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BY

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By DAVID WEBSTER, M.D., New York.

I REGARD the use of jequirity as one of the most valuable additions to the ocular therapeutics of this or any other age, and Dr. de Wecker, who introduced it to the profession, as a public benefactor.

I know of no remedy that can compete with it in efficacy in the cure of trachoma with pannus. No one who will take the trouble to read the cases herewith reported can remain skeptical as to its potency when freshly prepared, of the proper strength, and thoroughly applied. The failures that have been from time to time reported, have undoubtedly been due to inexperience in its use, or to worthlessness of the preparation employed. The inflammation set up by it is sometimes so severe as to cause apprehension lest it might produce sloughing of the cornea, as in purulent conjunctivitis. Hence, I would not venture to recommend its thorough use except in cases where considerable vascularity of the cornea exists. Experience, however, seems to indicate that its effects may, to a certain extent, be regulated, and that it may be very cautiously used in cases of granular lids, without pannus, with good results. In such cases I have brushed a little of the infusion upon the inner surface of the upper eyelid twice or three times a week, carefully watching the effect, and discontinuing the remedy if any irritation seemed to be produced. A number of out-patients were considerably improved under this method of treatment.

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Through the kindness of my associates at the Manhattan Eye and Ear Hospital, I am enabled to report, somewhat in detail, thirteen cases in which jequirity was used, these being all the cases of which there are reliable records. In the order in which they are arranged, the first six belonged to Dr. C. R. Agnew's clinic, the first four having been under my special care, and the next two under the care of Dr. George F. Carey. The remaining seven were all patients of Dr. D. B. St. John Roosa.

I am indebted to Dr. J. M. Ray, the house surgeon, for the notes of the cases, and for the following remarks:

"It was found that the infusion was always more active when newly made. Precautions were taken by putting it in a cool place, in the summer in an ice-chest, but under no precautions could it be made to act satisfactorily after being kept over two weeks.

"When it begins to decompose its odor changes from a rather sharp and pungent one to that of stagnant water or decayed vegetable matter. It also loses its pinkish hue, and a deposit is formed.

"In cases where a membrane was produced once, it was always longer in being produced by a second application. In the case of Nellie J. we did not succeed in producing a membrane a second time, although a fresh infusion was applied six or seven times a day for several days in succession, and that very thoroughly.

"In the case of John C., who was treated as an outpatient, and who received only one application a day, no membrane was formed at all, only considerable lachrymation and redness, and yet the ultimate result was about the best in the entire series."

Case 1.—Mrs. M., aged thirty-eight, came to the hospital Oct. 3d, 1883, with granular lids and pannus of both eyes. The disease dated from childhood. She had slight photophobia, her eyelids were somewhat swollen and red, her corneæ were vascular, with an ulcer of the left, and opacities of both which were evidently of long standing. A cantholysis was done upon both eyes on the day after admission, and iced cloths were applied for a few days until the inflammatory reaction had subsided. The

improvement resulting from the operation was slight, and on Oct. 10th jequirity was applied to the left eye which was much the worse eye. Two applications of a fresh infusion were made to the conjunctival surface, and to the outside of the lids. The following morning the reaction was severe, the patient complaining of a great deal of pain. A thick croupous membrane formed upon the conjunctiva which, with the lids, became considerably swollen. Iced cloths and atropine were used to allay the inflammation.

On Oct. 15th, the conjunctiva appeared to be dry, the exfoliated membrane seemed to adhere to the cornea, and the patient complained that the eye would "stick" when she tried to move it about. The use of atropine was then stopped, the eye was frequently bathed with hot water, and was kept well lubricated with vaseline. Glycerine and castor oil were also tried, but were found to be less soothing than vaseline. The patient was discharged on the 22d, the eye still showing a tendency to xerosis of the conjunctiva. The vision was not recorded in this case, either before or after the use of jequirity, but the records say "improvement was not marked." Dr. S. B. St. John, of Hartford, Ct., under whose care this patient placed herself on leaving the hospital, informed me some time afterwards that the eye had not gone on to xerosis, but was improving.

Case 2.—Lizzie F., aged about sixteen, with "old granular lids and pannus," was admitted to the wards of the hospital in the spring of 1882, and was treated with hot water and astringent applications for an acute attack of keratitis in which the left eye was the worse. Having improved considerably she was discharged, but continued an out-patient of the hospital. She had numerous attacks of vascular keratitis, each of which left her vision worse than before. On Nov. 13, 1883, a free cantholysis was done on the left eye, and she was placed in a ward where she remained under treatment of sulphate of copper, etc., and was again discharged improved.

She was admitted a third time on Dec. 28th. The left cornea was "fleshy," the lids thick and granular, and the photophobia extreme. Jequirity was then applied thrice daily for three days with no effect other than to make the eye more irritable. The infusion used was an old one. A fresh infusion was now obtained, and three applications of this produced swelling and redness of the lids with characteristic grayish membrane. Iced

cloths and atropia were then used. The membrane was persistent, lasting nearly a week. Before jequirity was used there was so much photophobia that no attempt was made to test the vision, but from the appearance of her cornea it was believed that she had little more than perception of light. When she was discharged on January 8, 1884, she had vision $\frac{20}{200}$. The lids had lost much of their thickness, the cornea was comparatively clean and only slightly vascular, there was very little redness of the eyeball, there was no photophobia, and the granulations were mostly gone.

Case 3.—Miss Mary K., aged eighteen, consulted me at the office Aug. 28, 1882. She said that her eyes had been sore off and on since the preceding Christmas, but never before. The palpebral conjunctiva of her right eye showed those atrophic and cicatricial changes which are so often seen after recovery from granular lids. The cornea was clear, the eye free from irritation, and the vision $\frac{20}{30}$.

The left eye was the subject of severe granular lids and pannus, and its sight was reduced to perception of light. Upon the following day, after consultation with Dr. Agnew, she was advised to have a cantholysis done upon the left eye. The operation was soon after performed at the Manhattan Eye and Ear Hospital, but with only temporary good effect. The ulceration of her cornea was not arrested, and on Sept. 9th she came to the office with perforation of the cornea and an empty anterior chamber. The eye was then kept bandaged, the bandage being removed at frequent intervals, the eye cleansed, and the bandage reapplied. Under persistent treatment the ulcer healed, and the eye became considerably improved, but did not get entirely well, and was always subject to periods of exacerbation.

On the 16th of October, 1883, in the midst of a very bad attack, she was taken to the hospital to be treated with jequirity. For several days an infusion was used which had been in the hospital for some time, and little or no effect was produced. Two applications of a fresh infusion to the inside and outside of the lids produced a marked reaction. The membrane appeared upon the conjunctiva, the lids were swollen, and the patient complained of headache and pain about the eye. Iced cloths were then used for from ten to fifteen minutes every hour for two days, when the conjunctival membrane was mostly thrown off. Atropine was then used daily for a week, when the patient was discharged.

On entering the hospital there was marked pannus crassus, with

great photophobia. The cornea was covered with blood-vessels and exudations, and it was difficult to hold the eye open. The vision was only perception of light. When discharged, the eye was open, and with it the patient could see large objects. She was seen again on March 7, 1884. She had had no further attacks of keratitis, and the vision had risen to $\frac{10}{200}$. There were no indications for further treatment.

Case 4.—Mary S., aged eighteen, was admitted to the hospital for jequirity treatment on February 23, 1883. Her trachoma had been treated for several years with the ordinary astringents and caustics. She had, all along, been subject to repeated attacks of keratitis with increasing vascularity of the cornea and corresponding diminution of the sight. A cantholysis was done upon both eyes, but failed to prevent the recurring exacerbations. The right eye exhibited a tendency to staphylomatous bulging of the cornea, which had been perforated by ulceration and had healed with synechia anterior. At the time the jequirity was applied the cornea was so opaque and vascular that the iris could not be seen. The left eye was not nearly so bad, the patient seeing sufficiently with it to get about alone. The jequirity infusion was applied to the everted lids, and a mass of absorbent cotton saturated with the infusion was applied externally to the lids for ten or fifteen minutes. After the remedy had been applied in this way thrice daily for three days, the inflammation had reached such a height that it was thought prudent to stop it. The characteristic membrane was produced. Iced cloths and atropine were then used until the membrane was thrown off and the inflammation had subsided. She left the hospital much improved, and continued under treatment as an out-patient until she had another severe attack of keratitis in the right eye. She was then admitted again, and the jequirity infusion was applied to this eye a second time. The membrane was produced, with the other characteristic symptoms, as before, and the result showed great improvement. Before the use of jequirity, in this case the vision was only perception of light in the right eye, and $\frac{10}{200}$ in the left. On March 7, 1884, the vision was R. $\frac{10}{200}$, L. $\frac{18}{100}$, and the eyes were nearly free from inflammation.

Case 5.—John W., an adult Irishman, with "old granular lids and pannus," had a cantholysis done upon both eyes on September 19, 1883, after having been treated with astringents for some

weeks. He had slight relief after the operation, for a while, but had frequent acute exacerbations of his old trouble. On February 15, 1884, he had developed a large central ulcer of his left cornea with considerable opacity about it. The cornea was also very vascular. One application of the jequirity at night produced before morning the membrane with œdematous swelling of lids, chemosis of conjunctiva, fever, and headache. Iced cloths and atrophine were applied. Before the use of jequirity he could count fingers when held quite close to the eye. After a week he was discharged from the wards, and continued under treatment as an out-patient. On March 7th the vision was $\frac{15}{200}$ and the eye was still improving.

Case 6.—Nellie J., who had "old granular lids and pannus" of the left eye, was for some time treated with sulphate of copper and with powdered boric acid rubbed into the everted lids with the thumb. A cantholysis was done upon the affected eye with the effect of temporarily relieving the symptoms, which, at the time of the operation, were severe, the patient being unable to open the eye. She was again admitted to the wards in December, 1883, and was treated by the usual methods, but as exacerbations continued to recur it was decided to give her the benefit of a trial of the jequirity treatment. On February 5th, when this treatment was commenced, the vision was reduced to ability to discern large objects. The infusion was applied thrice daily for three days, when the membrane was formed accompanied by the usual inflammatory symptoms. Iced cloths and atropia were then resorted to. On March 7th, the vision had risen to $\frac{20}{200}$.

An old solution was first used upon this patient, but repeated applications failed to produce any reaction. The fresh solution produced the characteristic inflammation after eight or nine applications. After the inflammation had subsided the fresh solution was again applied, but no membrane could be produced, although it was applied four or five times a day for several days, both on the conjunctival surface, and on the outside of the lids by dipping a piece of cotton in the infusion and letting it remain on the closed eye for fifteen minutes after each application to the conjunctival surface.

Case 7.—James H., aged thirteen, who had "trachoma and pannus of left eye, and complete leucoma and staphyloma of right," came to the clinic, April 24, 1883, and was ordered

atropine, astringents, and hot water. He was treated with these up to May 15th, when jequirity treatment was commenced, but being an out-patient, the applications were not made regularly, and no reaction was set up. June 5th, he came into the wards and jequirity was applied thrice daily. This produced no effect, and the application was made six times daily, and the patient was given some of the infusion in a saucer, with a piece of cotton, and was set to bathing his eyes with it for five or ten minutes at a a time. In this way a considerable amount of inflammation was produced after two or three days, when the jequirity was stopped, and iced cloths and atropine were used. After subsidence of the inflammation sulphate of copper was applied to the lids each morning. A second attempt was made to excite the jequirity inflammation but without success, although a fresh solution was used.

When this patient came to the hospital the vision of his right eye was lost, and that of the left was reduced to ability to see large objects, and he was led to the clinic. The opaque and staphylomatous right cornea was covered with bloodvessels, was fleshy, and the lids were granular. The left cornea was vascular, and there were ulcers on it with numerous opacities. The lids were swollen and the granulations were thick. He remained in the hospital during the whole summer, being discharged about August 12th. When discharged the conjunctivæ of both eyes were smooth though atrophied. There were no bloodvessels on the right cornea, and there was a small, partially transparent space near the upper margin through which he could see "shadows of objects." The left cornea was free from bloodvessels. There was no redness of the ocular conjunctiva, and he could read print the size of No. 10 or No. 12 Jæger. He has since been at the hospital, and has had no recurrence of the keratitis.

Case 8.—William P., aged twenty-seven, came to the clinic August 25, 1883. He had "old granular lids and keratitis." His eyes had been sore since his earliest recollection, and he had been prevented from attending school, when a boy, on account of his sore eyes.

When he came to the clinic his lids were granular, his corneal slightly vascular, and with numerous opacities. He was subject to recurring attacks of keratitis. He came into the hospital and was treated for nine months with the whole list of astringents, with the effect of somewhat improving the right, but the left still had

recurring exacerbations. He was discharged from the hospital on January 30th, and was thought to be out of danger. He returned in a week with the left eye as bad as ever. One application of jequirity in the evening produced, before morning, the characteristic membrane, with considerable red, tense swelling of the lids, and chemosis. Iced cloths and atropia were then used.

March 7th.—The jequirity inflammation does not seem to have had much effect. The left eye is now suffering from an attack of keratitis.

Case 9.—Louise K., aged eighteen, came to the clinic July 11, 1883, with "old granular lids and vascular corneæ." She was treated with atropine and hot water, applied at home, and sulphate of copper, applied at the hospital, three times a week. For a time, during August, she came to the morning clinic and had the sulphate of copper applied daily, and her conjunctiva afterward sprayed with salt and water. Her eyes improved somewhat, but she attended irregularly, and on Feb. 5, 1884, there was marked vascularity of both cornea, with a central ulcer of the left, which had perforated two or three times, but had healed without anterior synechia.

R. V. = $\frac{20}{200}$, L. V. = Perception of light. She was taken into a ward, and four applications of jequirity produced a membrane which was thick and adherent, especially on the lower lid, and when removed with forceps there was found to be a tendency to symplepharon below.

The inflammation was treated with iced cloths and atropine. On March 6th : R. V. = $\frac{20}{200}$, L. V. = $\frac{16}{200}$. Vascularity of cornea greatly diminished, and left eye looking clearer than its fellow.

Case 10.—Margaret C., aged twenty-two, had "trachoma and pannus" of eight years' standing. She was in the hospital at 34th Street for a period of some weeks. She came again to the clinic on January 4, 1883, with a fresh attack, and was treated as an out-patient up to July 1st. During the eight years that she had trouble with her eyes, she had been subject to recurring attacks of keratitis, and had received treatment of every kind. On June 5th it was decided to use jequirity, and a solution which had been kept on ice in the hospital for some time was applied every morning for a week or ten days, and then irregularly till July 1st, when she was admitted to the hospital, no reaction having been produced. A fresh solution was then applied, and after two applica-

tions a membrane was formed, when the jequirity was stopped, and atropine and iced cloths applied.

At the time of her coming to the hospital, there was marked photophobia and lachrymation; the cornea was vascular and cloudy; the lids were swollen, red, and granular, and the ocular conjunctiva chemotic. On July 9th she was discharged. The vision was not tested either before or after use of jequirity.

Nov 20th.—Has had no trouble since the jequirity treatment. Conjunctivæ perfectly smooth; corneæ clear.

CASE 11.—James K., aged twenty-one, had "trachoma and vascular keratitis" of two years' standing. The right eye had been cured by constant treatment, sulphate of copper, nitrate of silver, and tannin and glycerine having been used. But the left resisted all treatment, although, being an attaché of the hospital, his eyes had constant care for eighteen months. In May, 1883, the upper half of the left cornea was covered with blood vessels, there was photophobia, and vision equalled only perception of light. Jequirity was applied in the usual way thrice daily. It was discontinued after the third day, a membrane having been formed. Iced cloths and atropia were then used. The inflammation gradually subsided with marked diminution and vascularity. In June the application was repeated with still more favorable results. At the end of a month the cornea contained only four or five small blood vessels. He has had no attack of keratitis since jequirity was applied. Before it was used a severe attack occurred every few weeks from the slightest cold or exposure. Vision=$\frac{20}{200}$ each eye, slightly improved by a concave glass.

CASE 12.—John C., aged twenty-nine, came to the clinic on Feby. 20, 1883, with "trachoma and vascular keratitis." The edges of his eyelids were swollen. He was ordered an ointment of the red oxide of mercury, gr. ij to vaseline ʒ j, to be applied once a day.

March 17th.—He came to the clinic, and said he had "taken cold" in his left eye. It was much inflamed, and he was ordered atropine, hot water, and colored glasses to protect his eyes from the light.

March 29th.—Left eye much better. Was ordered to use the ointment of mercuric oxide on both eyes.

May 29th.—He came to the clinic with both eyes much worse, having been six weeks without treatment. The lids of both eyes

were swollen, there was profuse lachrymation, and the photophobia was so great that the patient could with difficulty make his way about. Under the use of atropia, hot water, and "blue-stone" the eyes improved slowly, but had recurring attacks of keratitis, the left being always the worse. Jequirity was finally applied to the left eye. He was treated as an out-patient, and came irregularly. The infusion was applied six or seven times during ten days. No characteristic membrane was formed, but considerable inflammation was excited. This was treated with atropine. Upon recovery the cornea was clear and the lids smooth. He was advised to have it applied to the right eye, but he said that "one good eye was enough for him." He has had no further trouble with it since jequirity was applied.

CASE 13.—Mrs. Addie O., aged twenty-six, came to the clinic Feby. 24, 1883, with "trachoma and vascular keratitis," and was ordered to come for an application of sulphate of copper three times a week. She lived out of town, however, and did not attend very often.

July 7th.—She came to the clinic with her eyes much worse, and was advised to remain in the hospital. She did so, and sulphate of copper was used on both eyes daily for four weeks. At the end of that time, R.V. $= \frac{20}{200}$, L.V. $= \frac{3}{200}$. Jequirity was then used on the left, being applied thrice daily, by dipping in the infusion a probe with a little cotton on the end of it, and sopping it on the everted lid. After seven applications a thick membrane was formed, and there was considerable swelling of the lids and chemosis. Iced cloths and atropine were then ordered, until the eye became quiet. After two weeks the application was repeated, a fresh infusion being used. Three applications produced the characteristic membrane, and iced cloths and atropine were again substituted. Meanwhile the right was treated with sulphate of copper, and after the inflammation in the left had subsided, sulphate of copper was used on it also till the patient was discharged on Oct. 29th.

When the patient came to the hospital all her letters had to be read to her, as she could not see to read them herself. After the inflammation from the second application of jequirity had subsided she read her own letters and postal cards, and wrote to her friends.

Nov. 20th.—She came to the clinic for observation. The conjunctiva of both lids of the left eye was smooth. Both corneæ were much clearer, the left apparently clearer than the right, and the vision of each eye was $\frac{20}{200}$.