and which is equally frequent among men and women and may occur at any age. The occurrence of this disease in connection with the puerperium is purely coincidental. In only a comparatively few cases, as most of the labours were uneventful, can the birth be said to have been the precipitating cause of the psychosis.

II. The second group comprised 18 cases of dementia precox. This is a disease entirely independent of childbearing, although at times the onset may be precipitated by pregnancy and childbirth, particularly the catatonic form.

III. The third group comprised three cases of epileptic psychosis. These patients had suffered from epilepsy for several years. It is scarcely necessary to state that the condition has no direct connection with childbearing.

IV. In the fourth group there was one patient with alcoholic insanity of polyneuritic type. She recovered. Of course her psychosis had no causal relation to the puerperium.
V. The fifth group comprised four cases, classified as psychosis with intellectual inferiority and mental deficiency. This mental condition may be defined briefly as a transitory upset in individuals who are not of strong mental endowment, such as unstable, "near normal" individuals, and high grade mental defectives. Their mental upset is the direct result of their inability properly to adjust themselves in the face of unusual difficulties. The history shows that during the pregnancy they suffered from mental distress arising from illegitimacy of child, fear regarding the outcome of confinement, etc. Mental conditions similar to this also appear independently of childbirth, and are especially common in men, showing that they are not in any sense puerperal. All of these patients recovered from their psychosis and regained their former mental condition, namely, that of inferiority and of mental deficiency.

VI. The sixth group comprised 31 infective exhaustive cases, of which three occurred during pregnancy, five at the time of labour, and the remainder during the puerperium. This group of mental diseases has a well-defined etiology, and may be said to be clinically closely allied to delirium. It is interesting to note that the majority of these cases had psychic conflicts, such as worry, fear, domestic and economic difficulties, etc., during pregnancy. It is in this group that the puerperium has the most direct causal relation to the psychosis, inasmuch as the phenomena of childbirth directly gave rise to conditions which were etiological factors. In other words, exhaustion and infection were directly dependent on the childbirth; although this, too, is a distinct psychosis, which may occur independently of childbearing, in women as well as men.

VII. Group seven consisted of 5 cases all of whom presented a condition of mental upset which we designate under the term "transient attacks of excitement and confusion." Clinically, these cases are closely allied to the infective exhaustive group, but they, are discussed separately, for two reasons: first, because the duration of the attacks is very brief, varying from a few days to a week; second, and much the more important, these cases differ somewhat from the infective exhaustive group, in that the psychic or psychogenic factors overshadow the physical which give rise to the psychosis. All the patients in this series had, during pregnancy, been troubled with fear, worry, anxiety, and other conflicts of various sorts. These cases did not present any febrile reactions, nor was there any marked physical exhaustion, or any physical complications in connection with their labour. There was very little physical disturbance, and the content of the delusional misinterpretation was the realisation of what the patient had feared, and anxiously anticipated before the onset of the illness. This last group is specially emphasized, trivial as it may seem,
because of its comparative infrequency and its brief duration, and for the reason that it teaches us a striking lesson of the necessity of attending to the mental hygiene of the pregnant mother.

These one hundred and eighteen cases, which were carefully observed, and their subsequent course and termination followed, have shown that the old concept "puerperal insanity," has no reason for existence. In fact, the perpetuation of the term is fraught with danger to the patient, and difficulty and confusion to the physician. No such entity as puerperal insanity exists. There are a number of different psychoses which may coincidently occur at this time, which are extremely diverse as to their course, outcome, and therapeutic possibilities. If the term "puerperal insanity" is permissible at all, it should be limited to the group of the infective exhaustive psychoses, because here only is there a direct and traceable relationship to the outbreak of the psychosis.

TREATMENT OF HAEMORRHOIDS BY PITCH TAKEN INTERNALLY

Benham, The Lancet, November 8th, 1924.

In a letter to The Lancet, Benham expresses the opinion that the value of pitch as an internal remedy for hemorrhoids does not appear to be generally known. He became acquainted with the use of pitch for this purpose more than 40 years ago. Since then he has constantly employed this treatment in nearly all such cases that presented themselves to him, and the result has been almost invariably successful and the improvement so rapid that, as a rule, troublesome symptoms have disappeared in a week or ten days. As far as he knows, relapses and recurrences have not taken place and very few patients, if any, have required an operation afterwards. He is accustomed to prescribe pitch, i.e. *Pix liquida* (Stockholm tar) with an equal weight of powdered liquorice in 5-gr. pills, three or more to be taken daily. In Meadow's "Prescriber's Companion," (1886) it is said that capsules of *Pix liquida* are used extensively on the continent of Europe for haemorrhoids and cystitis. Seafaring men say that Stockholm tar is often employed as a local application for piles. He adds that cold water and glycerine are much more useful and pleasant for local application than the standard Ung. Gallae c. Ópio.

USE OF PLASTER OF PARIS IN TREATMENT OF FRACTURE,

Firor, Johns Hopkins Hospital Bulletin. December, 1924.

The records of all the patients treated in the Johns Hopkins Hospital for recent fractures of the shaft of the femur have been reviewed by the author. There have been five methods of treatment employed for these patients: (1) Buck's extension; (2) overhead extension; (3) open reduction; (4) early immobilization
in plaster; (5) immediate immobilization in plaster. The transition from one method to the other is described. The results obtained by the different methods of treatment are compared. The average stay in the hospital of the patients treated by the various methods is tabulated. It appears that immediate immobilization in plaster of fractures of the shaft of the femur does not give satisfactory results in patients over 14 years of age; whereas in patients between 7 and 14 years the method gives good results, and in children under 7 years, this method gives results which are as good as those obtained by overhead traction. By the use of a method described as early immobilization in plaster, the period of residence in the hospital was greatly reduced.

TREATMENT OF WHOOPING COUGH.

The author describes the following therapeutical experiment, which illustrates the inefficacy of the various methods recommended for the treatment of whooping cough. Twins, aged 8 months, were admitted to hospital with severe pertussis on the sixteenth day after the beginning of the cough, and on about the fourth day of the paroxysmal stage. The number of attacks during the first two days was fifty-five and fifty-seven in one; and fifty-six and fifty-five in the other. The children were then put in separate rooms so as to eliminate the action of suggestion, and one twin was given no drugs at all, while the other was subjected to the following treatment: (1) sodium bromide 3 grams per diem, combined with luminal 0.1 gram per diem, for four days. The number of attacks was reduced by about half, while only a moderate diminution occurred in the control child. Somnolence, however, and diffuse bronchitis with a slight rise of temperature ensued, so that the treatment had to be discontinued. (2) Injections of 1 c.cm. ether on two consecutive days, but without the slightest effect. (3) Quinine hydrochloride, 0.2 gram per diem, but without any influence on the number and intensity of the attacks. (4) Parenteral protein therapy in the form of intramuscular injection of 3 c.cm. skim milk. A distinct febrile reaction ensued, but no improvement resulted. (5) Antipyrin 0.2 gram per diem was then given for three days, also without obvious effect. The number of attacks had now fallen below twenty daily, but in the untreated child they were considerably less. (6) Codeine hydrochloride 0.01 gram, was given without even transient improvement. On discharge from hospital at their mother's request after seventeen days' stay, both twins still had about ten attacks daily, the violence and duration of each attack being about the same as on admission. The untreated child, however, showed a distinct advantage over his brother both as regards the number and the intensity of the attacks.

The scope of bacteriology now covers a field which is so very wide that the ordinary laboratory worker finds considerable difficulty in utilising the large textbooks on the subject for his direct guidance in practical work. It has been the aim of the authors of this manual to set forth concisely for the use of students the essential methods and data relating to practical bacteriology and bacteriological diagnosis. It is intended that the manual should be used in a laboratory course in which the various apparatus, microscopic appearances, cultural characters, bio-chemical and serological reactions are all adequately demonstrated. With the exception of a few diagrams required to facilitate description, illustrations are omitted. Only the important methods used in bacteriological diagnosis which have been found by experience to be the most serviceable are recommended. Due attention has been paid to the diagnosis of tropical infections. The authors, who are engaged in the teaching of medical students in the University of Edinburgh, have produced a book which can be confidently recommended as a trustworthy guide in practical bacteriology to students and practitioners of medicine.

English-Chinese Medical Lexicon.—By Philip B. Cousland, M.B., C.M., O.E.C., Fifth edition — With the assistance of Teh Ching-leo. Thoroughly revised in accordance with the new official terminology. Publication Committee, China Medical Missionary Association, Shanghai, 1924.

An immense amount of time and labour must have been spent on the compilation of this dictionary, not to speak of the linguistic learning required. To translate English scientific terms into French, German, or any other language of the West is comparatively easy, for the equivalents of the terms are already in existence. In the Chinese language, as Western medical science is new to China, this is not the case. Terms have to be formed or coined and this requires great care and learning. The present Lexicon shows the admirable work which has been accomplished. Of course there is still much to be done before there will be a perfect medical terminology in the Chinese language. It was hoped that the Joint Committee on Medical Terminology for China which, by the cooperation of various educational and medical societies, has now been enlarged to form the General Committee on Scientific Terminology, would by this time have worked out a clear and scientific set of terms avoiding all Western errors, medieval and recent. But the majority of the members were not prepared for this step and preferred in most cases to follow the Japanese example in simply translating the Western terms whether they were good, bad, or indifferent. Nevertheless, it is a great advance to have a standard official terminology, as contained in this Lexicon, and it is of the utmost importance that all medical teachers and translators should proceed to use it, however irksome the change may be. Dr. Cousland and those who have worked with him, Dr. Teh Ching-leo and Dr. P. L. McAll, deserve the thanks of the medical profession in China for their painstaking and accurate work. The Lexicon is well and clearly printed; it is a credit to the Presbyterian Mission Press.
A Descriptive Atlas of Radiographs of the Bones and Joints.—For
Students and Practitioners. By A. P. Bertwistle, M. B., Ch. B., Price
17/6 net. Publishers: John Wright and Sons, Ltd., Bristol; Simpkin,

The object of this atlas is to provide students and practitioners with a
handy book of reference for the interpretation of the radiographs which are
becoming increasingly more useful for accurate diagnosis. The first part
contains plates of the normal bones and epiphyses, and these are arranged
on the left side of the volume; the pathological conditions appear on the
right hand page, so that they can be more readily compared.

A simple, but very valuable improvement has been made by the
author which adds greatly to the clinical value of X-ray prints. The some­
what unsatisfactory way in which ordinary X-ray prints are made use of in
text-books, and in the compiling of clinical records, has led him to evolve
the “silhouette radiograph”, which at once combines the properties of a
radiograph with those of a silhouette. The ordinary radiographic print is a
shadow photograph of bone; the silhouette makes plain also the contour of
the limb or other soft parts visible in the negative.

The method of preparing the silhouette is extremely simple. The
negative is held up to the light, or better, placed in an illuminator, and the
fleshy contour, which is always apparent on the negative, is carefully
scratched with a mounted needle. The print now made reveals the outline
of the part as a black line. The background is then filled in with Indian
ink, completing the silhouette radiograph. In the case of films, both sides
of the negative require to be scratched, and often reflected light is necessary,
as it may be, on rare occasions, with plates.

The process is necessitated by the inability of printing paper, especially
bromide—which is the one almost universally used—to indicate a structure
whose density is so slight as is that of the skin without giving an exposure
so long that the bony definition is sacrificed.

These pictures have an added value as they can be sent to the practi­
tioner when the negatives cannot be sent for fear of breakage in transit.
From the pictorial point of view the addition of the black background
enhances the bony definition, and gives the print a more complete appearance.
Moreover, a clean-cut silhouette often shows more than a photograph, so
that the latter can often be dispensed with. In short, the addition of the
silhouette imparts a much needed reality to the radiograph without interfer­
ing with the best possible bony definition.

No less than 300 excellent radiographs are given, many of them show­
ing the author’s improvement. All hospital radiologists should certainly
possess this handsome atlas.

Compend of Genito-Urinary Diseases and Syphilis.—Including their
Surgery and Treatment. By Charles S. Hirsch, M.D. Fourth edition,

Intended mainly for students, this compend presents a systematic
description of the genito-urinary diseases in a terse and clear manner, the
information given being trustworthy and practical. It has been revised with
a view of including every noteworthy improvement in the field of urology
and syphilology. Due attention has been paid to the description of
different operations upon the urogenital tract and the various pre-operative
studies and treatment. The compend is recommended to students
preparing for examination and to physicians who wish to make a rapid
review of their knowledge of this subject.
Manual of Bacteriological Methods.—Issued by the Department of Pathology, Peking Union Medical College, Peking, China, 1925. Publishers: Peking Leader Press, Peking, China.

This little manual of about forty pages on bacteriological methods has been compiled for the use of the students in bacteriology at the Peking Union Medical College, Peking. It opens with general directions for working in the laboratory and a few words on the use of the microscope; then describes the microscopical examination of material for bacteria, the stains most commonly used, the preparation of glassware, the media for the cultivation of bacteria, various tests, and the bacteriological examination of milk and of water. Only the media which the authors have found to be of practical value are included. Students will find this manual very helpful. It can be obtained from the Students Store Supply of the P.U.M.C. at the cost of 60 cents a copy, Peking currency.

JOURNALS, PAMPHLETS AND REPRINTS.

Medical Schools of the World.—Issued by the Division of Medical Education, The Rockefeller Foundation, 61, Broadway, New York, U. S. A. 1924.

A list, as complete as possible, of the recognized medical schools of all countries. It may surprise some readers to learn that China has twenty-four medical schools.

Morphia and Narcotic Drugs in China.—Bulletin Vol. V. No. 1. February, 1925. An Immanent Menace. Published by The International Anti-Opium Association, Peking.

"This Bulletin is issued with the sole object of giving publicity to the narcotic conditions in China. There is ample evidence that morphia addiction is rapidly increasing, and unless China can be protected from foreign narcotics it is highly probable that in a few years morphia and not opium will be her curse. There is some hope of saving the opium smoker but practically none for the morphia and heroin addict, of whom there are scores of thousands in China. If China cannot be protected against narcotic drugs, would it not be wiser for her to retain her opium? Time will answer it!"

The Value of the Study of Mitochondria in Cellular Pathology.—Dr. E. V. Cowdry, Rockefeller Institute, New York. Reprinted from The American Naturalist, Vol. LVIII, March-April, 1924.


Inclusion Bodies in Experimental Herpetic Infection of Rabbits.—


Silicosis is not an uncommon disease among the miners of South Africa and it is not always easy to distinguish a simple silicosis from tuberculo-silicosis, or the presence of a tertiary syphilitic lesion or lesions in the silicotic lung. This pamphlet reviews the essential points in the diagnosis of silicosis.

Publications of the South African Institute for Medical Research.—
Edited by W. Watkins-Pitchford, M.D., (Lond.) No. XVIII. An Investigation into the Significance of Localized and more or less Persistent Rales in the Marginal Areas of the Lungs of Apparently Healthy Natives. By W. Watkins-Pitchford, M. D. (Lond.); F.R.C.S. (Eng.); D.P.H., and Peter Allan, M. D. (Edin.); D.P.H. Published by The South African Institute for Medical Research, P.O. Box 1038, Johannesburg. March 20, 1924. Price 5 /—

During 1921 and 1922, a survey of the Union of South Africa was undertaken by the Union Department of Public Health, with a view to gaining definite information concerning the incidence and clinical varieties of tuberculosis among the different native races in the Union. In the course of these investigations the fact was disclosed that a considerable number (3.5 per cent) of natives recruited for labour in the gold mines is rejected for underground work, on account of a condition termed “Defective Lungs”. This term has long been employed in this connection, and enquiry showed that, in the great majority of instances, it implied a condition in which rales, usually finely crepitant in character, are detectable in the marginal areas of the lungs of apparently healthy natives who seem to be free from all other physical signs of disease. This condition forms the subject of the present report, and, for the sake of brevity, is referred to as “marginal rales.”


Two lectures on the application of free thought to the problems of sexual health and birth control which are marred by their great bitterness against the Christian religion and those who profess it, and by the strong conviction of the lecturer that she is wholly in the right, and of course all who disagree with her are wholly in the wrong. “The unorthodox free-thinking idealists are necessarily more honest intellectually than the orthodox authority-serving Christians, and they are more moral because their milk of human kindness is not curdled by the venom of cruel piety.” To say that conservative religious people are either “abyssmally ignorant,” or “mentally defective,” is not the way to change their opinions and gain their support, if such support is worth gaining. The foreword is more restrained.
Circular Letter to the Members of the Far Eastern Association of Tropical Medicine.

Weitevreden, March, 1925.

Dear Sir,

In accordance with Chapter 4, Section 3 of the By-Laws of our Constitution I have the pleasure of informing you that the Vth Congress of our Association will be held in Tokyo from the 18th of October until the 7th of November, 1925.

The first week of these three will be devoted to the scientific conference, the rest of the time will be taken up by excursions to places as Nikko, Hakone, Kyoto and Nara.

I cordially invite you to attend this Congress and to send in a paper or if possible more than one.

For those who for some reason will not be able to do the first I draw the attention to the fact that their not being able to attend the Congress need not prevent them from sending in their scientific research work because the Council will have their papers read at the Conference by a representative.

I sincerely request you to send in the title of your paper(s) and an abstract of your contribution(s) in time to reach me before the end of April, or the Local Secretary for Japan, Dr. S. Hata, before the end of May.

I am certain that the members who attended our last Congress at Singapore will agree that it has been a great success. I am also certain that the members who have not, will have received the Transactions of that Congress with the greatest interest and that the Transactions of our Congresses increase the value of any medical Library, private or otherwise.

You may be assured that our Japanese hosts will do their utmost to make our next meeting, if possible, more successful than the previous.

I, therefore, think that each of us should try to assist them as much as possible to attain that end.

In this connection I take the liberty of reminding you that one of the objects of our Association is the union of the medical profession of the Far East into one compact organization. It is therefore not only necessary to become a member for one session, but to remain a member for as lengthy a period as interest is taken in the Tropical Medicine of the Far East.

It is not only necessary to become a permanent member of the F.E.A.T.M. oneself, it is also necessary to have one's colleagues join the Association in case that they take an interest in the international intercourse between scientific men.

And even that is not sufficient. Besides becoming a permanent member personally one should enrich the library of the scientific body or institution with which one is connected, by having it become a permanent member of the Association.

I wish to point out to you that only in this way the F.E.A.T.M. can become what it ought to become, namely the one big organization of medical men, interested in the public welfare of the Far East, not only of those who are able to devote themselves solely or largely to scientific research work but also of those who want to keep in touch with what is going on in this respect in their own and in the surrounding countries of the Far East.

I sincerely hope that with the cooperation of every member of our Association we may be able to advance towards the objects for which the Far Eastern Association of Tropical Medicine was formed.

I remain,

Yours very faithfully,
O. Deggeller.
NEWS AND COMMENT.

BIRTHS

BRYAN-BROWN.—On December 2nd, 1924, at the Mosse Memorial Hospital, Tatungfu, Shansi, North China, Edith, wife of Dr. D. S. Bryan-Brown, of a son.

FRAZIER.—At Peking, on Thursday, March 5th, 1925, to Dr. and Mrs. Chester N. Frazier, a son (Philip North).

UNION MEDICAL COLLEGE, PEKING.—A recent census taken of the graduates of the former Union Medical College in Peking shows that, out of a total of 136 graduates, 59 (39%) are in mission work, 32, (or 23 per cent.) are in government posts, while those engaged in private practice number 37, or 27 per cent. A noticeable number of graduates now engaged in private work have left government or mission positions within recent years to develop their own medical practice, which tends to indicate that the field for such practice in China is gradually becoming wider.

STRENGTH OF MEDICAL MISSIONS.—The missionary societies have 1,157 qualified physicians from Western lands at work. Of these doctors, 356 are women. In addition there are 612 graduate physicians (99 women) who are nationals of the countries where the medical mission work is carried on. Foreign nurses number 1,007, while there are 2,597 trained native male hospital assistants and 2,861 women assistants. Mission hospitals now number 858 with 31,264 beds; dispensaries number 1,686. Total individual patients numbered 4,788,258 for the last year reported. Medical work carried on in Asia (China leading, with India second) exceeded that in all other continental and island areas put together.

SHANTUNG ROAD HOSPITAL, SHANGHAI.—A strong appeal to the Shanghai Municipal Council to make a greatly increased annual grant towards the maintenance of the Shantung Road Hospital was made by Mr. J. T. Pratt, H. M. Consul General, at the annual meeting of the Institution on March 9th, 1925. The report of the Hospital will be reviewed later.

TAXATION OF MISSION HOSPITAL.—A deputy for Foreign Affairs in Wuchow, has decided to reclaim the site now being occupied by the Stout Memorial Hospital (Drs. Leavell and Beddoc) of the Baptist Mission at Wuchow, on the ground that it was a Government property illegally transferred to the Mission by a Mr. Chen Tai-lung. By a ruling of the Civil Governor of Canton, properties held by several charitable institutions which have long been exempt from government taxation, because of their nature, henceforth will be treated like corporation property and subjected to taxation. This new ruling will be strongly protested against by the organizations, who claim they are performing services which should be performed by the Chinese authorities.

HANGCHOW MEDICAL COLLEGE.—On February 18th, 1925, in the presence of many Chinese and foreign dignitaries, diplomas were presented by Dr. Duncan D. Main to seven graduates. This was the ninth annual ceremony in connection with the conferring of degrees.

GRADUATE COURSES: P.U.M.C.—During 1925 the type of intensive course for graduate physicians which has been given in previous years by the Departments of Medicine and Surgery will not be scheduled, but adequate provision
News and Comment.

is being made for qualified graduate students who can arrange a period of study in the College during the academic year. In the Department of Surgery a limited number of graduate students can be accepted during the summer, also as voluntary assistants under the direction of Dr. Mont Reid, Visiting Professor of Surgery. In the Department of Medicine, the visit of Dr. A. E. Cohn during the third trimester of this year, gives special opportunities in the study of the diagnosis and treatment of heart disease. The Department of Obstetrics and Gynecology is planning to offer instruction to a graduate class for a period of three weeks from August 31 to September 19, 1925. Additional details concerning graduate study in these and other departments of the College can be obtained from the Departments concerned or from the Registrar's office. Brief printed statements have recently been despatched to the several hundred physicians on our mailing list.

**British Pharmacopoeia in Chinese.**—A subcommittee of the British Chamber of Commerce, Shanghai, has been active during the past year on a translation of the British Pharmacopoeia into Chinese. The work, which is now nearing completion, was undertaken under the joint auspices of the Shanghai Chamber and the London Chamber, whose members have subscribed towards the expenses of production, and the book is to be the joint property of these Chambers.

**Marriage Certificate of Health.**—In America, Louisiana has joined the ranks of States requiring a physical examination and a clean bill of health as a pre-requisite to the issuance of a marriage license. At the last session of the legislature, the law-makers passed the Ducros Bill making it compulsory for any male applying for a marriage license to obtain from a licensed physician a certificate showing that he is free from venereal or other constitutional disease.

One State requires the prospective groom only to state that he is free from disease. Another stipulates that a certificate of health is necessary only when the applicant has been previously infected with a venereal disease, while the laws of a few States are identical with the Ducros Bill. North Carolina, Oklahoma, Pennsylvania, Indiana, Michigan, Oregon, Alabama and Utah are among the States requiring a physical examination of the male and a certificate of health precedent to the securing of a license to marry.

**Weihwei Hospital, Honan.**—The year's work affords great encouragement in several directions. The receipts from Chinese sources have been more than was anticipated for the first year. The hospital has made an appeal to the community greater than was expected. Many of the most prominent people of the city have been among the patients, and have expressed their gratitude for the care they received. There is confidence that each year they will assume a larger responsibility for maintenance of the hospital. The Christian work has been far-reaching, and has given fresh evidence of the value of medical work as an evangelizing agency.

**English Baptist Missionary Society.**—Dr. Henry George Wyatt, M.B., B.S., M.R.C.S., L.R.C.P., son of the Rev. Henry Wyatt, of Bratton, Wilts, was accepted at the January Committee for service in China, and has already sailed. During the war Dr. Wyatt served in France and Italy as a private in the R.A.M.C., and it was at this time that he definitely resolved to seek service as a Medical Missionary. He trained at the London Hospital, and was a highly successful worker among boys at Cross Street, Islington.
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