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Photodermatitis in Indians of Manitoba

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SINCE 1957 we have seen 64 North American Indians in Manitoba with light-sensitive skin eruptions. Before considering this distinctive dermatitis it may be of value to discuss briefly the people who develop it. It is believed that the North American Indians are a mongoloid people who came from Asia across the Bering Strait.[1] The people in this migration were of different languages and customs and during the glacial age lived in the southern half of the United States. The last ice sheet did not completely leave the southern half of Ontario and Manitoba until 5000 B.C. As the weather improved, the Indians migrated north. In more recent historic times there has been a westward migration of Indians from the Atlantic seaboard to the Rockies. For example, within the last 150 years the Assiniboines displaced the Blackfeet from southern Manitoba and they, in their turn, were pushed westward by the Saulteaux; while in the north the Chipewyans lost their hunting grounds to the Crees. The tribes currently living in Manitoba are the Saulteaux, the Crees, the Sioux and the Chipewyans (Fig. 1). The Saulteaux are of Algonkian stock. They belong to a group of Indians who first migrated to Sault Ste. Marie and then separated into three tribes, the Ojibwa, the Ottawa and the Potawatom. The Saulteaux are called Ojibwas in Ontario, and Chippewas in Minnesota and Michigan.

The Crees are also of Algonkian stock and live in the northern part of six provinces in Canada. The Sioux belong to the Dakota family and are descendants of the Sioux refugees who sought asylum in Canada during the "Minnesota Massacre" of 1861 and the "Indian War" of 1876. The Chipewyans are of Athapaskan stock, and recently two bands were resettled in Northern Manitoba.

In addition to the Indians described above, there are abundant offspring of Indians and white parents known as "half-breeds" or Métis. In many of them their Indian characteristics are readily recognized, while others are well on the way to integration into the white population.

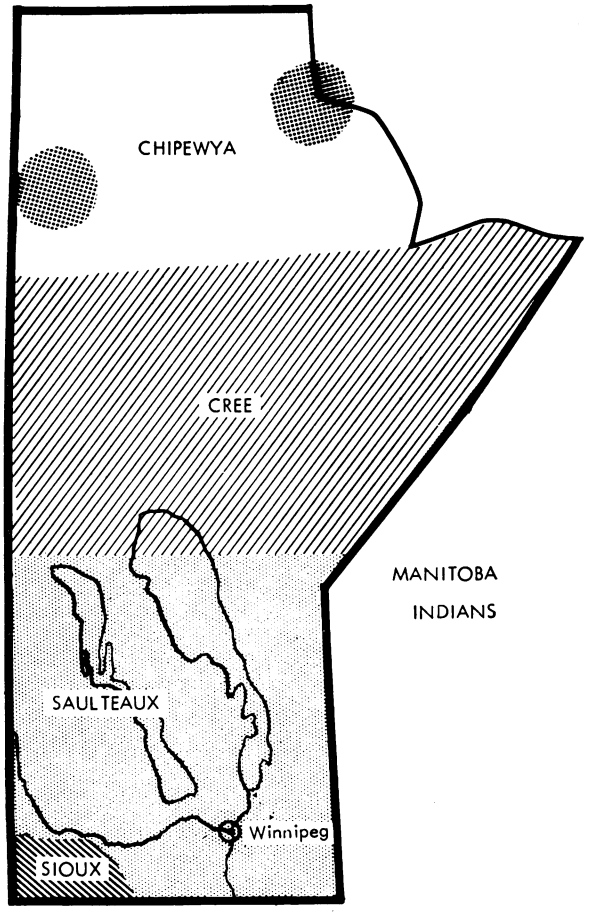

Fig. 1.—Distribution of Indian tribes in Manitoba.

REVIEW OF LITERATURE

In 1960 Schenck[2] published a paper entitled "Controlled Trial of Methoxsalen in Solar Dermatitis of Chippewa Indians". As the Director of an Indian Hospital at Redlake, Minnesota, responsible for the medical care of nearly 3000 Chippewa Indians, Schenck saw about 20 or more patients each year with dermatitis actinica. He describes the condition clearly and succinctly as affecting the exposed areas such as cheeks, nose, lower lip, ears, dorsal surface of the hands and V of the neck. The lesions consist of erythema, edema, vesicles with exudation and crusting; secondary infection is the rule, and chronic impetigo, which leaves some scars, develops commonly. The condition appears in the spring, lasts throughout the summer, and tends to recur year after year. It is interesting that this was such a common problem to Schenck and that in the first recorded report of this photodermatitis occurring in North American Indians the emphasis is on a form of therapy which did not prove to be beneficial for the 13 persons treated.

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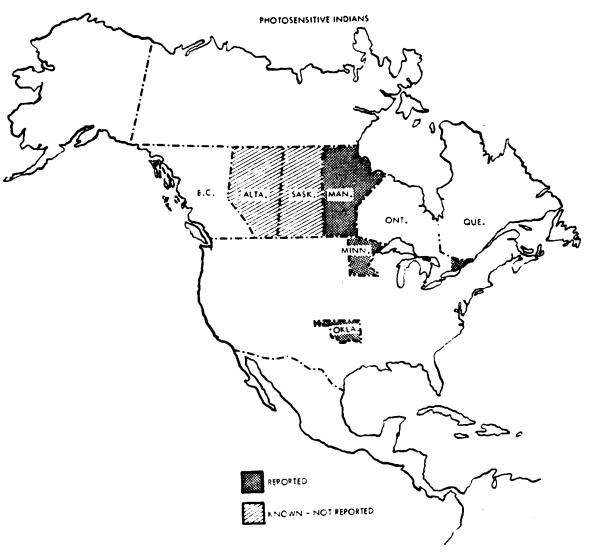

Fig. 2.—Distribution of known photosensitive Indians in North America.

In 1961 Everett *et al.*[3] reported light-sensitive eruptions occurring in 7 of 14 full-blooded American Indians whom they observed in Oklahoma. Using the classification of polymorphic light-sensitive eruptions proposed by Lamb *et al.*,[4] they noted that six of the seven patients had eczematous and/or prurigo-like eruptions and only one had a plaque-like lesion. They drew attention to the high incidence of eczematous and prurigo-like eruptions, which are extremely uncommon in the general population. They also observed that there is often only a partial remission of the dermatitis during the winter.

Brandt,[5] in his report in 1958 on dermatological conditions occurring in Navajo Indians, briefly mentions some people with sharply defined erythematous patches on the nose and cheeks, which produce some depigmentation and which may be associated with cheilitis. It is possible that this is an early report of the dermatitis under consideration.

CLINICAL MATERIAL

It is of particular interest that the 64 Indians in this series, as well as those reported by Schenck[2] and Everett *et al.*,[3] all lived in the central plains of North America (Fig. 2). Similar light-sensitive skin eruptions have been observed in Alberta[6] and Saskatchewan,[7] and recently three photosensitive Indians were found in eastern Ontario.[8] Photosensitivity has been noted in members of each of the four tribes resident in Manitoba.

Slightly more than one-half of our patients were female. The onset of symptoms tended to be early in life. Sixty per cent of the Indians involved showed evidence of photosensitivity by the time they were 10 years old, and 75% by the age of 20 years. There was a family history of photosensitivity in 45% of our cases. This will be discussed later.

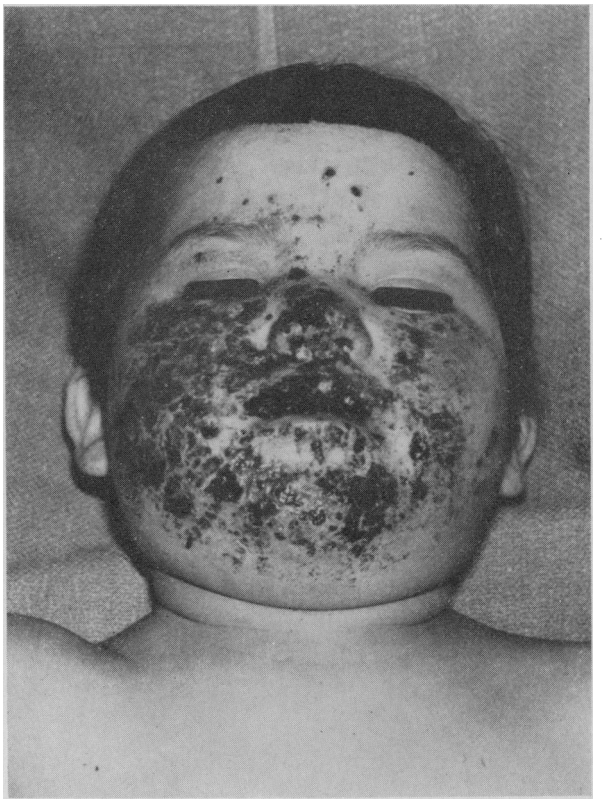

Fig. 3.—Acute eczematous response to sunlight with secondary impetigo in a 4-year-old Indian girl.

It is customary for Indians to wear hats and high collars, and to keep their arms and legs covered so that these areas are not exposed to the sun. As the Indians become more exposed to our culture, they also become more exposed physically, and because of this, the women and children in particular are more likely to develop photosensitive skin eruptions on their necks, arms and legs.

The reaction pattern in this photodermatitis bears a marked similarity to that of atopic dermatitis in that the acute eczematous eruptions tend to occur in the very young, and the more localized thickened plaques in the older patients. As mentioned previously, 60% of our patients developed symptoms before the age of 10 years. In small children the eruption on the face was always eczematous, with an acute explosive onset often associated with a secondary impetigo (Fig. 3). There were erythema, edema, exudation and crusting. Vesicles and bullae were not observed clinically. The lips and ears were often

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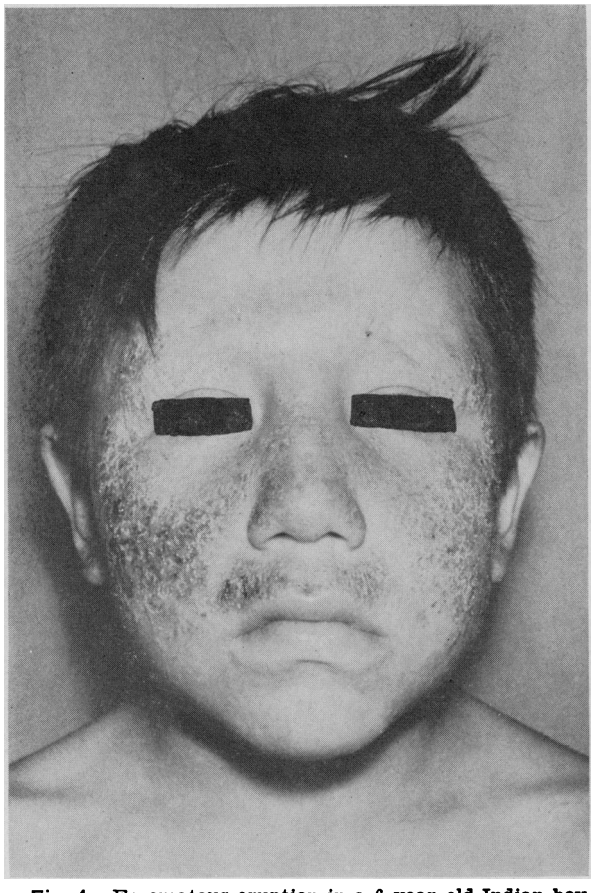

Fig. 4.—Eczematous eruption in a 6-year-old Indian boy showing clear areas on the protected regions of forehead, under the nose and on the chin.

involved and the protected areas under the hair, nose and chin were usually not affected (Fig. 4).

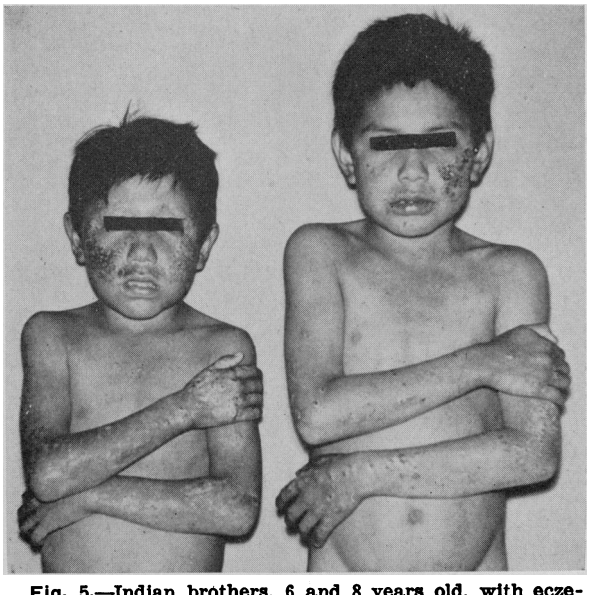

Fig. 5.—Indian brothers, 6 and 8 years old, with eczematous eruptions on the face and papular prurigo-like lesions on the arms.

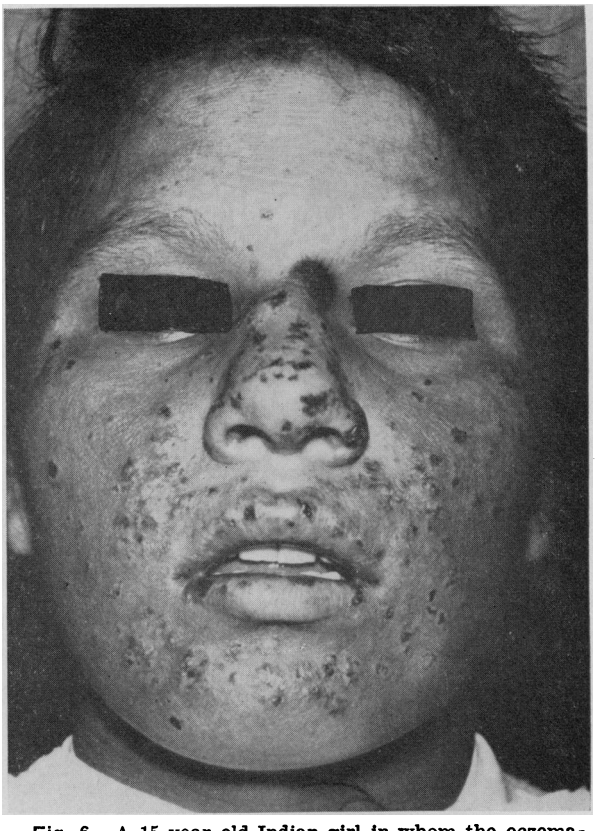

Fig. 6.—A 15-year-old Indian girl in whom the eczematous lesions on the face are becoming more grouped and not so diffuse.

In the first case we recognized in 1957 a diagnosis of infected eczema had been made by competent dermatologists, and it was only after a considerable time had elapsed that the role of sunshine in the production of the dermatitis became evident. The lesions on the arms and legs were always papular and prurigo-like (Fig. 5). They were often crusted and left faint depigmented scars. They were never vesicular or bullous. In older children the eruption was eczematous, but the dermatitis was not diffuse, and the lesions tended to be grouped and contain some papules (Fig. 6). The eczematous type of eruption was not very common on the face of adults, but it was observed in both the male and female (Fig. 7). Plaque-like lesions were much more frequent on the faces of adult men and women (Fig. 8). They were not present on any of the children. The majority of adults with photodermatitis on the face had an associated cheilitis of the lower lip.

Nine patients presented with the unusual symptom of a chronic recurrent cheilitis of the lower lip, characterized by acute exacerbations after exposure to sunlight, usually healing completely in the winter, and without other lesions on the face. It occurred in seven males and two

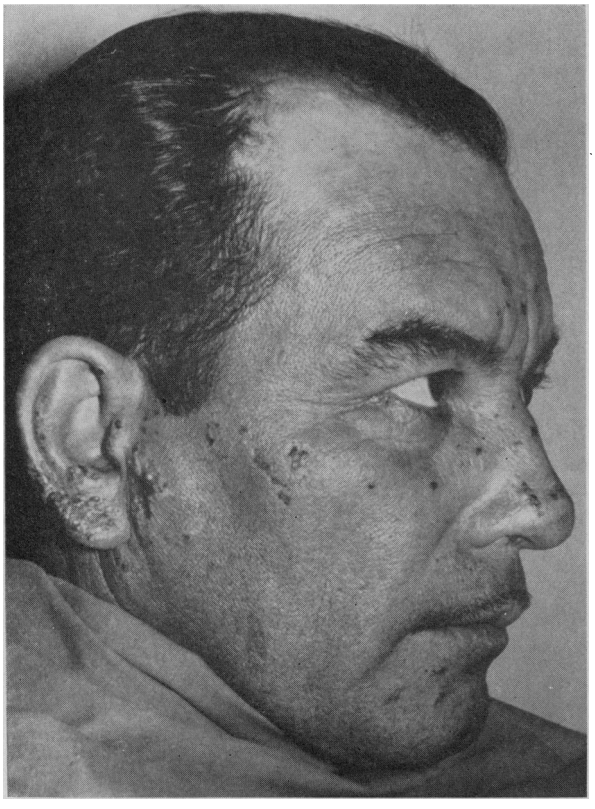

Fig. 7.—Eczematous-type photodermatitis in an adult male Indian.

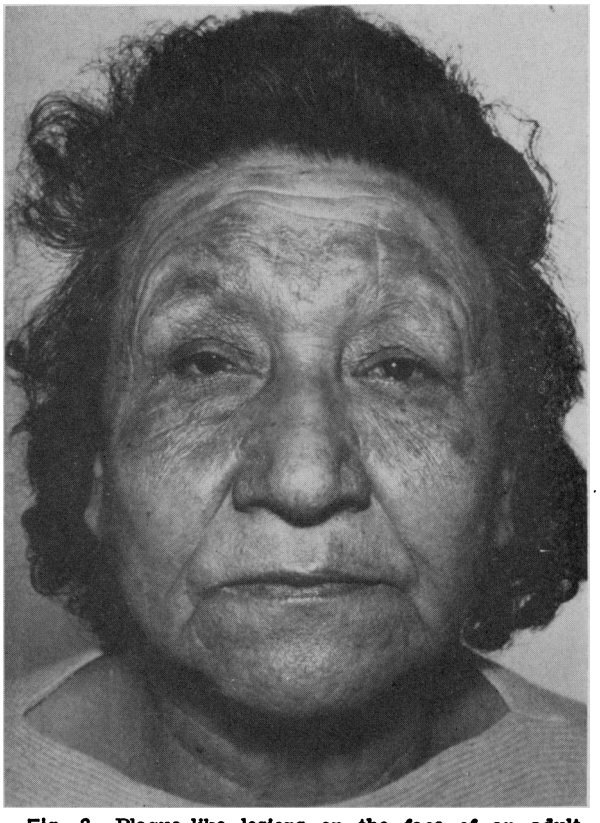

Fig. 8.—Plaque-like lesions on the face of an adult female Indian.

females and had its onset in early childhood in seven of the nine patients affected. In one man and one woman it appeared at about the age of 30 years. After exposure to summer sunlight, the lower lip becomes very edematous, denuded and partially covered with a yellowish-brown crust (Fig. 9). This cheilitis, occurring in the absence of other facial lesions, is usually associated with a papular, prurigo-like eruption on the hands, arms and legs. One 53-year-old Indian male, who had this type of cheilitis since childhood, lost it while he worked underground as a miner for four years. When he returned to work above ground the cheilitis recurred and at the same time he developed a new plaque-like eruption on his face.

INVESTIGATIVE STUDIES

Histopathology

To date, we have not attempted to duplicate the excellent study of the histopathology of this condition reported by Everett *et al.*[3] They found that the microscopic picture of the eczematous and prurigo-like polymorphic light eruptions was similar to that of chronic dermatitis. The epidermal atrophy, basophilic degeneration of collagen and clumping of elastic tissue, which were prominent features of plaque-like polymorphic

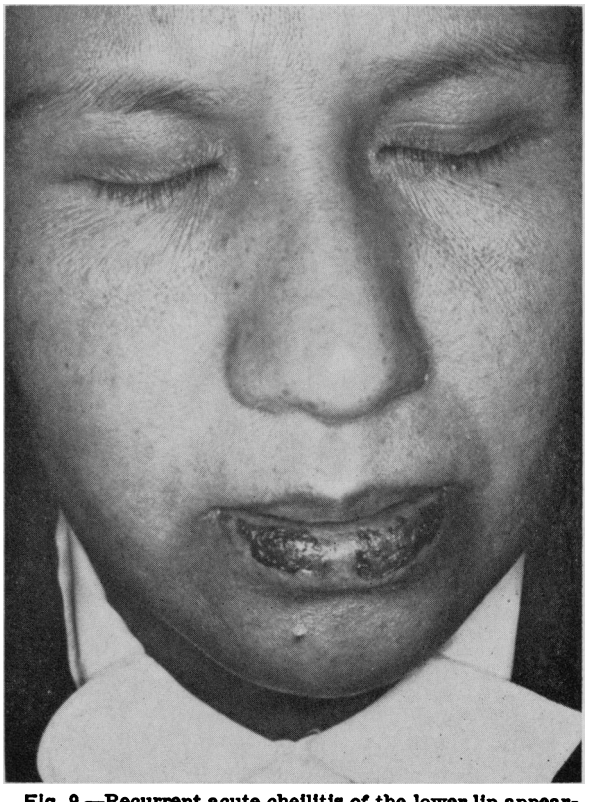

Fig. 9.—Recurrent acute cheilitis of the lower lip appearing every summer since childhood in a 45-year-old woman.

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light eruptions, were not features of prurigo-eczema type, and were not useful in their identification.

Porphyrins

We have examined many urines and feces for porphyrins, with consistently negative results. Recently we have been screening our patients for evidence of erythropoietic protoporphyrins, and the results of these tests have also been negative to date.

Phototest Techniques

Everett *et al.* recorded, and we are able to confirm, the persistence of a mild form of the dermatitis throughout the winter in the majority of the Indians in our series. We have also noted acute exacerbations of the dermatitis as early as the middle of February in some patients. In Manitoba, February is very definitely a winter month, so much so that on February 2, when folklore states that the ground hog makes his appearance, there is always so much snow and bright sun that he invariably sees his shadow and goes back to sleep for at least six weeks, waiting for spring to arrive. With our present knowledge it is difficult to explain the frequent persistence of this photodermatitis during the winter months and the acute exacerbations that develop before springtime. It has been assumed that polymorphic light-sensitive eruptions are provoked only by wave lengths of light in the sunburn spectrum (29 to 3200 Å). It is also thought that the light under 3200 Å does not reach us during the winter months and that this fact accounts for the absence of suntanning and certain types of photosensitivity in our area in the winter. Obviously more work needs to be done to measure accurately the wave length of light reaching Manitoba during the winter, and then, if possible, to correlate this information with the photodermatitis occuring in Indians.

Recently we have been using Epstein's[9] repeat phototest technique to try to reproduce the dermatitis in our patients. Twenty-four Indians have been tested, and 11 developed some degree of eczematoid response in the test area. We found that this was still an experimental and unpredictable procedure and in its present state of development it did not give positive results with sufficient consistency to be of diagnostic value.

Genetic Considerations

A unique finding in this series of 64 North American Indians with polymorphic light eruptions was the high incidence of the same condition in other members of the family. Twenty-nine (45%) of the 64 patients had a definite family history of photosensitivity. Considering the difficulties encountered in obtaining an accurate family history from Indians both on and off reservations, this incidence is amazingly high. Based on the evidence of the histories presented to her, Dr. Irene Uchida, the geneticist at the Winnipeg Children's Hospital, is of the opinion that this polymorphic light eruption of North American Indians is transmitted as an autosomal dominant trait. It is quite possible that some factors in the environment, such as diet, drugs or plants, may initiate this photodermatitis in Indians who have a certain genetic background. Investigation of this possibility has been unrewarding to the present time.

TREATMENT

Treatment of the condition is unsatisfactory. During the acute eczematous stage, bland therapy, utilizing local corticosteroid creams and antimicrobial agents as indicated, merits a trial. The most useful therapy in our series has been the local application of 0.1% betamethasone valerate cream combined with the judicious use of systemic antimalarial drugs. We have not obtained much benefit from the use of sun filter creams in these patients.

Summary A typical photodermatitis occurring in North American Indians in Manitoba has been studied. The clinical picture in 64 Indians whose ages ranged from early childhood to later life is described and includes an unusual cheilitis confined to the lower lips. Tests for porphyrins, including erythropoietic protoporphyrins, have been negative and photo skin tests have been equivocal. This photodermatitis of North American Indians appears to be transmitted as an autosomal dominant trait.

Photodermatitis occurring in North American Indians is clinically similar to polymorphic light eruption occurring in the rest of the population. It differs in its apparent hereditary nature; its early onset and long course; its tendency to persist in minimal form during the winter months; and its occasional occurrence as a chronic and recurrent severe cheilitis of the lower lip.

Résumé L'auteur a étudié une photodermite charactéristique qui se produit chez des Indiens manitobians. Il décrit le tableau clinique observé chez 64 de ces Indiens, dont l'âge variait de la première enfance à la maturité et qui comportait notamment une cheilite exceptionnelle limitée à la lèvre inférieure. La recherche de la porphyrine, et de la protoporphyrine érythropoïétique a été négative et les épreuves de sensibilité cutanée ont été équivoques. Il semble que cette photo-

dermite affectant des Indiens de l'Amérique du Nord se transmette suivant un trait d'autosome dominant.

La photodermite qui se produit chez les Indiens de l'Amérique du Nord ressemble à l'exanthème polymorphe du reste de la population. Elle est différente quant à l'hérédité, le commencement précoce, sa persistence pendant l'hiver et aussi parce qu'elle se produit quelquefois comme une cheilite grave et chronique de la lèvre inférieure.

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Effect of Methandrostenolone on Blood Lipids and Liver Function Tests

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ANABOLIC steroids are widely used. Their effect on blood lipids has been described in several publications. So far as methandrostenolone¶ is concerned, some authors have reported an increase in blood cholesterol,[1-3] others have noted no effect[4, 5] and still others have observed a decrease.[6-8] Since it is now considered desirable to avoid hypercholesterolemia in the presence of atherosclerosis, it seemed important to us to examine the effect of methandrostenolone on blood lipids in more detail, particularly since anabolic agents are prescribed primarily for that age group in which atherosclerosis is common.

We chose to examine the effect of methandrostenolone in a group of aged and atherosclerotic patients, using the therapeutic doses usually recommended for such patients in Canada (i.e., 5 to 10 mg. daily, for short periods of time) and also the somewhat higher doses common in Europe.

SUBJECTS AND METHODS

Eighteen males from a hospital for the chronically ill were selected as the subjects of the study. A diagnosis of atherosclerosis had been made in the majority of the cases. Three different treatment schedules, each of three periods of three weeks' duration, were drawn up, and six patients were assigned to each treatment schedule by means of a random number table. A description of the patients in the three groups is given in Table I, and their treatment schedules are described in Table II. The double-blind technique was used throughout the study.

The biochemical analyses were performed at the Laboratoire de Recherches d'Endrocrinologie et de Nutrition of the Hôtel-Dieu de Montréal, utilizing the following methods: bromsulphalein (BSP)—5 mg. per kg. was injected intravenously, blood being then withdrawn at two different times, 0 and at 45 minutes for estimation of the excretion test; the prothrombin time was performed at the bedside, on whole blood, using activated thromboplastin;[9] serum transaminases by means of the Hyland kit;[10] triglycerides by the method of Van Handel and Zilversmit;[11] total and esterified cholesterol by the method of Zak *et al.*,[12] modified; phospholipids by the method of Fiske and Subbarow,[13] modified; total lipids were calculated by adding together the various lipid fractions; non-esterified fatty acids (NEFA) by the method of Dole,[14] modified. All the analyses were done at the beginning of the study and repeated every three weeks (i.e. at the end of each period) except for the BSP, which was done only twice (at the beginning and at the end of the study).

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¶Methandrostenolone is $\Delta 1$, 17_α-methyltestosterone (Danabol, CIBA).
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