pars intermedia. The pars glandularis is intensely congested; otherwise there is no evidence of pathological change.

The case is of interest as exhibiting the presence of ocular symptoms in the absence of glandular or neighbourhood phenomena. This incongruity fortunately delayed operative measures, and so prevented what might otherwise have proved catastrophic surgical intervention.

FAMILIAL PELLAGRA IN IRELAND.

BY

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THE fewness of the cases of pellagra reported from these countries in the past was due probably to the prevalent idea that the disease was confined to subtropical countries. Between 1850 and 1910 no cases appear to have been reported in the British Isles. The discovery of several unrecognized cases by Sambon and others in 1916 in England and Wales raised the probability that others escaped diagnosis. This and the fact that the disease must have become familiar to many civilian medical men serving in the great war combine to account for an increase in the number of cases since recorded. Even so the disease would appear to be of sufficient rarity here to deserve reporting. It is not unlikely that some cases still escape recognition, particularly cases of pellagra *sine* pellagra in countries of little sunshine. In this connexion, too, it may be pointed out that 1926 (in which year these cases were observed) and the previous year were years of exceptional sunshine in Ireland.

It appears probable that the first of the cases here recorded was an acute exacerbation of a chronic affection. Most Italian writers consider that the acute type is never primary, but always an exacerbation of the chronic. Wood and others, however, from their study of cases in the southern States of America, state that at least 50 per cent. are of the acute type. The view that the disease is due to an inability of the patient to use biologically valuable protein would appear to account for these two cases; in them such inability may have been a familial failing. The diet would appear to be a fairly useful one; it certainly is a very usual one in this country.

CASE I.

A woman who had been married fourteen months presented herself on May 27th, 1926. She complained of weakness and loss of energy. She was inclined to be sick in the mornings, and the menses had ceased. She was constipated; she wondered if she were pregnant.

She was of the melancholic type, and her mentality was sluggish; the pupils were very large. The face was greasy and dark, giving the impression that it required washing. There was marked seborrhoea of the nose and mandibular region. There was a rash on the forearms, extending about half-way to the elbows, and on the backs of the hands to the metacarpo-phalangeal joints. On the thumbs it extended to the middle joint. It was much less extensive on the flexor surface of the forearms, and did not come below the wrists. This rash, she said, was of recent origin. The pulse was a little fast. The knee-jerks were lively, and there was a suspicion of ankle clonus. No other physical abnormalities were found.

She was told that it was just possible that she was starting pregnancy, and asked to report later on. Her husband, however, was informed that no evidence of pregnancy could be found, but that her general condition strongly suggested pellagra; this disease was, however, so rare that I hesitated before definitely diagnosing it.

She returned on June 14th. She was then very weak and had had diarrhoea for some days. She had intense vulvitis, moist and red. During the next few days the diarrhoea became severe and was only partially controlled by opium or morphine in one or other combination. There was distressing retching at this time, due probably to intense salivation, as food was not vomited.

On June 20th she presented all the textbook appearances of very acute pellagra. The rash on her arms and face had diminished somewhat and now resembled very closely the coloured plates of pellagra in Dr. Norman Walker's *Introduction to Dermatology*. She was very inert mentally. There was still intense moist circumscribed dermatitis of the vulva. The anal region was red and excoriated, probably from the almost constant passing of liquid motions. There was vague tenderness over the spine; the abdomen was tender all over, but most markedly in the gastric region. The knee-jerk could not be elicited on the left side, and only slightly and with difficulty on the right. She complained of pain in her back and lightning pains in the legs. The pulse was 120 and thready, the temperature 103°. Perhaps the most striking symptom was the intense stomatitis. The tongue was swollen,

clean to the point of "beefiness" (Sandwith's bald tongue), ulcerated deeply about its edges, and the buccal mucous membrane was ulcerated and fetid. The fauces could not be seen owing to the swollen tongue and soreness at the angles of the mouth. There were enlarged inguinal glands. Prostration was intense. She died of exhaustion on June 28th.

In support of the view that the disease was an acute exacerbation of a chronic condition, a few notes may be added. Inquiries locally reveal that her neighbours had considered her "not quite right," and had commented on this at the time of her marriage. Her husband informed me that a couple of months after marriage she became "gloomy" and developed "vagaries" and unreasonable jealousies. She got out of her bedroom window one night and went to her mother's home scantily clad and barefoot. She had to be restrained partially at times from doing queer things, and there had been some talk of having her sent to an asylum. Her sister says she remembers her having to go to bed years ago because of "a rash about her neck." Her family history is given in connexion with Case II.

Her diet was that usual for people of her class in this country: bread-and-butter and an egg in the morning, potatoes, meat, and vegetable (usually cabbage) for dinner, and tea or cocoa at bedtime. This diet hardly suggests a deficiency disease.

CASE II.

A woman, aged 33, presented herself on July 28th, 1926. Her father had died of "heart disease," aged 56, her mother was alive; she had two brothers, of whom one was weak-minded or erratic, and three sisters, of whom one was living; one had died of meningitis, aged 27, and the other was Case I.

She had been married two years and five months, and up to marriage had had good health except for dysmenorrhoea. About eighteen months ago she began to feel weak. She had a miscarriage in October, 1925, and saw a doctor afterwards. She has been weak ever since. The periods have been irregular since, recurring every two months, lasting about seven days, and varying in amount. She has to go to bed at these times. In the forenoon she feels dizzy and has noticed that her mouth fills with water. The bowels move every second day without medicine, and the appetite is fair. She says that her speech is affected and that she cannot continue speaking for long because her mouth feels stiff and tired. When going to sleep she has noticed that her mouth is inclined to fill with water, and she feels as if she could choke. She believes she has been losing weight for the past eighteen months. She presented dermatitis on the backs of the hands, and said that she gets this every summer and that her neck, too, gets very sunburnt. The rash covered the backs of both hands and came forward on the extensor surface of the thumb to the middle joint; it was red, with a good deal of branny desquamation, and some scattered brown pigmented warty or psoriasiform spots on an erythematous surface. There was one such spot on the neck. Her face was seborrhoeic, especially the nose and lower cheeks. The liver was rather easily palpable but not tender; the cervical glands were palpable; the pharynx was a little red. The pulse was 88, and the blood pressure 90/130. There was a suggestion of ankle clonus and both knee-jerks were lively. All other examination gave negative findings.

She was advised to go to bed for a time and afterwards to avoid sunlight and to wear a veil. An iron and arsenic mixture was prescribed and instructions were given as to diet and general hygiene.

In February her sister reported that she was well.

The Registrar-General of the Free State has courteously informed me that two deaths from pellagra were registered in 1922 and 1923. They were of females aged 55 and 60 years.

TRENDELENBURG'S OPERATION FOR REMOVAL OF A PULMONARY EMBOLUS.

BY

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THE operation for the removal of a pulmonary embolus, first suggested by Trendelenburg, is one that the surgeon can but rarely be called upon to perform. As a consequence the number of recorded cases in which an attempt has been made to remove the clot is very small, and the results almost uniformly disappointing. In the case here described an opportunity was afforded of testing the practicability of this rather dramatic procedure.

On August 5th, 1926, a woman, aged 19, was operated upon at Charing Cross Hospital for a chronic right-sided pain. The diagnosis had been extremely doubtful and an exploratory laparotomy was performed through a paramedian incision. The only

pathological structure discovered was a cyst, the size of a tangerine orange, of the right ovary. This was removed very simply and without difficulty by ligation of its pedicle; the healthy appendix was also removed in the usual fashion. Convalescence was uneventful except for the presence of a very slight occasional rise of temperature which was attributed to a mild superficial stitch infection. On August 16th, shortly after having left her bed for the first time, she gave a sudden cry of intense pain and collapsed. She was immediately lifted back into bed, where I saw her about a minute later. Her appearance was characteristic of a large pulmonary embolism. She was pulseless, of a peculiar patchy white and purple colour, the expression one of extreme anxiety with eyes widely open and pupils dilated. Dyspnoea was intense, she fought for every breath, but was apparently unconscious. The diagnosis was obvious, but it was very difficult to decide immediately whether recovery was possible. At the end of two minutes, however, she was still alive, which seemed to indicate that only one branch of the pulmonary artery was involved; operative intervention, therefore, was certainly not imperative. Within the course of another two minutes she appeared to improve considerably and regained partial consciousness. Violent spasmodic movements of the whole body now started, connected with the air hunger, dyspnoea still being intense, and at the same time the bowel acted involuntarily. The movements could only be restrained by force and continued for a further two minutes, when suddenly she again collapsed, and, after one or two tremendous but ineffective attempts at inspiration, apparently died. The heart, nevertheless, could still be felt beating feebly at the apex beat. The conclusion was reached that a second clot had been detached which was now blocking the remaining branch of the pulmonary artery so that spontaneous recovery was impossible. After a moment's hesitation it was decided to attempt removal of the clot.

Operation.

Within about a minute, after a very hasty cleansing of the hands and the perfunctory application of iodine to the chest wall, with a scalpel and three pairs of artery clips as the sole immediately available instruments, a semilunar incision was made at the level of the second and third costal cartilages. After turning up the flap of skin and fat the origin of a portion of the pectoralis major muscle was reflected outwards, the second intercostal muscle was detached from the cartilages and the latter then removed by rapidly cutting through them with the knife. This gave a limited exposure through which the margin of the pleura and the base of the pericardium could be seen. All pulsation of the heart had ceased, but the operation was nevertheless continued. In hastily attempting to enlarge this aperture the pleura was torn and the left lung collapsed; better exposure of the pericardium was, however, thereby obtained. The pulmonary artery was still partially hidden by the border of the sternum, and although an attempt was made to hook it forward with the finger and by artery forceps lightly applied, it quickly became obvious that the task of opening it and removing the clot would be almost impossible without further exposure. In the meantime a pair of bone forceps were available and a portion of the sternum corresponding to the length of the exposure and including about half its width was thus removed. The pericardium itself was now opened medially to the left phrenic nerve, which could be seen coursing downwards over its surface, and the artery was palpated in the hope that the clot might be felt, perhaps broken up and driven through into the smaller branches. This failed; the clot could not be detected through the thickness of the vessel wall, and nothing remained save extraction through an incision. Two artery clips were placed in close proximity upon the outer sheath and the index finger of the left hand was passed behind the transverse sinus to hook the pulmonary artery and aorta forwards. It was hoped that this manoeuvre would control the bleeding while at the same time rendering access easier.

An incision about an inch long was made longitudinally into the vessel on its anterior surface and immediately a large quantity of blood escaped, obscuring the field. By pulling the vessels forwards with the finger the haemorrhage was to a great extent controlled, but at the same time the pulmonary artery was so compressed that it became impossible to insert forceps or palpate the interior in order to determine the position of the clot. This method was therefore abandoned and a pair of soft bowel clamps placed across the roots of the pulmonary artery and aorta. Control of bleeding being now quite reasonable, a finger was inserted into the lumen, where the clot could be easily felt lying in the left branch of the artery with its base riding across the dividing ridge into the right branch, which it partially obstructed. It was extracted with ordinary dissecting forceps and the wound in the vessel rapidly closed with a continuous catgut suture,

keeping the edges well everted so that endothelium was in contact with endothelium everywhere. The aperture in the pericardium was also closed.

Direct massage of the heart resulted, after an interval, in a series of irregular and feeble contractions. The force of these beats was slight, but it was impossible to perform efficient artificial respiration to help the circulation owing to the large opening in the chest wall; positive pressure apparatus, too, was not immediately available. At this stage more than 1 c.cm. of 1 in 1,000 adrenaline was injected into the ventricle, with remarkable effect, since the heart commenced to beat more regularly and with increasing force. This continued for a minute or so, and great hopes were entertained of recovery. Gradually, however, the enhancement died away and the beats again became feeble and irregular. Massage was continued, but, although intermittent contractions were obtained for several minutes more, no permanent effect resulted. The chest wall was closed and artificial respiration with further injections of adrenaline tried, without avail.

The clot removed was about 2 inches long, and tapered from the size of the finger at one end to two small branches, about one-eighth of an inch across, at the other. It showed in addition several side branches, and from its shape it was thought probable at the time that it came from the internal iliac vein.

Post-mortem Examination.

The parietal wound was well healed in its whole extent without any signs of infection. The abdominal cavity was clear, and the scar of the appendicectomy cleanly healed without adhesions. The

right broad ligament was very slightly thicker than the left, and around the ligature on the ovarian pedicle was a small bead of pus, but there were no indications of surrounding thrombosis. The internal iliac vein was carefully explored throughout its length; no signs of any clot or of roughness of the endothelium associated with the recent detachment of a clot were seen. The left internal iliac, the external and common iliacs, superficial and deep femorals, indeed all the larger veins of the body, were examined, but no signs of thrombosis could be found. The left lung was collapsed but otherwise healthy; in the lower lobe of the right was a rounded area of a bright cherry-red colour, possibly a recent infarction. In the right auricular appendage of the heart a small irregular and apparently *ante-mortem* clot was found.

The difficulties confronting the surgeon in this operation are those of circumstance even more than those of technique, while the decision to perform it is not an easy one to make in view of his limited experience as to whether

spontaneous recovery can occur, and the knowledge that no permanently successful case has been recorded occasions hesitation born of despair. In his original article Trendelenburg says that two conditions must be fulfilled: (1) Can the diagnosis be made with sufficient accuracy? (2) Is there sufficient time for an operation? He answers both of these questions in the affirmative, and states that there is an average interval of fifteen minutes between the onset of the symptoms and death. He also shows, partly as a result of experimental investigation and partly from actual experience of the operation in two cases, that the pulmonary artery may be compressed for forty-five seconds without fear, and that this may be repeated if necessary after the re-establishment of the circulation for a short period of time.

Experience of the present case would appear to suggest yet another query: Is it possible to resuscitate a patient after removal of the clot when the heart has already ceased to beat? The remarkable effect of the injection of adrenaline directly into the heart, and, even more, the great stimulant effect upon the auricles of forced intermittent aeration of the lungs rendered possible by modern appliances—for example, intratracheal catheter and "lung-motor"—probably make resuscitation feasible even in such desperate cases. In future these two methods should be used from the moment the clot is removed; the time taken by the preliminary stages of the operation makes it possible for the necessary apparatus to be available when required, at least in institutional practice.

Sketch showing the manner in which the pulmonary artery and aorta are "hooked" forwards by the finger in the transverse sinus. The shape of the clot with its clearly marked lateral branches is indicated below.

When the belated decision to operate has been made, further delay is occasioned by the fact that nothing is ready; instruments usually have to be obtained from a distance, and the surgeon is taken unawares, and so has no stereotyped technique to follow. To add to these difficulties the patient's posture as he lies in bed is by no means an ideal one for this type of operation; the only possible approach through the chest wall cannot be carried out rapidly in the absence of adequate instruments, while the lighting is apt to be very poor.

Although definitely recommended by Trendelenburg, the opening of the pleura was quite inadvertent, since it was thought that the pleural reflection might be brushed well out of the way by gauze dissection. The experience of this case, however, shows that valuable time would thus be lost, and that there need be no hesitation in deliberately opening the pleura. This is especially so since in all cases some variety of positive pressure apparatus should be brought into use before the operation is completed. It must again be emphasized that the efficient and early application of such a method is probably the most important single factor in re-establishing the circulation. In experimental work *in vitro*, with perfused hearts which had been maintained in a quiescent condition in the cold chamber, I found that the most effective stimulus to restarting the beat was the stretching of the musculature of the auricles by the entry of the perfusing fluid under pressure; *in vivo* a similar effect was obtained by positive intermittent aeration of the lungs.

The fact that no adequate source of origin of the clot was found in this case is, in a way, not to be wondered at, since in many cases of fatal pulmonary embolism, both post-operative and spontaneous, it appears to be impossible at the *post-mortem* examination to trace the vessel from which the clot arose. The shape of the clot in this instance showed that it had not originated in the auricular appendix, but probably in the internal iliac vein, along which it had grown without producing sufficient changes in the surrounding endothelium to be visible. It was then carried into the circulation as a whole, and not, as is frequently pictured to be the case, a small fragment detached from it as it grew from the internal into the common iliac vein.

The small bead of pus surrounding the ligature was

likely enough aseptic and due to the chemical irritation of the antiseptic in the catgut (picric acid), but this was not put to the proof.

One further point of interest is the fact that the legs had been lightly massaged twice a day after the operation as a prophylactic against femoral thrombosis, according to the suggestion of Morison. This is of doubtful value even in the case of the femoral vein, and can obviously be of no avail in the commoner cases of pelvic thrombosis. Until our knowledge of the etiological factors which determine the onset of thrombosis is much more extensive than it is at present no rational method of prevention can be suggested. It would seem possible that the role of sepsis has been exaggerated in the past, for the incidence of embolism in frankly septic cases is smaller than in those performed with all aseptic precautions. It is at the same time true that in the majority of cases of embolism the temperature chart shows a slight rise for a few days following the operation, but whether this is due to some mild grade infection (perhaps by an ultra-microscopic organism since the ordinary pyogenic organisms are rarely recoverable at *post-mortem* examination) or is a true traumatic pyrexia remains to be proved.

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THE TREATMENT OF SOME OCULAR DISEASES
WITH ULTRA-VIOLET LIGHT.

BY

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SINCE the introduction of the ultra-violet light apparatus at the Bristol Royal Infirmary we have endeavoured to arrive at some conclusion as to its effect on some of the ocular diseases subjected to this treatment. Hitherto we have been working on rather "blunderbuss" methods, as very considerable work has yet to be done in sorting out the rays most helpful in medical treatment; the rays range from the near ultra-violet through a big spectral field up to the far ultra-violet, differing considerably in their action, the short being strongly irritative and destructive, whereas the long are more penetrating and stimulative. Still, even with the present methods ultra-violet light plays a very important part in clearing up a number of ocular conditions which, in the past, have been difficult to deal with.

We have made no local applications of light to the eye, but have used the mercury vapour lamp for general radiation of the skin; the first exposure is of three minutes' duration; this is increased by two minutes at each subsequent treatment up to twenty minutes, two exposures a week being given. The distance of the patient from the burner is 36 inches. Care must be taken that the eyes are protected by suitably coloured goggles.

Diseases of the Conjunctiva and Lids.—These have all been cases of children, and of a type which has resisted

ordinary treatment. In chronic and long-standing blepharoconjunctivitis it has been our practice to have tonsils and adenoids dealt with, and an autogenous vaccine prepared from the lids when possible; it is in cases which have continued in spite of this treatment that we have found ultra-violet light valuable. The curative effect of light seems to be due to the improvement in the child's general condition, thus increasing its resistance to infection. The treatment is also very beneficial in cases of chronic and recurring sties.

Phlyctenular disease of the Cornea or Conjunctiva.—Undersized, delicate children, often with enlarged cervical lymphatic glands, respond most readily to treatment. The throat should always be examined for tonsils and adenoids, and these conditions dealt with before the light treatment is begun. Here again astonishing results are often seen in the child's general condition. As a result of light treatment the cure of phlyctens appears to be more permanent than before this method was used, recurrences being much less frequent.

Corneal Ulcers.—The chronic and recurring corneal ulcer so often met with in children, associated with conjunctivitis and blepharitis, does remarkably well under the action of ultra-violet light treatment.

Tuberculosis of the Conjunctiva.—The best result that we have had so far occurred in this disease.

A child, aged 10, was seen with a large tuberculous ulcer, situated in the outer part of the upper lid. Surrounding the ulcer were tuberculous nodules, whilst the remaining conjunctiva was thick and velvety. There was a chain of lymphatic glands in the neck, the upper ones soft and evidently on the point of breaking down. The patient was seen by a surgical colleague, who advised removal of the glands, but before doing this it was proposed to use ultra-violet light. In order to estimate the value of