An unsaturated fatty acid is one in which two adjoining carbon atoms have each lost one hydrogen atom and are united by a double bond—

This is a weak spot in the chain. Usually the double bond is between the alpha and the beta carbon atoms and breakdown occurs here, resulting in the oxidation of the two terminal carbon atoms and the production of a fatty acid having two less carbon atoms. This shorter acid is again broken down by beta-oxidation, and so on, until the four-carbon stage of the fatty acid is reached. Here an extraordinary, though not inexplicable, phenomenon occurs; the oxidation of the four-carbon fatty acid requires the simultaneous or "linked" oxidation of a molecule of glucose (under the most favourable conditions the molecular proportion may be 2 fatty acid : 1 glucose). If the oxidation of glucose be interfered with, so also is the completion of fat katabolism. A result of this interference is the appearance of acetone or ketone bodies, representing incomplete oxidation of butyric acid.

These are injurious in two ways : (1) they react with bicarbonate, diminishing the alkali reserve and causing a tendency to acidosis ; (2) more important, they contain the toxic enol group. The appearance of these substances in diabetes is an indication that the amount of glucose being oxidised is insufficient to complete the oxidation of the fats of the diet, either because the interference with the oxidation of glucose is so extreme, or because the glucose intake has been cut down to too low a level, so that, after the leakage of a certain proportion owing to the hyperglycæmia, an insufficient amount remains to complete the oxidation of fats. Roughly this means that the weight of fat fed must never exceed four times the weight of glucose oxidised (safer not to exceed twice); but the subject of the ketogenic-anti-ketogenic ratio is a thorny one, and I refer those interested to a summary of the subject by Shaffer in the issue of *Medicine* for November, 1923.

Every practitioner should have in his consulting-room the reagents necessary for testing for acetone and diacetic acid. A fresh solution of sodium nitroprusside is prepared by dissolving a crystal in water ; 10 c.cm. of the suspected urine is saturated with ammonium sulphate by adding 5 g. of the crystals ; 3 drops of the nitroprusside solution and 2 c.cm. of strong ammonia are added. A fine permanganate colour is produced if acetone or diacetic acid is present.

ACIDOSIS IN CHILDREN.

I leave it to yourselves to apply the theoretical considerations which I have indicated. I will content myself with emphasising the frequency of slight cases of acidosis in children. It is obvious that any interference with normal oxidations results, as I have said, in a tendency to acidosis. This occurs in many quite trivial, as well as serious, complaints in children. The metabolic derangement caused by extreme fatigue or excitement, such as a railway journey, may bring it on. These conditions may be responsible for the upset which occurs on the first day or two of a holiday, an upset which is often attributed to change of air. Sometimes it is so serious that the parent takes the child home again to consult his own doctor, only to find that the return home is not accompanied by improvement but rather a temporary worsening.

The treatment is obvious. Rest in bed will diminish the metabolic exchange and give time for the condition to improve, as it does, spontaneously. The diet must be carefully attended to ; fatty foods must be avoided ; while bread-and-milk or dry toast or almost any of the patent invalid foods supply an adequacy of carbohydrate for forcing the completion of the oxidation of fat.

THE SILHOUETTE RADIOGRAM IN THE INTERPRETATION OF CLINICAL SIGNS.*

BY

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WHEN a sharply cut outline is required a photograph or drawing comes far behind a silhouette in many respects. It is not as well known as it should be, that it is a very simple matter to prepare a silhouette from a radiogram.¹ The superimposition of the contour of the part on that of the bone possesses great teaching possibilities which are worth studying.

It is a recognised fact that in the process of ordinary printing the fleshy contour of a part, which was quite definite on the negative, disappears. The silhouette radiogram is prepared as follows : The plate or film is held to the light, or better, placed in a viewing-box, and the outline of the part is scratched on it by means of a mounted needle. When a print is made this outline appears as a

* Opening remarks at a Discussion at the Post-Graduate Hostel, July 12th, 1926.

¹ (a) X Ray Prints, A Suggestion, Brit. Jour. Surg., 1923, No. 39, vol. x., p. 357. (b) The Silhouette Radiogram, Brit. Med. Jour., Oct. 13th, 1923 (Annual Meeting Pathological Museum). (c) The Silhouette Radiogram (illus.), The Lancet, Oct. 6th, 1923. (d) The Silhouette Radiogram as an Aid to Clinical Diagnosis, Canad. Med. Assoc. Jour., August, 1924. (e) Illustrated Reprint of (d), Clinical Journal, Jan. 14th, 1925.

black line. The print is now dried and the background filled in with Indian ink with a brush with the production of a reversed silhouette. It is dried and squeezed.

Three points strike one: firstly, the better "finish"; secondly, the stereoscopic way the bones "stand out"; and, thirdly, their detail, which is accentuated by the optical illusion of the black background. The silhouette radiogram demonstrates at once the deformity and its cause. It gives the position in which the limb was screened. Deformities due to the following are manifest:—

1. *Congenital Errors.*—The cause of the bowing of the arm in congenital absence of the radius and the elevation of the shoulder (Sprengel's) are readily seen. Certain conditions, such as spina bifida, encephalocele, and thyroglossal cysts are depicted better by this means than any other.

2. *Fractures.*—The steep slope of the shoulder in fracture of the clavicle, the "wave" deformity of a greenstick fracture of the forearm, the dinner-fork deformity and backward displacement in Colles's fracture, the gap between the two fragments of a patella broken by muscular action, the torsion of a foot in Pott's fracture are all strikingly demonstrated and explained. The nearness of the fragment to the skin is apparent; this is of great importance in the demonstration of painful amputation stumps.

3. *Dislocation.*—The disappearance of the deltoid fullness responsible for Hamilton's ruler test and the increased axillary girth (Calloway's test) observed in a dislocation of the shoulder are readily explained, also the hard prominence palpable anteriorly and the groove posteriorly in a dislocated elbow.

4. *Disease of Bone.*—The typical bulbous finger of a periosteal whitlow, the spindle-shaped finger of tuberculous dactylitis are well seen. If the swelling lies immediately over diseased bone it is due to this disease, if over normal bone it is not. The presence of irregularities due to sinuses is characteristic of pyogenic infection. The presence of wasting is well seen if both sides are available and is of the greatest importance, since malignant and rachitic disease is not so accompanied, whilst tuberculous disease is. One of the causes of genu valgum is seen to be enlarged inner femoral and tibial condyles. The osseous lesion in the various talipes is well seen.

Another use of this method is to show the depth of foreign bodies and the direction of sinuses which assume a definite position instead of appearing in space.

No one would expect a busy radiologist to paint out the background for cases other than for publication, but he could, without defacing the bones, scratch the skin outline before printing, and so give the practitioner his "bearing." Undoubtedly the best feature of this method is that it forms a link between the experienced radiologist and the practitioner and student.

EDITORIAL NOTES

POST-GRADUATE STUDY.

FOLLOWING on our suggestions for post-graduate study under the Fellowship of Medicine scheme in the April issue, we would now deal briefly with the afternoon and evening clinics. Mondays, Wednesdays, and Fridays can be spent profitably at Brompton Hospital from 3 P.M. onwards. There is also a 3 P.M. clinic at St. Margaret's Hospital for Consumption. For those interested in diseases of children there is a varied choice at Great Ormond-street Hospital, and also a clinic at 5 P.M. at the Prince of Wales's General Hospital on Tuesdays. In dermatology there are daily, afternoon and evening sessions at the London School of Dermatology (St. John's Hospital) and Blackfriars Skin Hospital. In electrotherapy and radiology the Cancer Hospital and King's College Hospital hold clinics from 3 P.M. throughout the week. All clinical work, including cystoscopies and operations, is performed at St. Peter's Hospital and All Saints' Hospital in the afternoons. There is some work available in the afternoons at the National Hospital for Diseases of the Heart, and Dr. STRICKLAND GOODALL attends at 4 P.M. on Fridays. The City of London Hospital for Diseases of the Heart and Lungs and the Royal Chest Hospital would provide for other days. In laryngology, rhinology, and otology there is the Central London Throat, Nose and Ear Hospital and Golden-square Hospital. In neurology there is the West End Hospital for Nervous Diseases, which also provides an afternoon course three times during the year. In ophthalmology the medical staff of the Royal Eye Hospital holds clinics from 3 P.M. daily, and this hospital gives two special courses in the year. There is plenty of opportunity for the study of proctology, as all the teaching at St. Mark's Hospital is undertaken in the afternoon. General surgery offers plenty of choice, and it must be remembered also that several of the medical schools' surgeons perform their operations from 2 P.M. onwards. In venereal diseases there is a varied selection, as several hospitals undertake late clinics during the afternoons and evenings.

It must not be overlooked that already four hospitals provide special courses in the later afternoon—viz., the Royal Eye Hospital from 3 P.M. to 5 P.M.; the West End Hospital for Nervous Diseases from 5 P.M. to 6 P.M.; and the two general hospitals—the London Temperance Hospital and the Hampstead General Hospital. These two latter hospitals provide work in all departments of medicine and surgery and are primarily for the benefit of the general practitioner who desires to refresh his knowledge of present-day methods.

SPECIAL COURSES.

THERE is a varied choice of special courses held under the auspices of the Fellowship of Medicine during October.