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By The Secretaries.

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**To the Members of the Independent Medical
Profession of Madras.**

I have been asked to give you a message on my departure from Madras. There is only one piece of advice that I am justified in giving, that is to aim at the **UNITY** of the Whole Medical Profession of Madras and at the raising of professional standards in every possible way.

The Medical Men of Madras are admitted by all to be equal if not superior to those of other Provinces of India. but they have, unfortunately, been disunited in the past and for this reason they have suffered in the estimation of the Public.

I wish the members of the Independent Medical Profession of Madras **SUCCESS** and **PROSPERITY**. I have tried to promote their interests just as much as those of the members of the Medical Department, believing as I do that the interests of each section of the profession are the interests of all.

J. W. D. MEGAW.



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"LABORATORY METHODS OF DIAGNOSIS—THEIR VALUE, LIMITATIONS AND CLINICAL APPLICATIONS IN GENERAL MEDICAL PRACTICE"*

By Dr. P. Murugesan

*(Bacteriologist and Clinical Pathologist,
494, Mint Street, Park-Town,
Madras).*

As every one of you might know, the Laboratory method of diagnosis serves only as an aid to the clinician. It is only occasional that the physicians resort to Laboratory aid in their daily practice. They do so when they want for their own satisfaction to get their clinical investigations confirmed by a Laboratory test, or when they are confronted with a difficulty to arrive at a definite conclusion as regards any diagnosis with the clinical evidences before them; or if any of their patients desires to know whether the treatment given to him is radical and thorough such as in the case of antisyphilitic treatment where one wishes to know whether the Wassermann's reaction of the blood serum after a course of treatment is negative or not. Again in stimulating diseases such as the Enteric fever or the Typhoid form of Kala Azar when the physician wants to exclude one or the other by a serological test, there is a necessity of going in for

a blood test. Now-a-days in cases of malarial infection hardly any physician seeks the laboratory help except when he wants to exclude it in clinically suspected cases of typhoid fever, kala azar or pulmonary tuberculosis and suppurative affections, etc. But very often occasion arises to seek the laboratory help in cases of lung affections for the detection of T. B. in the sputum in clinically suspected cases of tuberculosis of the lungs.

In my opinion a laboratory intended for medical diagnosis serves a most useful purpose in not only maintaining the reputation of a physician but also very often saves a patient from falling a victim to the evils of erroneous diagnosis which is likely to occur in certain instances in spite of great care. Whenever clinical evidences are obscure for a correct diagnosis, it is most advisable both in the interest of the physician and the patient to get the diagnosis already arrived at by clinical evidences, confirmed or excluded by a laboratory test such as the case may require. I know of instances where it so happened in hospital and private practice in spite of great care that cases that were being treated for Typhoid fever for a fairly long period say a month or 40 days were later on proved to be after all cases of early Kala Azar by serum tests. Therefore in such cases of suspected typhoid fever not exhibiting clear clinical evidences (*i.e.*, atypical forms) and also in clinically confirmed cases of typhoid fever, it is most desirable, I

* Read at a Clinical Meeting of the South Indian Medical Union, Madras.

think, to have the widal reaction done on the blood serum of such cases and the clinical diagnosis confirmed as a rule before proceeding with the routine treatment.

Apart from the valuable aid rendered by the laboratory in diagnosis, a physician could also utilize it as a guide to judge whether a certain line of treatment adopted by him in a certain case is doing good to the patient, or not, in checking the disease such as in cases of antisyphilitic treatment, in the treatment of diabetes mellitus and tuberculosis of the lungs, etc., where a clinician may not be able to gauge the results of the treatment by way of clinical signs only—I mean while aiming at a radical cure.

I cite another valuable help rendered by the laboratory in diagnosis. Specimens of fæces are sent to the laboratory often on the suspicion of Ankylostomiasis for the detection of the ova of the worms. While searching for the ova under the microscope, cysts of *amœba histolytica* are seen instead of the ova of worms. But for the microscopic examination, such cases often go undiagnosed since chronic amœbiasis presents various clinical manifestations mostly perplexing to the physician.

Again laboratory help is really indispensable in the diagnosis and differentiation of anæmias primary and secondary; and to differentiate malarial enlargement of the spleen from leukæmic spleen, etc.

Now coming to the limitations of laboratory methods in practice.—In certain cases the laboratory will be the last thing to be resorted to and at times even useless to think of as an aid to diagnosis, e.g., In cases of pulmonary Tuberculosis in its early stages if the physician could only depend upon

the negative report of a microscopic examination of sputum for T. B. and exclude tubercular infection on the strength of such findings as all in all, he will be doing harm to the patient. Similarly absence of malarial parasites or L. D. bodies in a few fields of a blood film under the microscope or at times even in a few slides of blood films examined, especially in the case of kala azar, does neither exclude chronic malaria nor kala azar altogether. To be satisfied with a blood film examination and rely on a negative report in the diagnosis of kala azar is utterly useless. A physician might do better by confining to his clinical data for the diagnosis than to resort to such film examination in kala azar or Chronic malaria.

Similarly, in the face of definite clinical evidences and a history of infection, a negative Wassermann's reaction report of a laboratory on the blood serum of a patient is greatly disputed and might be ignored. Better give your patient the benefit of your clinical doubts than to rely on such a reaction whether it arises from a wrong technique in the laboratory or as the usual fallacy of the reaction itself. But, on the other hand, a positive report of W. R. on the blood serum of a patient even with the denial of a history of exposure to infection, and in the presence of certain clinical signs suggestive of syphilis is really valuable as a guide to diagnosis and might be relied on and the treatment be proceeded with.

Again when more than one laboratory test are available in the laboratory diagnosis of a certain disease, the physician has every right or at least he should insist on the application of all the available tests before reporting on the results of the laboratory investigations, especially in the case of serological tests. If one of the tests available is applied in a certain case and is

negative, the other available tests for the diagnosis of same disease are to be applied before the laboratory report is concluded by the bacteriologist, *i.e.*, the results of all the tests are to be taken into consideration before arriving at the positive (+), negative (—) or a doubtful ($\frac{+}{-}$) nature of the reactions is made out, *e.g.*, in the case of serological tests for the diagnosis of kala azar there are three laboratory tests, *viz.*, the Aldehyde Test (Napier), the Precipitation (Globulin) test (Brahmachari) and the Ureastibamine test (Chopra). These tests are all based upon a *specific Globulin precipitation* and they behave differently with the different stages of the disease.

The Laboratory Bacteriologist who, already labouring under the difficulty of not being provided with the history of the case, the specimen of which is sent for the test, will not be able to guess the stage of the disease so as to apply the required test; hence a history of the case is necessary for laboratory diagnosis. The Aldehyde test for kala azar is not always positive in the very early stage of the disease. I have seen pucca cases of early kala azar proved negative by Aldehyde test had shown strongly positive (+ +) reaction with the other two tests, *viz.*, Brahmachari's and Chopra's. These are no doubt early cases and proved to be so by specific treatment and subsequent cure. If a detailed history of the case is available and the stage of the disease could be known the required test might be applied straightaway which could have saved much time and labour. If only Aldehyde test was done in a case of early kala azar and a negative report obtained; and if the clinical diagnosis is set aside by the physician on the strength of this report both the bacteriologist and the physician would have committed a great blunder and harmed the patient.

The recent introduction of biochemical tests into the laboratories in India has brought the general practitioner in closer touch with the laboratories and I think it might be possible in the long run to make the laboratory aid more frequently resorted to than ever before as the biochemist advances in his discoveries of quicker, less complicated and above all cheaper methods of laboratory diagnosis, as Napier's Aldehyde test and Chopra's Ureastibamine test for the diagnosis of early kala azar and Kahn's precipitation test for syphilis. Tests like these not only rendered it possible to diagnose the disease quicker but also at a moderate cost for our patients. These tests are so simple that they might be carried on in every headquarter hospital and in some cases at the bed side of the patient as the reagents and appliances required are either a chemical or reagent like "an antigen" and few test tubes, etc., easily procurable. Besides such advantages these new biochemical tests have increased largely the scope of their application in a large number of cases by a larger number of practitioners, considering the cheapness and the quickness with which the tests are finished. We owe a great deal to the biochemist for such advances made in the serological diagnostic tests and we hope for further discoveries of the kind.

The practical application of microscopic methods of Laboratory Diagnosis to clinical medicine.—Microscopic examination of blood films for the detection of parasites in acute malaria and the study of the characteristic blood pictures under the microscope, peculiar to certain diseases are of immense value to the physician. A routine examination of blood films in all cases of fever and a study of the blood picture in a number of diseases like chronic malaria, pneumonia, tropical abscess of the liver, other inflammatory and suppurative affections, meningitis, septicæmia, endocarditis, measles, chronic

tuberculosis, etc., etc., each of which presenting certain specific changes in the leucocytes, the morphology of R.B.C's and similar changes, are really of great value in the diagnosis and also in the prognosis and in judging the course of certain diseases. In the absence of malarial parasites in the peripheral blood after quinine administration or in chronic malaria, the characteristic blood changes (a picture as it is called) consequent on the infection serves as a useful guide in the diagnosis of malarial infection.

Again in hospitals and in private medical institutions where there are no facilities for Widal (agglutination) test for the diagnosis of typhoid fever, if only a high power microscope is available, a close study of the blood picture during the first and second weeks of the illness is really of great value in confirming the clinical diagnosis.

The practical application of the serological tests like the compliment fixation reaction, the gellification and precipitation tests and the agglutination reaction will be discussed in the second section of the paper in connection with the sero-diagnosis of syphilis, kala azar and typhoid fever.

II

KALA AZAR.

I give here a regular history of the development of the diagnostic methods from the beginning of our scientific investigation of kala azar. For some years before Col. Donovan discovered the Leishman *donovan* bodies in the peripheral blood of kala azar the laboratory methods of confirming clinically suspected cases of Kala Azar were:—

I. (1) *Blood pictures*.—A differential Leucocyte count showing a marked polymorphonuclear leukopenia and a large Mononuclear increase, with

occasional eosinophilia. Presence of Endothelial cells and fragility of large monos, etc. (eosinophilia was attributed to the ankylostomiasis or other helminthic infections often associated with kala azar cases).

(2) An absolute W. B. C. count showing nearly always 3000 to 4000 W. B. C.'s per c. m. m. of blood.

(3) A fairly high hæmoglobin estimation unlike in malaria.

(4) Increased time of the coagulability of the blood.

(5) Diminished alkalinity of the blood.

II. *Microscopic*.—Since the discovery of the parasites in peripheral blood, we were going on with this laborious method of detecting the parasites. *We had to hunt slide after slide* to find a parasite and that with negative results in most cases except in cases with inflammatory complications, when the Leucocytosis produced by the inflammatory processes, enabled us to come across a larger number of leucocytes in peripheral blood and thus increased our chances to detect the parasites.

III. *Spleen puncture*.—When the method of microscopic examination of peripheral blood was a tiresome one and was not of much use to the physicians, the *spleen puncture* was resorted to, which, owing to the unnecessary fear of hæmorrhage created in the minds of the junior practitioners was limited only to selected inpatient cases in selected institutions and by selected specialists. I said 'unnecessary fear,' for the spleen puncture diagnosis was of late a routine method in the outdoor department of the Calcutta Tropical school by Dr. Napier prior to the discovery of his Aldehyde test, without any untoward results.

IV. *Culture*.—When spleen puncture smears failed to show parasites in clinically suspected cases, *culture method* of diagnosis on the special blood agar media (the N. N. N. media and Row's media) was adopted. Unfortunately this method of diagnosis was not possible to be done in ordinary hospitals except with the help of a protozoologist or at least a man with laboratory experience of growing the parasites and so was limited to big institutions.

V. *Globulin Test*.—Later Dr. *Brahmachari* published his discovery of the *specific Globulin precipitation test* wherein by the addition of Kala Azar serum to distilled water the specific globulin precipitated. This was of some service to a large number of practitioners in the diagnosis of Kala Azar. This is a characteristic precipitation forming an opaque colloidal solution in distilled water and gross particles of globulin sticking to the sides of the test tube and the bottom of the tube. This again was found to possess certain fallacies. As Globulin precipitation occurred in certain other febrile conditions such as severe typhoid infections, etc., it was not considered to be a specific test.

VI. *Formol Gel test*.—Then came the "*Formol Gel*" test to replace the Globulin precipitation test. This is a simple test and consists in putting a drop of clear suspected serum on a dry slide and gently inverting it over a watch glass containing commercial formalin or directly on to the mouth of the bottle containing the formalin so as to put the drop hanging at the centre of the mouth, without touching its edges, when immediate gellification of the serum takes place with varying degree of opacity due to the precipitation according to the stage of the disease.

VII. *Aldehyde test*.—Later on came the *Aldehyde test of Napier*. This

was after the model of Gate and Papagasta's gellification test for syphilis, viz., the addition of a fairly big drop of commercial (40%) formalin to about 1 or 1.5 c. c. of clear blood serum of a suspected case of kala azar. A positive reaction is indicated by quick precipitation and a simultaneous gellification binding the precipitate thus formed and the serum tested in converted into an opaque gelly like mass. The degree of reaction, viz., the gellification and precipitation depending upon the stage of the disease. The serum remaining unaltered in negative cases. The positive reactions are noted by signs \pm , +, ++, +++ and ++++ according to the intensity of the reaction. The time taken for the complete gellification and precipitation is also of importance because in early cases and in Kala Azar of children generally the reaction is not manifest before 24 hours. This test was not of much use in early and very early cases.

VIII. *Ureastibamine test*.—Very recently *Chopra's Ureastibamine* test was introduced and it is a more reliable test in early and very early cases of kala azar. This test consists in gently adding a solution of ureastibamine to the serum to be tested, preferably to 1-5 or 1-10° dilution of the serum in saline. Positive reactions are indicated by a cloudy precipitate at the junction of the two fluids. This test has one difficulty. Some experience and skill of observation are required, for, in non-kala azar cases especially in prolonged febrile conditions like typhoid fever, a certain amount of precipitation takes place, but by experience we can exclude it. In kala azar we get a cloudy precipitate while the other is a flocculent fine precipitate. The precaution being that on no account is an undiluted serum to be used in the test. *Summing up* the results and observations we will find in the *Chopra's* and *Brahmachari's* precipitation tests useful guides for the

detection of the disease early even within a month of the illness while the Aldehyde test is reliable in fairly advanced cases of more than three or four months duration.

In the typhoid form of kala azar a weak (+) Chopra's and Brahmachari's tests will be of great service in the diagnosis of kala azar early, especially when a negative Widal's reaction for B. Typhosus is also obtained in such cases.

As the cases of kala azar referred to in private practice are invariably early or very early ones; I find it expedient to carry on all the three tests in every case before reporting. On the investigations of the serum, which I term the A. B. C. test for kala azar (A. for Aldehyde test, B. for Brahmachari's and C. Chopra's), I sum up the results obtained in the three tests and then report on the case. This way I have been able to pronounce my results very accurately in my laboratory practice. A number of clinically atypical typhoid cases were proved to be early kala azar by serum tests.

In fact all these reactions consist in the detection of a specific Globulin in the serum of kala azar. In one case we throw it down in distilled water, in another we bind it into an opaque jelly and in the third we accelerate the precipitation and float it on the top of a fluid.

A few specimens of the results obtained by the three serological tests for Kala Azar in varying stages of the disease are given here so as to present a picture reading :—

Case I.—*Very early case of K. A.*

Test 'A' = —
Test 'B' = +
Test 'C' = +

Case II.—*Early case.*

Test 'A' = +
Test 'B' = +
Test 'C' = ++

Case III.—*Fairly advanced case*

Test 'A' = +
Test 'B' = ++
Test 'C' = ++

Case IV.—*Moderately advanced case.*

Test 'A' = ++
Test 'B' = ++
Test 'C' = +++

Case V.—*Very well advanced case with complications.*

Test 'A' = +++
Test 'B' = +++
Test 'C' = ++++

(A. Aldehyde test. B. Brahmachari's 'precipitation test. C. Chopra's ureastibamine test.)

If only a systematic serological test be carried on in cases of repeated attacks of fever that are quinine resistant with enlargement of spleen, in cases of fever of unknown origin and in mild, ambulatory or atypical forms of typhoid-like cases before treating them in our daily practice, we could, I am sure detect and fish out a number of early and very early cases of kala azar among such patients.

III

SEROLOGICAL METHODS OF DIAGNOSIS IN SYPHILIS.

Noguchi's modification of Wassermann Reaction.—As already pointed out a negative W. R. is not undisputed while a positive W. R. is a strong presumptive evidence of syphilis and an absolute indication for antisyphilitic treatment. But a negative reaction is indeed of great value as a guide after treatment in cases which showed a positive reaction before treatment.

If in cases clinically suspected to be syphilis, a negative reaction is reported from a laboratory at one examination it is advisable that the blood should be examined at a later interval before the treatment is decided upon, for, in certain instances in spite of great care on the part of the laboratory worker, it so happened that subsequent examination proved positive.

Modification of Noguchi's test.—

This is an innovation devised by me at the Coonoor Pasteur Institute in 1915-16. It consists in substituting the human corpuscles suspension from an altogether different and apparently healthy individual for corpuscles from the patient's blood itself. All that is required is to draw an extra quantity of blood from the patient whose blood is to be tested a portion of which being utilized for preparing the corpuscle suspension and a portion for the serum for the test. This is strictly speaking a simplification of the Noguchi's test and the test is possible where anti-human hæmolytic serum is adopted in the procedure.

Kahn's precipitation test.—This test was recently introduced into the laboratories in India. Dr. R. L. Kahn (U. S. A.) says, that in parallel tests over 300,000 sera he found a close agreement between Kahn and Wassermann tests for syphilis. He considers his test as highly specific in the serodiagnosis of syphilis and is further claimed to be more reliable than W. R. test in early cases of syphilis. It is indeed more economical and the report could be obtained quicker than in the case of W. R. test. The only special reagent used in this test is an antigen prepared by Ethereal extract from Bacto Beef heart and preserved in alcohol after cholesterinization. A strong positive reaction is indicated by a heavy precipitate, the antigen control and the negative reactions showing mere

opalescence; varying strength of antigen is used in varying quantities of the serum to be tested so as to obtain the intensity of the reaction.

I have my own doubts as to the specificity and especially the sensitiveness of reaction in this test.

Wassermann's and Kahn's Sero-diagnosis.—Instead of all of a sudden replacing this old time honoured biological test, viz., Wassermann's, by a recently introduced biochemical test like the Kahn's, on the consideration of the cheapness or the simplicity of the technique in Kahn's test, I would suggest that a close study of the exact nature of the so-called, puzzling substances of the serum, viz., the complement and amboceptor or antibodies and further researches from a biochemical point of view might be carried on and the biochemical processes, if any, that underlie the phenomenon of hæmolysis and that of Bordet-Gengou might be revealed in the light of the modern scientific observations.

In fact there is a close analogy between the Wassermann's and the Kahn's tests, viz., we have (1) *the positive serum*, (2) *the special antigens* (perhaps this differs in the improved and cholesterinized form in the latter test) and (3) *the Normal saline* in common to both these tests in the positive tubes. The vital difference between the two tests being that in one we have a specific precipitate and in the other hæmolysis as our indicator of the nature of the reaction. In Wassermann we read the reaction through hæmolysis as an indicator as it were. To put it clearer what I think is that a kind of fine characteristic biochemical precipitation taking place simultaneously in the positive tube in W. R. renders the R.B.C's. in the suspension less susceptible to the influence of the hæmolysing agents

and consequently there is inhibition of hæmolysis. This is evident from the fact that in tubes showing a very strongly positive reaction, *i.e.*, complete inhibition of hæmolysis, we often notice the corpuscles thrown down the bottom of the tube in clumps or in a sticky mass, at times difficult to break by lightly shaking the tube, unlike the ordinary suspension of corpuscles in normal Saline which could be evenly and quickly distributed, after once allowed to go in sedimentation, by gentle shaking. This is only my theoretical guess from my observations. I can't assert it unless experimentally proved. I am further led to believe that such a precipitation in the positive Wassermann tube is accelerated in the Kahn's test by the cholesterinization of the Kahn's specific antigen.

For a positive W. R. we count upon the degree of inhibition of hæmolysis. The theory tells us that it is due to the so-called deviation of complement. If only a close and very careful investigation of the nature and the cause of the inhibition is made by the biochemist I would safely presume that he might come to the conclusion that the so-called deviation of complement is nothing but a change in the chemical environment in the mixture which is purely responsible for the inhibition. What I conjecture is that the chemical environment of the mixture in the positive tubes containing the antigen might be so altered in its salt contents as well as the H ion or the Hydroxyl ion concentrations as the case might be, that the conditions favourable for the occurrence of hæmolysis might thereby be removed on the addition of the immune serum to the antigen mixture. The antigen solution used in W. R. test being prepared from acetone insoluble lipoids after extraction with ether and preserved in alcohol evidently capable of altering the chemical environment. In support of this statement we have certain chemical agencies

actually bringing about the process of hæmolysis. Why not the inhibition of such a process be brought on by a chemical environment contrary to the one capable of producing hæmolysis? So long as the exact nature and the composition of the serum elements are not known to us and if further researches based on the chemical theories such as those I conjecture, are carried on, I am sure the biochemist will find his way to explain the exact nature of these substances of the serum and do away with such vague terms as complement, amboceptor or antibody and so on.

The originators of these biological theories and the faithful followers of such theories were content with such terms like complement, etc., because the science of biochemistry or pathological chemistry was not so well developed in their days. Now that the service of biochemistry and chemical pathology are so far advanced that the workers in these fields might explore into such theories and render them more modern and scientific.

As far as my knowledge of the application of Wassermann test to the serodiagnosis of syphilis goes, I believe that Wassermann's test, as it is, is second to none except any modification of it based on the discovery of the exact nature of the serum elements pertaining to original Wassermann and the real cause of the inhibition of hæmolysis in the positive tube. There are a good many biochemical substances like the "specific Globulins" being discovered day by day possessing peculiar properties of their own.

These are my own views on these tests and I leave it to the scientists in the field for further researches. I earnestly hope that this contribution of mine will be of ultimate use, in the advancement of the serological tests in the right direction.

IV

RECENT ADVANCES IN VACCINE
THERAPY.

Lastly I would like to put before you a few conclusions that I have been able to draw from my own experience and observations regarding the *most abused and neglected subject of vaccine therapy* and with special reference to the (1) *specific and non-specific methods of immunization by vaccine treatment*, (2) *the foreign protein theory* as applied to vaccine therapy and (3) *the biochemical aspect of the treatment* with bacterial vaccines and the vaccines themselves according to the recent advances made in vaccine therapy. Originally at the beginning of vaccine therapy as one of the specific methods of combating bacterial infections, much importance was attached to the use of autogenous vaccine in bacterial infections. It was thought after very careful experiments *in vitro* and *in vivo*, the immunization by vaccine treatment was strictly specific. In the absence of facilities for the preparation of autogenous vaccines, stock vaccines, corresponding to the microbes with which the patients are infected were used with certain amount of success in all cases as auxiliary to other medical and surgical measures pertaining to a particular affection.

After the last European war owing to their war experiences, the pioneers of vaccine therapy had to change their own views with regard to the specificity of vaccine treatment. I think I will do well to put their views in their own words. About the year 1919 the originator of vaccine therapy, Sir Almroth E. Wright writing on "the lessons of the (European) war" recorded certain instances of collateral immunization and confessed openly the failures of his own theories of vaccine therapy. He says in the course of his lecture "I

confess to having shared the conviction that immunization is strictly specific." "20 years ago" he says "when it was alleged before the Indian Plague Commission that Antiplague inoculation had cured Eczema, Gonorrhoea and other miscellaneous infections" (because his belief about the specificity of vaccine therapy was strong then) "I thought the matter was underserving of examination. I took the same view when it was reported in connection with antityphoid inoculations, that it rendered the patients much less susceptible to malaria." He further adds "Among thousands of patients treated by vaccine therapy in private practice and in hospitals, it happened every now and then that a patient was treated with a vaccine which did not correspond with his infection and that the patient was indubitably benefited." This was specially the case in field hospitals during the war time, as they could not get the stock of all the vaccines, the wounded were treated with any vaccine then in stock irrespective of the infection with no doubt, good results. Cases of gonorrhoeal complications were treated by intravenous injections of typhoid polyvalent vaccine with remarkable results. This non-specific method of immunization was later introduced into the Civil Hospitals and private practice and gradually in several institutions useful spheres for the practical application of this novel method was thought of, and a large number of cases of gonorrhoeal complications were treated successfully by the intravenous injections of T. A. B. vaccines. Best results were obtained with old vaccines preserved in glass bulbs for more than 6 months and nearly a year. Originally the idea of preferring old vaccines to new ones was that the toxicity would have been reduced by keeping and for this reason Thomson's detoxicated vaccines are commonly used for intravenous injections. Rheumatic affections due to

oral sepsis and joint affections due to similar causes were also successfully treated with T. A. B. vaccines given intravenously.

Acute cases yield to this method very quickly in two or three injections. The effusion in the joints and the urethral discharges dry up quickly. But the disadvantage of this method though absolutely harmless, is that it is unfit for private practice owing to the alarming general reaction, such as very high temperature, severe rigors, etc. Symptoms of cystitis disappear under this treatment without any other medical measures such as drugging or washing, etc. In fact gonorrhoeal complications intractable to all medical and surgical measures were very successfully treated.

Great caution is required in selecting the initial dose for intravenous injection as in some cases even 25 millions have produced severe general reaction. In chronic cases up to 200 millions might be injected at intervals of six or seven days and not earlier though the negative phase is generally shorter in this method than in the subcutaneous method.

Another instance of non-specific immunization is that a number of filarial complications are treated with bacterial vaccines, generally by a mixed Staphylo and Strepto stock vaccine with much benefit in mitigating the sufferings.

The specificity of the vaccine therapy having been thus discredited the question arose as to how the cure is brought about by the non-specific method of immunization by bacterial vaccines. To this no satisfactory answer could come to us from the vaccine therapists in the field. We turned to the biochemist and he held the theory that the aminoacids of bacterial origin naturally produced in the old vaccines,

by keeping, would have been responsible for a mental shock, when the stuff is injected into the vein which shock giving rise to high temperature was responsible for bringing about a drying up of the effusion and discharges and consequently killing the causative organisms (Pyrotherapy as this was called for the time being).

While I was discussing about this method of treatment and its marvellous cure to some prominent biochemists they suggested that a biochemical or chemical analysis of the *old stuff in the bulbs* be done.

On analysing the *stuff* chemically I was informed that the chemists detected minute traces of silicates and double salts of potassium and sodium suspended as it were in a colloidal form in the original vaccine emulsion in the presence of amino-acids of bacterial origin.

I prefer to call the contents of the bulb a *stuff* because I was convinced that we were then carrying on a most empirical line of treatment and so long as the specificity established with regard to vaccine therapy has been experimentally and therapeutically disproved and confessed by its author himself and especially when such marvellous results were shown by the non-specific immunization.

I did believe in this analysis and the source of these inorganic salts is evidently the glass tubing out of which the bulbs are manufactured and also probably from the test tubes used in the process of preparing the stuff. As we keep on shaking and shaking the stuff for hours together in test tubes of glass it is quite likely that these products enter the emulsion in such minute quantities as is generally the case with such products if kept in glassware for a long time. These *inorganic salts* in their *infinitesimal doses* quite

possibly contributed to a great extent along with the *amino acids* present in them in effecting the cure. In support of this I might mention here the fact that certain preparations of colloidal metals are now-a-days claimed to possess similar therapeutic values independently of the bacterial vaccine.

The real value of the Prophylactic use of vaccines is yet to be proved. I think it is Prophylaxis by mere *suggestion*.

I believe this will be a fit occasion for us to exchange our views on this subject.

Before I close this part of my paper I like to briefly mention in a few lines about the laboratory methods of diagnosing a few other diseases such as typhoid, early leprosy, long standing chronic gonorrhoea, urethritis, filariasis and amœbiasis.

In typhoid fever a positive Widal is always reliable. A negative reaction does not always exclude typhoid infections.

The absence of the specific organisms by the microscopical examination even, if repeatedly done, does not absolutely exclude any of these diseases. Better no importance is attached to the negative reports on Microscopical findings in such diseases in preference to clinical evidences.

In the absence of positive microscopic findings in the aforesaid diseases, complement fixation tests in leprosy and old gonorrhoeal infections with the respective specific antigens, a typical blood picture in filariasis and the presence of cysts in the faeces of suspected cases of amœbiasis are of really great value to get one's clinical diagnosis confirmed or excluded according to the positive or negative reports from a laboratory.

V

CONCLUSIONS.

1. A close co-operation of the general Practitioner and the Bacteriologist is always necessary in Laboratory Practice.

2. In order that the full benefit of the laboratory method of diagnosis be enjoyed by the general practitioner a short history of the case mentioning the duration of the illness and the prominent signs and symptoms or at least the provisional diagnosis of the case should accompany each specimen sent to the laboratory especially in case of serological tests.

3. Laboratory aid in diagnosis is indispensable to the general practitioner, in his daily practice.

4. The reputation in laboratory practice depends upon the conscientious work of the laboratory practitioner unbiased by the clinical history of the case furnished with each specimen.

5. As a rule the Negative reports on laboratory diagnosis should not be applied to the cases referred to unless corroborative of the clinical evidences.

6. Wassermann's or the Noguchi's Modification of W. R. test is second to none in the diagnosis of syphilis with regard to its sensitiveness and specificity of reaction.

7. On no account should a newly introduced biochemical test in serological diagnosis be adopted in a laboratory in preference to any of the existing equally useful biological tests such as W. R. test before every laboratory practitioner is convinced of its efficacy and on no account should such replacement be done merely for the consideration of its cheapness or the simplicity of the technique or at least

till we are well advanced in our knowledge of biochemistry as applied to medical science.

8. It might be safely presumed that almost all our biological theories were based on certain biochemical processes which the originators of such theories were unaware of as the science of biochemistry was not then so developed as at present.

9. A good deal of chemical and biochemical researches are yet to be done on the chemical and biochemical aspects of our biological theories and the exact nature of the elements of the sera are yet to be studied and worked out on modern biochemical lines of research.

10. The close co-operation of the bacteriologist, the physician, the

chemist and the biochemist is greatly needed for the scientific advancement of laboratory diagnostic methods.

11. Vaccines are not so specific as they have been hitherto considered and "confident dogmatic belief that immunization is strictly specific" should be given up.

12. The superiority of a vaccine either autogenous or stock is judged by the immunizing properties it possesses rather than by its source—the intravenous method is the most effective and the only method of overcoming systemic infections by old vaccines. The subcutaneous method of injecting *vaccines in systemic infections* should be discouraged as a therapeutic measure wherever possible.



UNITY IN THE PROFESSION

CAN ONLY BE ACHIEVED BY

JOINING THE UNION.

MEDICAL EDUCATION.

II

At times, the student sees his teacher engrossed much more in his administrative duties than in his professorial work. A few professorial examples will prove the above remarks.

A few years back an I. M. S. officer with high surgical qualifications was posted as a surgeon to the General Hospital. According to some rule or convention he had to teach some subject in the college. His predecessor in the hospital had some health qualification and so he was a surgeon in the hospital and professor of hygiene in the college. Hence our officer who was a surgeon was also appointed as professor of hygiene, a subject with which he was not particularly familiar. This officer was appointed in spite of the fact that there was an assistant in the Hygiene department of the college well qualified to teach hygiene, and one who had previously acted for a year as professor of hygiene. The professorial history of another I. M. S. officer who is about to retire would be interesting. This gentleman perhaps started as professor of biology. He went over to midwifery. He was subsequently professor of ophthalmology and then of jurisprudence. He went back to midwifery. Then he was professor of medicine and returned *once more* to midwifery. This gentleman is evidently a man of protean attainments, even for the Indian Medical Service. We can multiply instances of this nature endlessly, but we will stop with an example which will bring this aspect of the question up-to-date. An officer was evidently a good surgeon. Most of his service seems to have been spent in the districts. Some time ago he was brought to Madras to act for the professor on surgery who went on leave. When the permanent professor returned, he was found another place in Madras to

act for some one who was professor of jurisprudence. The one time acting professor of surgery now became the acting professor of jurisprudence. Again the professor of surgery went on leave for some months and was succeeded by the acting professor of jurisprudence. After the return of the permanent professor of surgery, the professor of midwifery happened to be on other duty. The acting professor of surgery and jurisprudence becomes the professor of midwifery and gynecology. The ease and rapidity with which these teachers change from one subject to another is certainly remarkable and if they could as easily carry on their duties efficiently, it would certainly be marvellous. It should not be supposed that professors of medical colleges who belong to the Madras (Provincial) Medical Service are differently chosen for their task. There is at present in the college a professor who teaches a subject which he never learnt as a student, nor probably subsequently till he was made to teach the subject. As we do not wish to hurt the feelings of present incumbents, we do not mention names.

With such men to teach, what would be the quality of the graduates of medicine who come out of our universities? We have already said that in spite of his environment the local graduate does not suffer by comparison. But the difference comes in when we take the front rankers. In spite of undoubted ability and capacity, our men do not generally come up to the level of the best men in other countries, because, they lack the inspiring example and the guidance of men who have practically spent their whole career in the pursuit and teaching of subjects which they have endeavoured to master to the very best of their capacity and energy.

We have shown how so called service exigencies interfere with the normal development of medical education. This service exigency interferes with education in various other ways. If we look at the strength of the teaching staff of some of the recognised institutions of other countries, we find that the personnel is large. In England, even more so in America, some of the schools and hospitals of about the size and importance of the Madras Medical College and General Hospital have on their staff many times the number we find here. Some of the special hospitals like the Eye Hospitals of England have one surgeon for about a score of beds. But in Madras, the staff is very limited. The public knows this only too well from its experience of the out-patients' department. This minimum staff is merely on account of financial considerations. The State finds that it can spend only a certain amount of its revenue on medical education. It has therefore to carry on the work with the fewest possible number even at the expense of efficiency. This small number affects medical education in various ways. In education it is only when a sufficiently large number of men are working in a department that it would be possible to devote attention to details. Attention to details enhances thoroughness of work and paves the way for research. If the staff is meagre, only routine work could be carried out and that too probably in an inefficient and slipshod method. Students who are trained under the latter circumstances are ignorant of thoroughness in work and fail to appreciate its usefulness in their future career.

It is now necessary to draw the attention of our readers to one of the most serious defects which arise from the inadequate and inefficient staff of our teaching institutions as well as hospitals. We have already mentioned it casually. We refer to the almost

utter absence of research. Any one who is even slightly acquainted with current medical literature of the world must be struck by the amount of work that is turned out of the various institutions. There is a continuous effort at working out the finer details of the structure of the human body, every physiological laboratory is endeavouring to unravel and understand the function of the various structures of the body, new facts are superseding old statements. Symptoms of ill-health are beginning to be analysed and their significance studied. Obsolete and inefficient methods of diagnosis are discarded and newer methods explored and diseases which have resisted the therapeutic skill of old physicians are beginning to be tackled with other and newer agents. Similarly in the field of surgery and other branches. People do not rest after discovering satisfactory methods of treatments. There is always a continuous search for more and still more satisfactory methods. All these efforts are not always successful. But failure only acts as a start for another attack probably from a different point. But nearer home, the tale is depressing. We are content to use methods and believe statements which come down to us from abroad. Often there is not even the effort to test the suitability of the one or the truth of the other. With almost unequalled facilities for anatomical research the contribution from Madras has been zero., of physiological research we shall not mention; they have not succeeded in getting a professor and we shall leave the University and the Government to wrangle over their arrangement for teaching physiology. We have yet to hear of any contribution from any physician, surgeon or gynaecologist to the literature which has been noticed by other men in other countries. Even in the field of tropical medicine, like malaria and hookworm infection, Madras is content to make use of others

work without contributing anything in return.

The reason for this barrenness in research is as already pointed out, the paucity and inefficiency of workers and more so due to the absence of any directing mind. The vintage is abundant, but the gatherers are few and mostly too lazy to press out the good wine.

We have not said anything about the various medical schools of the presidency. There are three complete schools run by the State, one for women and two for men. There has been a persistent agitation from the medical profession that these schools should be abolished. The *Antiseptic* a leading Medical Journal of the East has been foremost in voicing this feeling. But for some reason or other the Government has been stubbornly maintaining these institutions. Everybody including the Government is agreed that the education in these schools is inferior to the standard that is universally desired as requisite for a practitioner of medicine. But opinion seems to be divided as to whether these schools should be retained with some modifications or whether they should be abolished altogether in favour of new institutions teaching up to the university standard. We understand that proposals are under consideration to raise the status of some at least of these schools to that of a University College. Under these circumstances no useful purpose will be served by a review of the present condition of these schools.

GENERAL MEDICAL COUNCIL AND INDIAN MEDICAL DEGREES.

For some time past all those interested in the Medical Education of this country have been disturbed by the

threat of the British Medical Council to withdraw the recognition hitherto accorded to the medical degrees conferred by the Indian Universities. The threat has now taken a practical shape in the form of their decision which is found to handicap the Indian students pursuing their studies in Great Britain and in entering the Indian Services. The *unsatisfactory* medical education obtaining in this country is put forward by the council as one of the main considerations which led them to take this step. On an examination of the several issues raised we find that they have adopted a reprehensible attitude towards the question. To take an example, the lack of opportunities in *Obstetric* instruction, which is said to have influenced the council, appears to be the weakest point in the arguments advanced. The opportunities of *Obstetric* education in this country have, as a matter of fact, increased five-fold since Sir Norman Walker first visited India in 1921. And it is doubtful whether in London itself, which is the seat of the General Medical Council, a fraction of the facilities existing in Madras is available. In this connection the observations of Dr. Conyers, Senior obstetric surgeon of the Middlesex Hospital, London, in the last winter issue of the Journal of Obstetrics and Gynæcology are worthy of consideration. The situation created by the Council's decision is certainly perplexing. But the effect will be of a far reaching character. It will enable the country to free itself from the shackles of thralldom and to develop Medical Education as best suited to India's interests. If only the legislatures tackle the question resolutely, and take up the challenge of the General Medical Council the solution is at hand. Encouragement has to be given to the brilliant products of our Universities for higher education in non-British Universities

and be given Educational appointments in the State which have hitherto been the monopoly of particular services. The post-graduate studies in our Universities particularly admit of greater improvement and we commend this to the attention of the Government with all the strength we could command. Dwelling on the subject in our October number we have stated that if the Minister-in-charge of local Self-Government would give equal value to post-graduate studies and higher examinations in Universities other than those controlled by the General Medical Council of Great Britain, e.g., Universities in Germany or France, a solution to the problem would be found.

The insistence on the possession of qualifications registrable in Great Britain have already provoked discontent among intending entrants into the Indian Medical Service. The present move of the General Medical Council has made the conditions for candidates aspiring for commissions in the I. M. S. still more difficult. We trust sincerely that the Government of India will respect the public opinion in this country and remove the restrictions that operate upon Indians who intend entering the Indian Medical Service. *The time has come when the medical service in this country can no longer be allowed to be the hot bed of racial discrimination and when we cannot permit a policy of perpetual tutelage in regard to higher medical education in India.*

UNION NOTES.

(Honorary Secretaries.)

SCIENTIFIC SECTION.

One clinical meeting was held, presided over by Lt. col. Malcolmson I. M. S., Professor of Medicine, at

which Dr. T. Satakopan read a paper on "the Diagnosis of Dyspepsias."

* * *

One very pleasing feature that is being noticed is the increasing interest evinced by the members. Not only is the members' attendance getting larger but a number of others of the profession and medical students attended and evinced a lively interest in the evening's proceedings. Another pleasing feature is the increasing readiness with which members are coming forward to render their quota in the clinical meetings. Well-wishers both of the profession and outside it have also promised to deliver lectures on professional as well as lay subjects of interest to the profession.

* * *

We hope to be able to enlarge the scope of our meetings by having other than medical lecturers giving addressing our gatherings. We would like to inform the members in this connection that Col. Bradfield, Professor of Surgery and First Surgeon, General Hospital, has promised to address the Union on 'Radium and its effects on Cancer' and Dr. M. Vijayaraghavalu, M.B., C.M., on 'The work ahead of us.' Capt. Bernard will give a demonstration at the X ray institute. The dates of the meetings will be announced later we need not say that all are invited to these meetings.

* * *

We trust that the medical students of all the local institutions will make it a point to attend these. "Catch them young" is our motto. The students are our future members, as leaving a small percentage who join the paid services, the majority have to join the ranks of the Independent Medical Profession. We assure the medical students that they will always be welcome at our gatherings.

* * *

The National Health Association of South India has asked the help of the Union in its propaganda work. The Governing Body has promised our hearty co-operation. The time required from each member is *one hour a month* (a very small sacrifice, indeed), and every facility for the lecture is being provided by the Association. Apart from the educative value to the public, selfish interests at least should induce members to come forward. The American Medical Association—for example—is issuing a magazine and has organised broadcast talks on the wireless to educate the public *against relying on self-medication and treatment by charlatans and quacks*. The Union has requested the Corporation of Madras to allow it the privilege of using the Corporation broadcasting station in its Health Propaganda Work.

* * *

GENERAL SECTION.

The surest sign of our success is the attempts by interested parties to belittle and obstruct the working of the Union. We shall not be surprised if 'friends' attempt to bring about changes involving retracing our policy and bringing in discordant elements in place of the present harmonious atmosphere. We have to request the members to be on guard against any such calamity falling us.

* * *

The rules framed by the committee as approved by the Governing Body are being circulated to the members. A special meeting is being called to consider the draft rules.

* * *

The annual general meeting of the Union will be held in April 1930. Members who wish to move any

resolutions are requested to send them to either of the Secretaries before the 10th April to enable them to be circulated to the members.

* * *

May we also take this opportunity of requesting the members to pay any arrears of subscription due from them before the 7th April 1930.

* * *

At the February meeting of the Governing Body of the Union the following resolutions were passed unanimously :—

(1) "The South Indian Medical Union regrets to observe that the Government of Madras is restricting the appointment of honorary physicians and surgeons to the University degree holders and request the Government to select competent men for such appointments from amongst all those on the Madras Medical Register irrespective of their degrees or diploma."

(2) "The South Indian Medical Union requests the Government to remove the ban placed against L.M.P. diplomates belonging to the Independent Medical Profession from holding the posts of Medical Inspectors in schools and Colleges."

* * *

The recent decision of the General Medical Council of Great Britain has been receiving the attention of the Governing Body. At its March Meeting this was discussed and the following resolutions were passed :—

1. "The South Indian Medical Union (Madras) welcomes the decision of the General Medical Council of Great Britain withdrawing the recognition of the degrees of the Indian Universi-

ties, as this enables the country to develop Medical education in India on lines best suited to Indians condition, without being hampered by the dictates of the General Medical Council of Great Britain."

2. "The South Indian Medical Union requests the Government to remove the disabilities of Medical graduates of Indian Universities consequent on the decision of the General Medical Council withdrawing recognition of Indian degrees."

3. "The South Indian Medical Union requests the Government of India to take early steps to establish a General Medical Council in India to control and develop Medical education in India."

All the above resolutions have been duly forwarded to the Authorities.

* * *

Complaints have been reaching us about the non-receipt or late receipt of

the Bulletin. To avoid this all the copies are being posted to the last known address of the members. It is requested that a report of any irregularity be sent to reach the 'Publicity Section' not later than the 10th of the month following the issue. It is also further requested that any change of address (temporary or permanent) be also sent to the Union.

* * *

We rely for the addresses mostly on the Madras Medical Register. To start with, the 1928 register is, we understand, still in the press. Secondly, the men on the Register do not care to notify their change of address to the Registrar. So it is said. The net result is that a number of Journals sent out are returned on account of the addressee not being traceable. If we are informed of their change of address we shall make it a point to inform the Registrar of it.

* * *

It will be noticed that out of members in the Madras medical council there are only two elected private practitioners. A vacancy is shortly falling vacant and we are informed that **Dr. S. Rangachari** of Madras (The President of the Union) is standing for election.

We request and trust that all the Registered graduates of the University of Madras (Part II, Medical Register will extend their hearty support to him.