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PART I.

ORIGINAL COMMUNICATIONS.

ART. X.—*Illustrations of the Use of Chrysophanic Acid in some Diseases of the Skin.*^a By WALTER G. SMITH, M.D., Univ. Dubl. ; F.K.Q.C.P.I. ; Assistant Physician to the Adelaide Hospital.

I PROPOSE in this paper to make a few remarks relative to the use of chrysophanic acid in some diseases of the skin, and hope to elicit the experience of those who have tried the new remedy. My observations will be restricted to the class of parasitic diseases, and I will not now touch on the important practical question of the application of this acid to the non-parasitic diseases further than to express my conviction that the evidence in favour of its utility in psoriasis appears to be unanswerable, and that Neumann's statement—that the therapeutics of skin diseases have, for the last ten years, been enriched by but few remedies which have been crowned by so eminent a success as chrysophanic acid—can scarcely be accused of exaggeration.

If we regard the cutaneous affections commonly recognised as due to a vegetable parasite, they may be arranged, from a therapeutic point of view, in an ascending scale of increasing difficulty of cure, thus:—

1. *Tinea circinata*, or ringworm of the non-hairy parts of the body, most cases of which are easily and permanently curable.

^a Read before the Medical Society of the College of Physicians on Wednesday, February 5, 1879.

2. Tinea (pityriasis) versicolor, the chloasma of English authors.

3. Tinea tonsurans, or ringworm invading parts where hairs are well developed, often an obstinate and perplexing disease to conquer.

4. Tinea favosa, or favus, the most intractable and the most disgusting of the ecto-parasitical affections.

Although tinea versicolor is usually a trivial affection, and quickly curable by the ordinary remedies, yet, from carelessness and other reasons, it is sometimes difficult to eradicate completely; and we must all feel indebted to Mr. Balmanno Squire for introducing and popularising chrysophanic acid as an efficient stimulant and parasiticide.*

The following cases, in brief summary, illustrate its use in this form of disease:—

CASE I.—A medical friend, of a not very robust frame, consulted me about two years ago for an eruption of tinea versicolor extensively diffused over the chest and back. He improved slightly under treatment with corrosive sublimate, soft soap, &c., but the affection persistently relapsed, and, being anxious to get thoroughly rid of it, he wrote to me last summer inquiring about the use of chrysophanic acid. I strongly advised him to try it, and he accordingly ordered the ointment as prescribed by Mr. Squire. Shortly afterwards he again wrote to me to say that the ointment had “made a perfect cure” of his skin, after having applied it once only to the back, and three times to the chest. He adds—“I tried everything I could think of before—even linimentum iodi, and strong mercurial ointment—without the slightest benefit.” Wishing to ascertain if a permanent cure had been effected, I lately (December, 1878) made inquiry, and learned that the chrysophanic ointment completely cured him for the time; but, he writes, within “the last four or five weeks I see small spots, the size of peas, on my chest of the (tinea) versicolor, which I intend to attack some fine day with the remains of the ointment; now that I have the cure in my own hands, it makes me careless. Any amount of washing, or baths, or soap, has not the very remotest effect on the disease.”

CASE II.—In September, 1878, a former pupil brought his wife to me on account of an extensive outbreak of tinea versicolor upon the chest, back, and side of the neck, which had developed three years previously after an attack of measles. She was of a brunette complexion, and appeared in excellent general health, and was within a few weeks of her

* Essays on the Treatment of Skin Diseases. No. IV. On the Treatment of Psoriasis by an Ointment of Chrysophanic Acid. By Balmanno Squire, M.B. London: J. & A. Churchill. 1878.

first confinement. The following ointment was prescribed:—Chrysophanic acid, gr. 30; spirit of chloroform, ʒi.; simple ointment, ʒi. Mix. An immediate good effect was observable, and in the course of three weeks she wrote to express her thanks for “the rapid cure of the unsightly brown spots.” “I am glad,” she says, “to be able to tell you that they have entirely disappeared. The outer skin is now peeling off, leaving the under one quite fair and white.” In a recent letter (December 14th), three months later in date, she writes:—“I am indeed glad to be able to tell you that your cure has been a lasting one. I have never had the slightest return of the brown marks. My neck and chest are perfectly white and fair, and my friends and relatives can hardly believe their eyes when they see my chest *now* compared to what it *was*.”

The third case of *tinea versicolor*, which I will presently adduce, possesses some interest from the results of a novel therapeutic experiment made in connexion with it.

In an interesting paper (*Edin. Med. Journ.*, July, 1878) Dr. James Adams relates two cases of psoriasis in which, in the pursuit of an ingenious hypothesis, he was led to employ *alizarin* as a substitute for chrysophanic acid. The results were equally effective, equally decided, if not so speedily apparent; and he anticipates “as possible and probable that alizarin may either prove a cheap substitute for chrysophanic acid, or that it may form a basis or a link in the artificial production of chrysophanic acid at a cheap cost.”

Alizarin is the colouring principle procured from madder, and, until a few years ago, was a costly product obtainable only from the natural glucoside in the madder plant. But, in 1869, Graebe and Liebermann added another to the many triumphs of modern organic chemistry, and, at the same time, revolutionised a great branch of commercial industry by their important discovery of the synthesis of alizarin from anthracene ($C_{14}H_{10}$), one of the hydrocarbons in that still unexhausted treasury—coal tar. The pigment is now made on a vast commercial scale. Alizarin belongs to the same group of bodies as chrysophanic acid—viz., the anthracene group, and, according to some, is isomeric with it. It possesses likewise acid properties, and presents some features of analogy with chrysophanic acid. Thus, for example, with potash either substance forms a compound of a fine purple or red colour.

The chemical synthesis of a natural organic pigment—the first synthesis of its kind—has reduced the price of alizarin to a very moderate cost, and it is probable, as Dr. Adams suggests, that ere long a process will be devised that will convert anthracene or alizarin

into chrysophanic acid, and so lower the cost of that remedy as to bring it within the reach of all. The gaps that yet remain to be bridged over by fresh discoveries are indicated by dotted arrows in the subjoined scheme of the compounds just referred to:—

I was struck by Dr. Adams' observations, which appeared to open up a fresh path in cutaneous therapeutics, and accordingly I determined to put the newly suggested remedy on its trial at the first suitable opportunity.^a

CASE III.—A few weeks ago, S. B., a young man, aged nineteen, from the county Mayo, who had been under my care some months previously for right facial paralysis, again came up to town and sought advice for an extensive eruption of tinea versicolor, which appeared some twelve months ago on the shoulders, and had gradually spread downwards. The patient was of a fair complexion, with light hair; and the eruption, which was of a dusky brown colour, extended over the front of the body as low as the umbilicus, and a little lower behind. Along the arms it had crept a short distance below the bend of the elbow.

The eruption was almost absolutely symmetrical in every small detail on each side of the body, and it occurred to me that this was a favourable case for testing if alizarin were possessed of parasiticide properties. For as the use of chrysophanic acid in various chronic skin affections was an extension of its original application to the treatment of parasitic maladies, so it appeared reasonable to try if conversely alizarin, which had been recommended as a stimulant in psoriasis in lieu of chrysophanic acid, might not prove serviceable as a parasiticide. In this latter capacity alizarin has not yet been tested, so far as I know; and without claiming more for a single case than it is worth, I desire to record it in the hope of inviting others to institute further experiments.

Treatment was commenced on the 4th of December. A preliminary scrubbing with soft soap was ordered, and the following two ointments

^a Dr. Janisch, clinical assistant to von Hebra, has also announced his intention to test alizarin clinically in skin disease on the strength of its chemical analogy to chrysophanic acid (*Wiener mediz. Blätter*, No. 7, 1878, quoted in *Pharm. Journ.*, July 27, 1878, and *Dubl. Med. Journ.*, Sept., 1878).

prescribed:—For the *left* side of the body, alizarin ointment, $\mathfrak{z}\text{i}$. of commercial artificial alizarin to $\mathfrak{z}\text{i}$. of lard. For the *right* side of the body, chrysophanic ointment, $\mathfrak{z}\text{i}$. of the acid to $\mathfrak{z}\text{i}$. of lard. The wide extent and symmetrical distribution of the eruption combined to render the case a fair one for comparison of the effects of the two drugs.

On December 9th, up to which time the ointments had been rubbed in regularly twice a day, the following points were noted:—*Right* (chrysophanic) *side*.—Skin brownish and reddened, especially about the neck; eruption considerably lessened over the front of the body. *Left* (alizarin) *side*.—Skin stained deep yellowish brown; eruption not materially altered in extent or character. Neither ointment causes any sensible irritation. The ointments were subsequently prepared with vaselin.

12th. *Right side*.—Many brown patches to be seen below the nipple, and about the clavicle and shoulders a number of vivid red patches. On the back the eruption seems to be as abundant as before treatment. *Left side*.—Skin stained orange brown, and a crop of minute dark red specks visible on the arm, the mammary region, and on the back. In the centre of each speck a hair stump appears. Four days later the eruption was much less apparent on the alizarin side, especially in front, and the skin presented no evidence of desquamation. On the chrysophanic side the skin was freely desquamating above and in front, and was tender when washed. The eruption stood vividly out.

Dr. Head saw the patient a few days afterwards, when the eruption had nearly faded away on the left (alizarin) side, and also to a less extent on the right (chrysophanic) side. The line of demarcation, back and front, between the two sides, dusky-red and tawny-yellow on either side respectively of the middle line, was sharply defined, showing that the ointments had been strictly applied according to directions. It was also noticed that the side of the shirt in contact with the alizarin ointment was very slightly stained, while the chrysophanic ointment had, as usual, stained the shirt deep brownish-red. On the 21st inst. I took scrapings from the skin of both sides, and examined two samples of each under the microscope. In neither of the alizarin specimens could I recognise the characteristic grouping of the microsporon fungus, and only some minute spheroidal bodies (of doubtful nature) were seen on one or two epidermal fragments. Neither could any trace of mycelium be detected in the chrysophanic scrapings, but the minute spheroidal bodies were much more numerous. He was obliged to leave Dublin for his home on December 23rd, and at that date the skin on the left (alizarin) side was smooth and natural looking, slightly yellow, and presenting a mere trace of the eruption below. The skin on the right (chrysophanic) side was dusky-red, and presented more evident remains of the eruption.

On the 13th January, 1879, the patient wrote to me in reply to some queries:—

“I am delighted to inform you that both ointments have taken wonderful effect, each having produced a perfect cure. Of the two the alizarin ointment is the better, in my estimation, for no one could apply them more justly than I have done; and to-day, after the sharpest inspection, I could not detect the least particle of the disease, whereas on the right side, to which the yellow ointment had been rubbed, there remain about thirty little spots, the greater part of which are on the stomach. The eruption caused by the yellow ointment disappeared gradually as the skin inside became healthy, but I have remarked that where the spots remain there had been no eruption or irritation whatsoever, and undoubtedly the ointment has been distributed equally. As regards the staining of the clothes, until they have been washed the alizarin ointment appears to stain them more, but washes out more freely than the yellow ointment, which latter cannot be removed thoroughly; but I have been told by the washerwoman that bleaching takes the best effect.”

These cases taken together go towards confirming Mr. B. Squire's observations upon the use of chrysophanic acid as a speedy cure for tinea versicolor, while any appearance of a relapse can be at once met and instantly stamped out by a timely recourse to the remedy.

Before concluding, I will add a few words in reference to the common forms of ringworm.

The treatment of tinea circinata of the body is a simple matter, and we have numerous remedies at our command by which a good result is, as a rule, easily and rapidly attainable; and chrysophanic acid gives, as has long been known by Indian practitioners who are familiar with Goa powder, satisfactory evidence of its parasiticide power. For example, Mr. C. N., a medical student, consulted me in July, 1878, for ringworm. Several rings of tinea circinata appeared about October, 1877, on the side of his neck. No treatment had been adopted, and in July, after a duration of nine months, the rings had partially coalesced and formed gyrate patches. Chrysophanic ointment (3i. to ʒi.) was prescribed, and was diligently applied by Mr. N. Within a week the disease had totally disappeared, and no recurrence of it has taken place.

But in the management of that plague of practice, tinea tonsurans or ringworm of the scalp, I am unable to say that chrysophanic acid fulfils the desideratum of an efficient and speedy cure, and in this respect my experience coincides with that of Dr. Radcliffe

Crocker, who treated twenty cases of *tinea tonsurans* with chrysophanic acid:—"The results were by no means so satisfactory; in most of them other remedies had been tried, and the disease had existed for some time. When *tinea circinata* and *tinea tonsurans* occurred together in the same case, the ringworm on the body was readily cured. Of the whole twenty, two were cured completely—one in six weeks, the other in two months. In seven there was certainly improvement—that is, where there were several patches some were cured, but in the other patches the hairs were still diseased. The remaining eleven cases were only slightly improved, though the treatment was kept up for at least three months and even longer" (*Lancet*, January 27, 1877).

The acid is, moreover, open to certain disadvantages now tolerably well known. Of these the staining of the skin and dyeing of the hair are the least, for these quickly disappear when the use of the drug is suspended, and by simple precautions the discoloration of the patient's pillow, linen, &c., can be avoided; but the irritant qualities of the acid are more marked, and in more than one case I have been compelled to discontinue its use, even when freely diluted (20 grs. or less to ʒi.), on account of the œdema, irritation, and pain provoked by it.

To sum up, I think that the knowledge we have at present warrants me in saying:—

1. Chrysophanic acid is a powerful local stimulant—not, however, tending towards vesication or ulceration. Its action in this capacity is best illustrated in psoriasis.

2. It also possesses undoubted parasiticide power.

3. It is a most efficient remedy in two parasitic affections—viz., ringworm of the body, and *tinea versicolor*.

4. In ringworm of the scalp it frequently fails owing to causes that militate against all remedies as yet tried.

5. In favus it has not, so far as I know, as yet had a trial.

6. As a destroyer of animal parasites its efficacy remains to be proved. It would probably be of service in some cases of scabies and in pedicularia.

7. Internally, as Dr. Ashburton Thompson has shown, it is an emetic purge.

8. Alizarin, upon several grounds, appears to deserve a more extended trial in diseases of the skin.