

large as the femoral; the other as large as the radial. In this case the tumor was undergoing degeneration. She had refused operation a number of times. She was treated by a competent physician for malarial fever; the plasmodium malariae were found, and the patient went from bad to worse, and finally I was called back, and the physician said: "Doctor, we are going to have an operation performed just as soon as she gets stronger. What do you think about it?" I said to him: "My dear friend, she will never be any stronger than she is to-day." She had a temperature of 102 when put on the table, and never had a temperature over 99.5 after operation. An abdominal section was made, the tumor removed, and it was found to be degenerated. There was pus found in the center of the tumor. This case was treated by electricity for five years off and on, one in which the principal amount of nourishment to the tumor came from the omentum and the bowel. It was a subperitoneal fibroid.

In regard to subperitoneal, intramural and submucous fibroids, I have this theory: These tumors are migratory to a certain extent. In other words, we may have at the beginning an intramural fibroid; later it becomes submucous or subperitoneal, and this changed condition is brought about by the peculiar construction of the muscular fibers, together with the contraction of the uterus incident to menstruation. By this mesh-like general distribution of the muscular fibers the tumor becomes changed, so far as its location is concerned. It is migratory. You can readily understand that, if you use the faradic current in a case of this kind, it produces contraction of the muscular fibers of the uterus, and while the tumor at the beginning of the use of electricity was possibly intramural, by chance, and by chance alone, it became subperitoneal. If it had been located in the beginning, it might have been found nearer the mucous than the peritoneal surface.

DR. W. D. HAGGARD, JR., Nashville, Tenn.—The use of electricity undoubtedly gives rise to complications connected with fibroid tumors, particularly adhesions. I do not think Dr. Dorsett means to be understood as saying that all peritoneal adhesions, particularly the omentum, are due to electricity. Personally, I recall a case of huge fibroid, weighing thirty pounds, which had a pedicle nearly as large as one's three fingers, and the entire nutrition of the growth was derived from the omentum. Huge veins came down as large as fingers. This case was not treated by electricity at all.

DR. GILLIAM, closing the discussion.—I wish to thank the gentlemen for their kind reception of my paper. I shall have very little to say in conclusion. I thought I made myself understood as well as I could considering the short time at my disposal. There are two or three points brought out in the discussion that I would like to explain. In the first place, I do not want to go on record as being opposed to operation for fibroid tumors. I have done a great many of these operations, and I expect to do them in the future. I am opposed to unnecessary operations. An operation is more or less dangerous, no matter what we may say to the contrary. I tell a patient what I think her chances are, and in doing that I consider the personal equation Dr. Porter speaks of. If life is made unpleasant by the presence of a fibroid tumor; if she wants an operation done for its removal, I might probably advise her to have it done, but I do not insist on having it done. By this means I avoid taking upon myself the responsibility that would weigh heavily upon my conscience for the rest of my life. If she is determined to have an operation done, then I render her my best and most faithful service.

Dr. Reed spoke of one point that I desire to touch upon here. He said that women carry small fibroids, and if he finds them during the course of an examination he does not tell them anything about the matter. In the majority of cases a fibroid is going to be an incubus to the woman; it is going to make her unhappy, and there is danger of her drifting from one physician to another. You try to be honest; you give an honest opinion that you have discovered a fibroid. If you do not tell the woman this, if she is dissatisfied, she will consult another doctor. He will tell her that she has a fibroid, and urge its removal. By reason of the latter advice she either undergoes an operation or is so frightened that she will probably never get over the effects of it. Is it not much better to say to these women: "Madam, you have a little fibroid in the uterus; don't get frightened. These tumors are common; nearly all your neighbors have fibroids, and the reason I tell you is simply because somebody else will do so after a while and probably frighten you; the chances are it may not hurt you during your lifetime. If it should hurt you, consult some good conscientious surgeon, let him advise you in the case." When you speak to them in that way, they are armed for anything that may occur hereafter, and they do not worry about it.

A lady came to me a few weeks ago, who stands high; she is

a woman of brilliant intellect. I examined her and said, "you have got a little fibroid about so large." She said to me, "You told me that five years ago." I did not remember her. I do not remember the faces of my patients very well. However, she was going to Europe, and she felt a little uneasy. I happened to be writing my paper at this time, off and on, and I said to her, "let me read you a few lines of this paper, and explain some points to you." I read a little to her, and she was anxious to hear more, and before I got through her mind was relieved, and she left the office in a happy mood.

## CATAPHORESIS IN TRACHOMA.\*

BY GEORGE F. KEIPER, M.D.

LAFAYETTE, IND.

The word "cataphoresis" is derived from two Greek words.\*\* The word "catalysis,"\*\*\* is often used synonymously with "cataphoresis," and incorrectly. Cataphoresis is a subdivision of the electrical process called catalysis. Cataphoresis, as now understood, is a process whereby medicinal substances are introduced into the body, through skin or mucous membrane or both, by the help of the galvanic current.

*Synonyms.*—Anodal diffusion, electric osmosis, voltaic narcotism, electric transportation, anaphoresis, electric medicament diffusion, and electric transfer of particles and liquids, are the synonyms in use.

*History.*—The process is not a new one, though it is attracting more attention to-day and has been for the last ten years, than ever before. Dr. B. W. Richardson, in 1859, wrote two articles on "Voltaic Narcotism." In October, 1858, after vainly trying to produce anesthesia in a rabbit's ear, by the electric current alone, he used a solution of morphin at the positive pole of the battery and succeeded in anesthetizing that organ. Then he used tincture of aconite at the positive pole with the same result. He used the following solution:

R. Tinct. Aconit.....	3iii 3/90
Ext. Aconit. Aleh.....	3i 1/30
Chloroform .....	3iii 3/90

He put the positive pole of the battery, wet with one-third of the above solution around the upper part of the shaven hind leg of a dog. The negative pole was applied to the ankle. Eleven minutes sufficed to produce complete anesthesia to sticking pins. Then the tendo Achillis was severed without pain. In one hour the leg was amputated without any pain, except when the bone was sawn through. Then the dog cried out once, but probably from terror. Twenty minutes later the dog ate heartily and walked around on three legs quite unconcernedly.

A nevus one inch in diameter was subsequently removed from the shoulder of a ten-weeks-old baby, after a half hour's application of a solution of chloroform and tincture of aconite, 5 drops each, applied to the positive pole. A strangulated hernia was also operated on by this method, and then a tumor of the shoulder on a patient 47 years old was removed, all of which were painless.

Richardson's work aroused a storm of opposition on the Continent and in England and for twenty-five years it lapsed into obscurity.

Wagner, in 1886, reintroduced the subject to the profession. Adamkiewicz, in 1886, described a diffusion electrode for introducing chloroform into the tissues. In 1889 Peterson called attention to Richardson's experiments and theory. Opposition and criticism again greeted its revival, but to-day it has all disappeared.

\*Presented to the Section on Ophthalmology, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

\*\*Kata, down, and *φορεω*, to bear.

\*\*\*Kata, down, and *αλευω*, to loose.

**Apparatus.**—A good battery, say of twenty cells. For good results the plates must be clean and the zinc plate well amalgamated. The solution ordinarily used should be fresh. A switch-board in the commercial circuits is best.

2. A good milliamperemeter—the Kenelley or Weston are the best, because they are not influenced magnetically by the presence of iron in the immediate vicinity. The work previously done in this line has lacked scientific accuracy because the current has not been measured. No current should be passed through any person unless accurately measured. Many of the articles written speak of the use of from ten to twenty Grenet cells in producing the effects to be afterward described. This may mean much or little. If the battery fluid be old and nearly exhausted, or the carbon plates dirty and the zinc plate not properly amalgamated, and the connections poor and dirty, there will not be very much current, otherwise there will be. Hence there is no scientific accuracy in publishing results thus.

3. Proper conducting cords with proper tips for making connections between battery and electrodes and battery and milliamperemeter are essential.

4. Such electrodes as may be necessary. For forcing in solutions of drugs, the ordinary carbon electrodes of various sizes are best for ordinary use. Special ones will be described later.

5. Plenty of absorbent cotton to take the place of the dirty and filthy sponges now in almost general use on the electrodes is another necessity.

**Theory of Cataphoresis.**—If a vessel be divided into two distinct and separate compartments, by an animal membrane, and each side be filled to the same level, the one with a dense liquid and the other with one lighter in density, there will take place what is known as osmosis, whereby the lighter liquid will travel through the membrane to the denser. After a time the level of the denser will be higher than that of the lighter. Now, if the positive pole of the galvanic battery be placed in the denser and the negative pole in the lighter, the denser will be driven through the membrane into the lighter in direct opposition to the natural process of osmosis, i. e., the liquid travels in the direction of the current—from the positive to the negative pole. The effect is mechanical, for no decomposition takes place if carbon or platinum electrodes be employed.

**Experiment:** Take two porous cups and place them in a basin of water. Fill each to an equal height, with water. Put the positive pole of the battery in one and the negative in the other. Turn on the current and after a time the level of the water in the cup wherein is the negative pole will be higher than in the cup containing the positive pole. In fact the water will in a measure leave the cup containing the positive pole and its level may be lower than the surrounding water in the basin. Thus, with this simple experiment it is possible to make solutions travel in the direction of the electric galvanic current.

**Physiology of the Process.**—**Experiment:** Take a frog, keep its skin wet with a 2 to 5 grain solution of strychnin sulphate, and in a few minutes it will die of strychnin poisoning. The skin absorbs the strychnin. The skin of man and other mammals does not absorb substances readily because of the fat present in the epidermis and pores. Remove the fat with ether and the skin becomes more permeable. Massage, coupled with cutaneous medication, helps absorption by forcing the medicine into the pores. If the epidermis be removed either by abrasion, burn or blister, absorption will take place rapidly.

**Experiments:** Apply the positive pole of the battery to the back of the hand and the negative pole to the palm, and turn on a current of five milliamperes for from ten to twenty minutes. No anesthesia is produced.

Apply a 10 per cent. solution of cocain to the back of the hand and leave it there until the water is evaporated. Then apply more and thus continue the process until twenty minutes shall have elapsed. No anesthesia is produced.

Take a small carbon electrode, cover it with cotton and moisten it with a 10 per cent. solution of cocain. Attach it to the negative pole of the battery. Hold it on the back of the hand, grasping the positive pole in the palm thereof. Pass a current of five milliamperes for ten minutes. The result is no anesthesia, but hyperesthesia at the negative pole.

With the same electrodes as above, apply the electrode covered with cotton moistened with cocain to the positive pole. Put it on the back of the hand which grasps the negative pole in its palm. Turn on a current of five milliamperes for ten minutes, and the result is anesthesia to pain, touch and temperature.

H. Munk,<sup>1</sup> in a series of experiments found that he could as above introduce sufficient strychnin through the skin of a rabbit to cause it to die of strychnin poisoning in a few minutes. Quinin and potassium iodid introduced thus have been detected in the urine. What is true of cocain, quinín, strychnin and potassium iodid is also true of aconitin, mercuric bichlorid, guaiacol, metallic mercury (Massey), peroxid of hydrogen, sodium chlorid, morphin sulphate and lithium salts.

Peterson has thus summarized the physiologic action: "The galvanic current alone does not produce anesthesia at either pole, although the anode—positive pole—has a soothing effect over painful foci. A watery solution of cocain applied to the skin is not absorbed and does not produce anesthesia except, perhaps after an indefinite and long period. The same is true of chloroform and of an alcoholic solution of aconite. A watery solution of cocain is diffused through the skin and subcutaneous tissues by the anode, but not by the cathode. This is true of chloroform, aconite, strychnin, potassium iodid, corrosive sublimate, tincture of iodine and a number of other medicaments. Chloroform had better not be used this way unless a vesicant effect be desired. By this process a dermatitis is produced, the effect lasting for a week to ten days.

Haynes summarizes the effect of the direction of the current thus: "The galvanic current used to produce electrolysis on living tissues accomplishes results by utilizing three properties of current. 1. The chemical property into which the electricity is converted and manifests itself in the fluids and semifluids of the body contiguous to the electrodes—catalytic action; 2, the physical properties, due to the disintegration of the electrodes and the transference of substances through the tissues—cataphoric action; 3, the physiologic properties of the galvanic current as it produces trophic changes in the tissues."

In connection with this must be considered the solution of the electrodes themselves, and if placed at the positive pole the cataphoric action obtained by the solution of the electrode penetrating the tissues in the direction of the negative pole.

**Experiments:** Take a piece of fresh, juicy, lean meat, and put on one side a carbon electrode connected to the negative pole. To the positive pole attach a pure copper needle and insert into the meat; turn on the current. After a time on cutting the meat open around the needle an apple-green stain will be found. This is diffused in

the direction of the negative pole. Or, putting a blunt pure copper electrode on the surface of the meat, we get the very same stain. Chemical analysis of the stain shows it to be the oxychlorid of copper; it is a powerful germicide. In the reaction,  $\text{HCl}$  and  $\text{H}_2\text{SO}_4$  and  $\text{O}$  have been formed, which, uniting with the copper, form the oxychlorid of copper, and this, being soluble, is diffused by the cataphoric action of the current in the direction of the negative pole. It will also be seen that the needle used is difficult to withdraw after the current has been on. This is probably due to the albuminate of copper formed holding it fast. By reversing the current the needle can be easily withdrawn after a time. Not only is this true of copper but it is also true of iron, lead, zinc, and brass, which are readily soluble. Tin, silver and aluminum are less readily soluble. Carbon and gold are the least resistant of all the metals. Platinum and platinum with its alloy of iridium are not acted on at all.

#### THERAPEUTIC INDICATIONS.

*For Relief of Pain.*—In neuralgia, cataphoresis with a 10 per cent. solution of cocain or cocain with guaiacol, which is preferable, produces anesthesia which lasts from four to eleven hours electricity alone producing a transitory effect.

In tubercular laryngitis, by placing the positive pole wet with guaiacol on one side of the larynx externally, and the negative pole on the other side externally, relief from pain is usually prompt and the effect lasts about twenty hours. Guaiacol is to be preferred to creosote as being less irritating; in fact guaiacol is creosote deprived of its irritating properties. Lactic acid and curettement may be abandoned.

"In cutaneous operations," Dr. Dawbarn writes, June 10, 1889: "I have recently . . . tried this method on a child's hand requiring suture of a severed tendon. The injury was an old one, and there was no wound before I made my incision. The anesthesia from 10 per cent. cocain on the anode, continued with my chlorid of silver battery—twelve cells—for ten minutes, was very satisfactory."

In rheumatism and gout, at Edison's laboratory, a number of experiments have been made whereby lithium chlorid has been forced into the tissues. In an old man who had chronic uric acid concretions so that the joints between the phalanges were obliterated, by the cataphoric action of lithium chlorid after twenty-five hours of total application the measurements made showed a distinct reduction in bulk. The pain was relieved and the patient's general condition improved. The 120-volt current was employed through proper resistance. The current strength was twenty milliamperes. Note that this is a very strong current for cataphoresis, five milliamperes is sufficient. The séance is generally five to fifteen minutes; the stronger the current the shorter the séance.

In gynecology cataphoresis is giving results which are gratifying.

In this connection permit me to bring to your attention a new method of treating affections of the tear-duct and lachrymal sac by the cataphoric action of protargol. The cupped sounds are the ordinary Theobald probes in which at intervals of one-fourth of an inch cups are made into which the protargol in vaselin is placed. The probe is introduced in the usual way and after it is in place it is connected to the positive pole of the battery while the patient holds the negative carbon electrode in his hand. A current of five milliamperes is turned on and five minutes suffice to drive all the medicament out of the cups into the lachrymal passage. So far this

mode of treatment has given me better results than any I have heretofore tried.

Concerning the therapeutic indications of metallic electrolysis and the consequent cataphoric action, much might be written. Massey, in a work just published on conservative gynecology, speaks of an original method of treating cancer by passing into its substance mercuric oxychlorid. He used gold electrodes into which the mercury is amalgamated by submersion. By using a large lead electrode, 12 by 20 inches, at the negative pole, he is enabled to pass through the cancer as high as 350 milliamperes. His theory is that the cancer cells possess less physiologic resistance to the interstitial attack than does normal tissue. In fact the cancer cells lose their viability without the normal tissue suffering necrosis.

In laryngology, and in tubercular laryngitis, the soluble copper electrode is of great value. The oxychlorid of copper is not only a powerful germicide but a powerful stimulant to resolution of the painful ulceration. but it is in the treatment of granulated eyelids that we have made the most distinct advance over the older methods of treatment, so that it is now possible to cure in months trachoma that would have otherwise taken many years.

In the *Ophthalmic Record*, October, 1898, after three years of earnest search for a more efficient remedy for this troublesome disease, was published a new treatment for trachoma which consists simply in the solution of a pure copper electrode in the substance of the lid, by the means of the galvanic current. The sulphate of copper pencil, which has always been our standby, produces but a superficial action. The oxychlorid of copper is a more powerful germicide than the sulphate of copper and besides it penetrates into the very substance of the granulations themselves, causing their absorption, without contraction of the eyelids. Some pain follows the operation, which is quickly allayed by the application of cold water to the closed eyelid. Three milliamperes of current are generally sufficient. When the communication was published it was supposed to be entirely new. But the wise man of Israel has said that there is nothing new under the sun, and I was chagrined at having my "discovery" disputed by Dr. Neiswanger of Chicago. Demanding his proof as to the priority of the discovery, he sent me copies of the *Alkaloidal Clinic* of three years ago, containing in a short paragraph his use of it on a Kansas physician's trachomatous eyelids before a clinic in the Post-Graduate Medical School of Chicago. But as the *Alkaloidal Clinic* is not read generally by ophthalmologists it never came to light in ophthalmic literature and was buried. However, it afforded me great pleasure in the succeeding number of the *Ophthalmic Record* to accord to Dr. Neiswanger proper credit for his priority in this valuable discovery.

In a communication to the American Electro-Therapeutic Association in 1894, Dr. W. J. Morton offered the following conclusions concerning metallic electrolysis.

1. The salts of many metals may be electrically dissolved from metallic electrodes, and at the same time be caused to permeate human tissue to a considerable depth. In the case of copper on dead tissue, with the current usually applied to living tissue, this depth is visible as an apple-green color, in the radius about the electrode of from one-fourth to one-half an inch; it probably invisibly extends much farther, shading off to a minimum.

2. The electrically formed and electrically diffused metallic salts are not destructive to tissue in the sense that ordinary electrolysis is; the effect is rather by the presence of a partially insoluble salt and by the effect of

a newly formed organo-metallic salt, denutritive or absorbing, on diseased tissue.

3. It would seem that these electrically-formed salts possess a selective affinity for diseased in preference to healthy tissue, or at least produce a more profound action on the morbid tissue, causing a favorable alteration in the nutrition of the part.

4. Electric diffusion is greatly superior to topical application, for the reason that the medicament is caused to penetrate the tissue acted on.

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## DISCUSSION.

DR. HUIZINGA.—As to the benefits to be derived from cupric electrolysis in trachoma, I believe that it deserves more than a passing notice. Taking for granted for the present that trachoma is the result of specific infection, and that the neutralization or destruction of this infection is a primary requisite for the cure of the trouble, it must follow that if cupric electrolysis will accomplish this it is a valuable remedy. To determine this factor I have made a large number of extensive and careful experiments in which a five-milliamper current was passed for five minutes through previously infected raw beef, the anode being an electrode made of pure copper. A piece of this electrolyzed beef was afterward placed in sterile solutions of bouillon and agar. If the excised piece was very thin, and taken from the place where the anode had been, it was found that the beef was completely sterile, thus showing that in the immediate vicinity of the anode the current passing through the copper electrode had distinctly germicidal properties. I believe a current of this kind will penetrate the conjunctiva and destroy or neutralize the cause of trachoma for about the depth or thickness of an ordinary inflamed conjunctiva, but no farther, and inasmuch as the cause of this disease may be deeply imbedded in the tissues, the usefulness of this form of treatment has its limitations.

I have estimated that the amount of copper deposited in the tissues is approximately 1-300 of a grain. This copper unites with the chlorin ions in the tissues to form the chlorid of copper. It is necessary, in order to get a maximum effect in a minimum of time, that the distance between the anode and the cathode should never be less than five inches. The reason for this is that the amount of chlorin ions between the two poles must be sufficient to meet any demands that may be made on them. To illustrate this I have repeatedly tried the following experiment: Two electrodes placed in raw meat at a distance of ten inches from each other, will dissolve one-eighth of a grain of copper wire in twenty minutes, with a voltage of 60, and an amperage of 20, while if the distance between these two poles was only three-quarters of an inch it required an hour to dissolve one-eighth of a grain of copper wire, with a voltage of 10 and an amperage of 20.

DR. L. HOWE.—At the last meeting of the American Therapeutic Society I presented a paper on an analogous subject, and in looking up the literature I found that Morton's book was the only one that contained any concise statements on the subject. I am somewhat surprised at the amperage mentioned, because one and one-half or two milliamperes will cause the patient to wince very decidedly, and three is painful in the extreme.

As to the electrode, we can get the same results by using instead of the solution of sulphate of copper, simply the crystal applied against the conjunctiva itself. In using solutions we must take into consideration that they are decomposed before entering the tissues. I have made the attempt to estimate the amount of substance which might be introduced into the globe in this way. I thought I could get the characteristic starch and iodine reaction without difficulty, and on several human eyes, just before enucleation, and in many rabbit eyes, I have applied the two electrodes with solution of iodine in various strengths and then turning on the current tested with the starch solution, but I could not get a trace of blue color. I know the amount was very small, but still I do not think there is proof that the solution enters the tissue in that manner.

DR. G. F. KEIPER.—Dr. Howe spoke of the wincing of the patient. I think it is best to always use cocaine first, but still the patients will suffer some pain, and the most peculiar thing is that they have most of it after they leave the office.

## Correspondence.

## Medical Guild of the Misericordia.

WESTBORO, Mass., July 10, 1899.

To the Editor.—The Medical Guild of the Misericordia is a society of medical practitioners and medical students interested in the work of mercy for the sorrowing and suffering. The guild comprises an order of brothers and associate communicants of the Anglo-Catholic Church in every land, with priests as chaplains whenever their services are required. The relief it seeks to afford in corporal works of mercy is: To feed the hungry; to give drink to the thirsty; to clothe the naked; to rescue the fallen; to visit the prisoner; to shelter the stranger; to visit the sick, and to bury the dead.

Members of the guild obligate themselves to engage in any or all of the above works whenever occasion offers, and to consider it their especial duty to watch for opportunities for so doing. In a word, the object of the organization is to impress on and keep before the minds of its members the duty of doing works of mercy, both corporal and spiritual, whenever it is possible.

Wherever there is suffering there is our opportunity. The emblem of the order is the crucifix, on the reverse arms of which appears the word "Misericordia." The skull and bones and words *Memento Mori* also are used as emblematic of the fraternity. The girdle of the guild is of purple silk cord with seven knots and seven silver beads, and is to be worn always, day and night the same, and around the shroud in death. In the impressive ceremonies attending membership, the candidate pledges himself with God's help that he will faithfully strive to carry out, with charity, humility and fortitude, all the public and private intentions of the Guild, and to preserve in secrecy all the works of mercy which he may be permitted to perform. He also pledges himself that he will not disclose the names of the members of the Misericordia.

We are glad to welcome to membership all who desire, for any cause, to devote the remainder of their lives to deeds of charity; all—rich or poor, saint or sinner—those whose hearts have been touched by sorrow or misfortune or who, through charity, seek to offer help to sufferers—"Darkened by shadows of earth, yet reflecting the image of heaven." Sincerely yours,

W. TH. PARKER, M.D.

## A National School of Tropical Medicine.

ST. ANNE, Ill., July 15, 1899.

To the Editor.—With the "Stars and Stripes" flying over the Hawaiian Islands and our new possessions abroad since the termination of the war with Spain, has not the time arrived for a more thorough and systematic teaching in our medical schools of the etiology, pathology, symptoms and treatment of tropical diseases? Returning from the west coast of Africa, last April, I was delighted to learn of the energy being displayed by the Liverpool School of Tropical Diseases, and knowing, from personal experience, what a terrible havoc malarial fever causes among the white settlers in western and equatorial Africa, and realizing how the troops and citizens in our new possessions will have to face not malaria alone, but other diseases peculiar to warm climates, I venture to advocate a more thorough course in all diseases pertaining to the tropics.

Many of the future graduates from our medical schools will take service in either military, naval or civil life in our new possessions; and the preference will undoubtedly be given to those best versed in tropical diseases. Not only would I advocate a special chair for teaching the subject of tropical medicine in every medical department of state and private institutions, but also the formation of a government school of tropical medicine, having well-fitted laboratories for research and original work. Physicians residing in tropical lands would doubtless be only too glad to collaborate with such a school, and give it the benefit of their experiences and material obtained on the spot.