hour (*Fig. 1*). Acetaldehyde was perfused through other lungs (5 animals) constricted by histamine. In these lungs there was an increase in the perfusion rate to just above normal levels, an effect which was however transient (*Fig. 2*).

When the sensitized guinea pig lungs were perfused with antigen there was a decided fall in the rate of flow. This bronchoconstrictor effect could be overcome partially by acetaldehyde. Reference to *Fig. 3* will show that administration of epinephrine, after acetaldehyde had had time to exert a maximal effect, was followed by an increased flow.

"Pitocin" was used to constrict the coronary vessels in three isolated rabbit hearts perfused according to the method of Sherrington,[11] which is a fixed pressure variable flow method. The outflow was measured with the same apparatus as mentioned above.

Initial flow through the coronaries was about 30 cc. per minute. "Pitocin" in doses of 0.2 cc., 0.4 cc., or 1 cc. (1:10 dilution) reduced the flow. "Pitocin," 1 cc. of 1:10 dilution, which was more often employed because more evident effect was produced, reduced the flow to between 11 and 16 cc. per minute. When such constriction was present, 5 cc. of a 5 per cent solution of acetaldehyde or 0.2 cc. of a 1:10,000 solution of epinephrine, restored the flow temporarily to near normal (about 25 cc. per minute).

SUMMARY AND CONCLUSIONS

Bronchioles constricted by histamine in perfused rabbit lungs were relaxed by both epinephrine and acetaldehyde.

Bronchioles constricted by antigen in perfused lungs from sensitized guinea pigs were relaxed by both acetaldehyde and epinephrine. In both guinea pig and rabbit lungs 5 cc. of 5 per cent solution of acetaldehyde did not exert so powerful an effect as 0.2 cc. of 1:10,000 epinephrine solution.

Coronary vessels constricted by "pitocin" in perfused rabbit hearts were relaxed by both epinephrine and acetaldehyde.

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DISCUSSION (*Abstract*)

Dr. William D. Davis, Jr., New Orleans, La.—There are one or two interesting questions which arise from a demonstration of the importance of acetaldehyde. One of the most interesting is the fact that intravenous alcohol relieves an attack of bronchial asthma. Handovsky has shown also, that following the administration of intravenous alcohol, serum acetaldehyde is elevated. Unfortunately, he does not tell us to what level it is elevated, and whether the effect of bronchial dilatation is due to the increase in serum circulating acetaldehyde.

There are one or two incongruities which need to be resolved between epinephrine and acetaldehyde if actually the clinical effect of "antabus" is to be ascribed to circulating acetaldehyde. For instance, following "antabus" plus alcohol, there is a flushing of the skin, as opposed to the pallor which usually follows epinephrine. In addition, following acetaldehyde there is a definite increase in the rate of respiration which is different from the respiratory effect of epinephrine, which only increases the total volume, and then no blood pressure effect has been reported following the combined effect of "antabus" and alcohol, though this has definitely been shown from acetaldehyde in the experimental animal by Nelson.

Finally, if we really do have a material which will produce coronary dilatation after the fashion of epinephrine without a peripheral pressor effect and increase on the load of the heart, it is apt to be an exceedingly useful material in clinical medicine from a cardiovascular standpoint.

A COMMON FORM OF FAT DYSCRASIA: DRY SKIN*

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Dry skin is a commonplace finding in the physical examination of patients today. In 100 consecutive examinations in my office this year, fifty women and fifty men, 64 per cent of the women and 46 per cent of the men gave a history of having suffered from dry skin. In my physical examination of these patients, I noted the presence of dry skin as of clinical importance in 54 per cent of the women and 36 per cent of the men. In examining 100 children under the age of 10 years, all of whom showed dry skin, 31 per cent were girls, 69 per cent were boys. The frequency of this symptom in the past few years has stimulated us to explore the cause and the treatment.

A leading fashion magazine, *Harper's Bazaar*,[1] has recently published an article entitled "Dry

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Skin—the Great American Drought." I quote their opening sentences:

"It's not seborrhoea, acne, impetigo, contact dermatitis, urticaria or dermatophytosis, but plain Dry Skin, that women in every city and village in America complain of today. Our skin is dryer than our grandmothers' ever was. Dryer than our husbands' is. Dryer than the complexions of the women of England, France, Scotland, Italy. Only the peasant women who labor in the fields have dryer skins than our American beauties."

These observations parallel those made in my own physical examinations over a period of several years.

When giving a history of their problem, my patients have attributed their skin disorder to one of the following causes: hard water, improperly neutralized soaps, detergents, various household chemicals, exposure to the sun or wind, dry weather, dust, and incompatible or excessive cosmetics. Physicians realize that these irritants may not disturb some people at any time, while others will suffer from even mild exposure to any of the irritants. Further, they recognize that a dry skin may accompany many diseases in which the patient has suffered febrile states, or has passed through a period of starvation, or has suffered serious liver impairment, or undergone other disease states due to a deficiency of the vitamins.

I shall confine this discussion to dry skin as a symptom of disturbed fat metabolism as it affects the apparently healthy individual.

To prepare for this approach to the problem, let us begin by reviewing the composition of the skin. Stelwagon and Gaskill[2] say that the skin acts not only as a protective covering of the body, but as a closely related organ to the entire body economy. The outermost layer, the epidermis, is constantly expended and is replaced by the lower layers: this horny layer of skin serves to protect the body from blows, from the injurious effects of extremes of temperature and from the absorption of harmful materials. Beneath the epidermis lie the sebaceous and sweat glands, which are excretory glands, with a minor respiratory function: beneath these are the hair, hair follicles and the nails, generally called the appendages of the skin, and the lymphatics, the blood vessels, nerves and muscles, concerned with the function of the nutrition of the skin. The sweat glands remove water from the body under ordinary circumstances at an almost imperceptible rate, cooling by evaporation. Ninety-nine per cent of this excretion is water, the balance being composed of inorganic salts, protein, urea and fatty acids.

Stelwagon and Gaskill[2] indicate that the sebaceous glands provide a natural oily barrier to permeability. Sebum, the material given off by the sebaceous glands, is a semi-fluid fat which normally lubricates the skin, keeping the hairs oiled and the skin pliable. The sebum may become solid when exuded, particularly from such larger glands as those about the nose.

Sebum has not yet been fully analyzed. To date, it is recognized to contain triglycerides,[3] cholesterol, oxycholesterols, saturated and unsaturated fatty acids,[4] phosphates, and choline.[5] Inasmuch as the phosphates and choline are part of the lecithin radical, it may be assumed that lecithin is likewise present. Hansen and Burr[6] have suggested that lineoleic, linolenic and arachidonic acids may be necessary to prevent dry skin in man as well as in experimental animals. This is the outgrowth of the recognition that certain of these multiple bonded fatty acids are now considered to be the essential fatty acids of nutrition.[7] In a similar manner, clinical evidence points to the fact that these unsaturated fatty acids may be part of the composition of sebum.

Although the fatty acids of the oils of sebum have been recognized to contain both oleic and palmitic acids, the former of which is a semi-drying oil, the latter, a non-drying oil, the rapid drying effect of sebum suggests the possibility that other multiple bonded fatty acids of much higher iodine number must be present in these materials. Inasmuch as phosphorus and choline have been reported as found in sebum and the skin, it is therefore logical to assume that the phospholipin lecithin, which contains both phosphoric acid and choline, is, in all probability, a constituent lipid of this material.

Lecithin, besides being an excellent source of choline, is an anti-oxidant and would aid in maintaining the sebaceous materials in a fluid state within the gland itself, but would permit rapid drying as soon as the material reached the relatively large surface of the skin.

Certain of the problems of dry skin, particularly the follicular keratoses of the dorsum of the arms and buttocks, which consist of keratinized plugs within the sebaceous glands, have been attributed by Frazier and Hu[8] to lack of vitamin A. Adlersberg and Sabotka[9] however, pointed out that lecithin, which contains choline, aids considerably in the assimilation of vitamin A. Morrison[10] has reported that even cholesterol that has been laid down in the arteries can be mobilized by the use of choline. Reduction of cholesterolemia has been reported by Herrmann[11] and Steiner.[12]

The mechanism of fats with reference to the skin appears to be simple. The important cholesterol-like substances that are found in sebaceous material act

as a substratum for holding the unsaturated fatty acids in solution, with a minute amount of water, while the lecithin fraction, which contains the phospholipins, prevents the oxidation of the double bonded fatty acids. These, when poured over the surface of the skin in small amounts, oxidize and leave a layer of fat over the skin which clings closely, like a good paint.

Dermatologists are in agreement that an unbalanced diet reflects in the condition of the skin. We have previously shown that lecithin aids in certain dermatological conditions.[13 14] Assuming that unsaturated fatty acids and lecithin are essential for the proper nourishment of the skin, let us review the sources of our dietary fats and what we do to them.

The primary source of man's fats today is of vegetable origin, the secondary, meat products, which, in turn, receive their fats from vegetable sources or other animals. Fats, like proteins and carbohydrates, are of many types, but are primarily triglycerides, made up of fatty acids and phospholipins. The fatty acids may be either of the saturated or unsaturated, and the unsaturated fatty acids may be of one or more double bonds. The double bonded fatty acids with 2 - 5 active radicals show the greater biological activity. The phospholipins, of which lecithin and cephalin are important members, are particularly effective as wetting agents, and one of their essential uses in the body is to mix water in oil and oil in water. In the processing of our foods today, we find that the unsaturated fatty acids which are found largely in the germ of our cereals, are removed in the milling, along with lecithins. If these active elements are left within the cereal product, rancidity develops.

In the handling of meat, the prevailing fear of coronary disease causes people to be afraid of eating the fat. The butcher frequently cuts away a large share of the fat on the roast. Those who do consume these meat fats are apt to require it very well cooked. When foods are cooked at high temperatures, many of the unsaturated fatty acids are oxidized at their double bonds, creating a different chemical, the biological worth of which is undetermined. It is known that when fats are heated to a high temperature the breakdown of glycerin produces acroline, a known poison. Lecithins, like other lipoid substances, are subject to breakdown at normal cooking temperatures. Housewives have been educated to use hydrogenated fats in their cookery further reducing their unsaturation. Maynard[15] points out that hydrogenation of fats causes them to lose much of their vitamin A potency. Therefore, if all of these elements are eliminated or impaired in the normal food supply, is it not reasonable to assume that unsaturated fatty acid and lecithin deficiency may exert a powerful influence on the body's nutrition?

Recognizing that essential fatty acids have largely disappeared from much of our modern dietary, we have worked out a high protein, high fat, low carbohydrate diet for general rehabilitation purposes.[13 14] All of the necessary food elements are present in abundance.

The skin is the first organ in which the clinician can judge the effectiveness of a dietary regime. A good skin is soft, pliable, yet tough and resistant to abrasion, heals quickly. The skin that is rough, thick and cuts and abrades easily, is bound down to the subcutaneous tissue and heals slowly, indicating a metabolic disturbance. I have found that rough skin is a fairer index of marginal disturbed fat metabolism than any laboratory means. When important liver, pancreas or other damage cannot be demonstrated, and it is found that the patient is consuming limited amounts of lecithins and unsaturated fatty acids, which result in producing a harsh dry skin, it is a relatively simple matter to reverse the trend of this condition.

The diet I prescribe includes liver and brain, cod liver oil, soy bean lecithin and edible linseed oil, *in toto* rich in unsaturated fatty acids and lecithins. The conscientious patient usually shows improvement of the skin in one week, and frequently recovers completely within sixty days. In my experience the use of vitamin A concentrates in the treatment of rough dry skin has given little relief. Nicholls,[16] Frazier and Hu[17] and Youmans[18] have all expressed the belief that dry skin is a sign of vitamin A deficiency. Youmans reported success in treating patients with cod liver oil, which, it must be remembered, is rich in unsaturated fatty acids of high iodine number.

CONCLUSION

In my experience dry skin is an index of suboptimal utilization of lecithin and unsaturated fatty acids. In the absence of systemic disease the inclusion of foods containing these substances will bring about a spontaneous change in the body metabolism as reflected in the skin.

Surely our patients would thank us if they could liken their skin to that of the peach, as did Ferenc Molnar[19] who placed in the mouth of his hero in "The Play's the Thing" these words:

"—and that skin, how round it is, how smooth it is, how velvety—and how fragrant."

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SIMULTANEOUS FULL TERM INTRA-UTERINE AND EXTRA-UTERINE PREGNANCY*

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The patient, a 26-year-old colored female, was admitted to the Charity Hospital in Jackson on October 11, 1948. Her last menstrual period had begun January 23, 1948. In March, 1948, she began to have low cramping abdominal pains. These pains increased in intensity and became so severe that she was placed in a private hospital April 19, 1948. At this time there was also a brownish red vaginal discharge. Her attending physician made a diagnosis of right tubo-ovarian abscess or right ovarian cyst complicating an intra-uterine pregnancy of three months. Treatment consisted of penicillin, sulfadiazine, and 1000 cc. of whole blood as a transfusion. Following discharge from the hospital on April 21, 1948, she had no further bleeding or pains. Three weeks later she was examined, and the uterus was found to be enlarged to about the size of a four months pregnancy, and no definite mass or tenderness could be felt in the right adnexal region. Three months prior to this admission, she developed edema of the lower extremities and from this time on occasionally complained of abdominal pains. On October 4, 1948, an x-ray of her abdomen was taken by her local physician as he found the fetal head high and on the left side of the pelvis. The x-ray picture was poor, and only one head was seen in the left iliac region. Later that night, she went into labor and at 2:00 a.m. on October 5 she delivered a living healthy male child weighing approximately 6 lbs. The placenta was expelled soon after the baby. The delivery was handled by a midwife, but the doctor was called to see her a few hours later. Three or four days later when the uterus did not appear to involute, the local physician suspected another baby was present and made a diagnosis of a second fetus in one horn of a bicornuate uterus.

The patient had one previous pregnancy in 1942. At that time she developed eclampsia and spontaneously delivered a stillborn fetus three weeks before term.

On admission, the blood pressure was 190/110, temperature 102° F. and pulse 120/min. A bilobed mass was present in the lower abdomen. The larger portion was more on the right side than the left, and it extended to within 4 cm of the right costal margin. It was tender and fetal parts could be palpated in it. A smaller mass was present in the left lower abdomen which could be made to contract by massage. Fetal heart tones were heard in the right lower quadrant of the abdomen. On sterile vaginal examination, a hard mass was present completely filling the cul-de-sac and pushing the cervix up behind the symphysis and to the left. The cervix was soft and admitted two fingers. The small mass mentioned above was almost superior to the cervix. There was a 3+ pitting edema of the legs.

A flat plate of the abdomen showed a full term breech presentation with the presenting part in the pelvis. A tentative diagnosis of extra-uterine pregnancy complicated by toxemia of pregnancy was made. On October 14, 1948, under spinal anesthesia (the choice of the physician anesthetist) the patient's abdomen was opened through a right para-rectus incision. On examination, it was found that the uterus was enlarged three to four times, was anterior, and to the left. There was a large mass beneath the right broad ligament extending from the pelvis up to the liver margin. This large mass was opened and a 4 lb. 10 oz. female infant was extracted. The amniotic fluid was dark brownish in color. The cord was clamped close to the placenta and after cutting it, it was tied. The sac was closed and some bleeding was noticed in the upper portion of the mass. It was found that the placenta was attached to the posterior surface of the peritoneum extending up to the liver and its upper margin had separated, causing the bleeding. The bleeding was controlled by pressure and "oxacel" and the placenta was not removed. The abdomen was then closed in layers without drainage. The baby appeared normal, and her heart was beating on delivery but the attending pediatrician was unable to get her to breathe. One thousand cc. of whole blood was given during the procedure. The postoperative course was complicated by an adynamic ileus and pyelonephritis. When she was discharged from the hospital on November 17, there was still a mass present in the abdomen extending up to the level of the umbilicus. On December 11, 1948, the patient was readmitted with a diagnosis of thrombophlebitis of the left leg which responded to paravertebral blocks and penicillin, and she was discharged on December 23. On February 7, she was readmitted at which time the abdominal mass was found to have increased in size, and there was a fluctuant area just to the right of the umbilicus. Under anesthesia, an incision was made over the fluctuant area and by blunt dissection, it was found to communicate with the larger

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