ascending myelitis. Is it possible to make a certain diagnosis between these conditions during life? Up to a certain point it is, but errors have been made in the past, and will no doubt be made again even by those who have had most experience of these particular forms of infective or toxic conditions of the central nervous system. Acute ascending myelitis is probably the easiest to recognise with certainty, owing to the fact that there is most pronounced sensory loss which ascends *pari passu* with the paralysis, and that the sphincters are early affected. The following points are of some value in making a differential diagnosis, and for the sake of clearness they are arranged in tabular form. It must not be supposed, however, that exceptions do not occur to the brief descriptions set forth below.

Table in which are Particularised Some Points which are Helpful in Making a Differential Diagnosis.

—	Acute poliomyelitis.	Landry's paralysis.	Acute toxic polyneuritis.	Acute ascending myelitis.
1. Onset.	Sudden; progress rapid.	Sudden; progress less rapid.	Onset and progress more gradual.	Sudden.
2. Constitutional symptoms.	Often severe. Temperature 101–103° F.	Not so severe; little or no febrile disturbance.	Often no constitutional disturbance.	Severe; often great constitutional disturbance.
3. Muscular condition.	Flaccid palsy; as a rule some groups of muscles more affected than others. Rapid muscular wasting. Cranial nerves rarely affected.	Flaccid palsy; more uniform distribution. Little muscular atrophy. Cranial nerves rarely affected.	Peripheral muscles more affected than proximal groups. Cranial nerves not uncommonly affected.	Ascending paralysis involving successive segments of the spinal cord.
4. Sensory symptoms.	Severe pains in back and on passive movement common in early stages. No loss of cutaneous sensibility.	Severe pain rare; paræsthesiæ not uncommon. No loss of cutaneous sensibility.	Paræsthesiæ common; tenderness on pressure. Some degree of loss of cutaneous sensibility common.	Pain in back common. Marked degree of loss of cutaneous sensibility; ascending with paralysis.
5. Reflexes.	Deep reflexes abolished in affected muscles. May have extensor plantar in early stage.	Deep reflexes absent. No extensor response.	Absence of all reflexes.	Lost as disease progresses, but may be + in legs with extensor plantar.
6. Sphincters.	Unaffected.	Unaffected.	Unaffected.	Affected early.
7. Prognosis.	Good as to life, except in very severe cases.	Not so good as to life, but muscular recovery likely to be more complete.	Good as to life and recovery of muscular power.	Exceedingly bad.

FURTHER OBSERVATIONS ON THE TREATMENT OF HAY FEVER BY HYPODERMIC INOCULATIONS OF POLLEN VACCINE.

BY J. FREEMAN, M.D. OXON.

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THIS paper is the sequel to Mr. L. Noon's paper on Hay Fever in THE LANCET of June 10th, 1911, in which was described research work for treatment by hypodermic inoculations of pollen toxin.

Previous Work.

Dunbar had described a simple ophthalmo-reaction as a diagnostic test for that susceptibility to pollen which constitutes hay fever; a watery extract of pollen of a certain strength dropped into the eyeball of a normal man produces no effect, but will cause a miniature attack of hay fever in susceptible persons. The test is quantitative in nature, and by noting the dilution of pollen which will just cause the eye to react it is possible to obtain some measure of the patient's susceptibility. Changes in susceptibility presumably have an inverse correlation with changes in immunity to the pollen toxin, and Noon applied this quantitative test to the study of changes in immunity produced by subcutaneous inoculations of pollen vaccine. In this way he demonstrated that *suitable* doses of pollen toxin increased the patient's immunity, while unsuitable doses either did not affect, or even decreased, this immunity; this brings the pollen inoculation work into line with the bacterial inoculation work of Wright and his school. These points established, Noon set to work to immunise hay fever patients during the off season in preparation for the season which we have just passed through. Unfortunately, circumstances compelled him to give up work last February, and the research passed into my hands; it is now possible to tabulate some laboratory data about these and subsequent inoculated hay fever cases, and also to give the clinical results of the treatment as disclosed by the past summer season.

Laboratory and Clinical Evidence in Table.

Explanation of table.—Adjoined is the tabulated list of the 20 cases treated on this system by hypodermic inoculations of pollen toxin; it is important to note that the list is not a collection of flattering "unsolicited testimonials," but gives an account of every case which had any systematic treatment, excluding only one or two people who were seen once and then lost sight of.

The first column gives the reference number of each case. The cases are arranged in the order in which they arrived for treatment; those who were already suffering from hay fever when they first presented themselves are marked with an asterisk.

The second column gives the dates of the beginning and end of treatment; these dates refer especially to the parallel figures in the next two columns.

The third column gives the state of pollen-immunity as judged by the ophthalmo-reaction at these dates. The unit of measurement here employed was explained fully by Noon in his paper last June; it is convenient shortly to redescribe it here. The quantitative measurement of the ophthalmo-reaction is made by noting the weakest dilution of pollen extract of which one drop, when dropped on the eyeball, will just produce a slight flushing of the inner canthus of the eye. The unit of measurement is a one-millionfold dilution of Phleum pratense pollen in water—which is spoken of as one unit of pollen, or shortly as 1 U P. Thus, a hundred-thousandfold dilution of pollen would equal 10 U.P., a thousandfold dilution would equal 1000 U.P., and so on.

The fourth column gives the hypodermic doses of pollen extract which were used at these two dates respectively; these doses are also given in terms of pollen units, 1 U.P. being 1 cubic centimetre of the millionfold extraction, or, to put it another way, the amount of pollen toxin extracted from one-millionth of a gramme of Phleum pratense pollen.

The fifth column gives a short summary of the fate of the patients during the hay fever season this year as reported by the patients or their friends.

In the sixth column I sum up my own impression of the case.

Laboratory evidence in table.—In studying this tabulated list of inoculated cases, the first point to be noted is the increased tolerance of pollen toxin which was produced by the inoculations in every case. This is shown in Column 3 by the ophthalmo-reaction which the patient gives at the beginning and end of treatment; and as the personal equation, the "functional error," of the observer enters very little into the results of this reaction, it is claimed that this change in the ophthalmo-reaction represents an undoubted change in the immunity of the patient.

Then, again, it is clear from Column 4 that the doses also were increased. Now, it was found by experiment that it

was impossible at the commencement of treatment to give much larger inoculations than those indicated in the list without producing symptoms of an overdose—symptoms clinically, and as noted in the laboratory by a falling off in the ophthalmo-reaction. If the dose *were* increased markedly, one might produce even in mid-winter such unpleasant things as swelling, pain, and urticaria at the site of inoculation, a general malaise, and all the nose and eye symptoms of a thorough attack of hay fever. Yet as immunisation progressed it was found by repeated ophthalmo-reactions that larger doses could be given with advantage, and though some of these were enormously greater than the initial dose, they were given without any clinical symptoms and without lowering the ophthalmo-reaction.

As denoted by the asterisks, most of the people at the end of the list were already suffering from hay fever when they came, but it was found that in these cases also there was an increase in immunity and an increase in the dose employed. The original scheme was one of prophylactic immunisation, and this was much more suitable for the preliminary research work because the effects of each dose could not be obscured by chance doses of pollen from the atmosphere; but clearly phylactic inoculations are of more use if only they will answer reasonably well. At first thought it might be argued that phylactic doses of pollen toxin will only add poison to an already poisoned patient, but this objection is no more valid in the treatment of hay fever than it is in the treatment of boils by staphylococcus vaccine; the answer is the same in both cases. Though it may or may not be true that at the seat of the disease the tissues are over-poisoned, yet the rest of the body may, under the stimulus of an inoculated vaccine, respond by an increased production of antibodies; this surmise is justified when it is found that such an inoculation *is* followed by a demonstrable increase in immunity.

Case.	Month and year.	Resistance.	Dose.	Patient's opinion.	Writer's opinion.
1	July, 1910. May, 1911.	40 U.P. 5000 U.P.	4 U.P. 2000 U.P.	Extremely bad with hay fever for last four years. Inoculated persistently during the off season; stopped treatment in May. Tested well, but absolutely immune.	Eminently satisfactory.
2	July, 1910. (Did not continue.)	40 U.P.	2 U.P.	Refused treatment owing to article on anaphylaxie. Had hay fever worse than ever this year.	(Satisfactory.)
3	Sept., 1910. May, 1911.	20 U.P. 400 U.P.	4 U.P. 120 U.P.	Inoculated irregularly and also with two bacterial vaccines. Had hay fever, but probably not so bad as formerly, and was sooner over.	Disappointing.
4	Feb., 1911. May, ,,	20 U.P. 170 U.P.	6 U.P. 25 U.P.	Certainly much better, though not clear of hay fever.	Fairly satisfactory.
5	March, 1911. June, ,,	40 U.P. 400 U.P.	18 U.P. 20 U.P.	Has been practically free from hay fever this season, but has felt "on the verge of it" once or twice. Went in hay fields, motored, &c. (which was impossible formerly).	Satisfactory.
6	March, 1911. June, ,,	40 U.P. 1000 U.P.	12 U.P. 100 U.P.	"Have had no hay fever this year, except one attack lasting an hour after walking through a hay field, and no asthma. In former years had bad hay fever for at least six weeks and asthma at night."	Eminently satisfactory.
7	April, 1911. July, ,,	6 U.P. 1000 U.P.	2 U.P. 18 U.P.	"I think I may fairly say that though I had it pretty badly occasionally, it was not in so severe a form nor so easily excited. Susceptibility diminished, perhaps one-third. Effects less pronounced in the same proportion."	Inconclusive.
8	May, 1911. June, ,,	13 U.P. 170 U.P.	4 U.P. 20 U.P.	"Quite a marked improvement, if not an absolute cure."	Moderately satisfactory.
9	May, 1911. June, ,,	40 U.P. 500 U.P.	4 U.P. 25 U.P.	This case was handicapped by the inoculations being given rather irregularly. "The attacks were less violent on the whole, and certainly did not last as long."	,,
10*	May, 1911. June, ,,	130 U.P. 170 U.P.	4 U.P. 10 U.P.	Did not improve after several inoculations, and as he could with difficulty spare the time he decided to postpone the treatment for prophylaxis in the winter.	Failure.
11	May, 1911. July, ,,	13 U.P. 170 U.P.	1½ U.P. 10 U.P.	Had a little sneezing, but was clear of hay fever most of the time—probably not a very severe case. He reported, "the cure still continues to work marvellously."	Satisfactory.
12	May, 1911. June, ,,	40 U.P. —	4 U.P. 10 U.P.	"I do not want to boast, but I think I am quite done with the accursed thing for this year. There can be no sort of doubt, seeing the kind of season it has been, that I should have suffered, and that severely, if I had not had these inoculations."	,,
13*	May, 1911. June, ,,	5 U.P. 17 U.P.	1 U.P. 5 U.P.	"I *did* have a return of the hay fever after the cure" (i.e., three inoculations), "but only slight, and have not had it for over three weeks now."	,,
14*	May, 1911. July, ,,	170 U.P. 500 U.P.	10 U.P. 15 U.P.	"Since the inoculations began I have had practically no running at the eyes and nose, nor do my eyes get bloodshot."	Fairly satisfactory.
15	June, 1911. June, ,,	170 U.P. 500 U.P.	10 U.P. 300 U.P.	A Canadian who gets bad hay fever in August, but not earlier. Has had none this year up to date.	No test.
16*	June, 1911. June, ,,	17 U.P. 170 U.P.	1 U.P. 6 U.P.	"She is certain that the condition improved after the third, and she thinks it was better after the second dose. Afterwards she had very little return of symptoms till treatment was discontinued, when there was a slight return."	Satisfactory.
17*	June, 1911. July, ,,	5 U.P. 50 U.P.	1 U.P. 6 U.P.	Reported a distinct improvement after the second and third doses, and had no hay fever after the fourth.	,,
18*	June, 1911. July, ,,	170 U.P. 1700 U.P.	10 U.P. 50 U.P.	Reported himself very much better after the second dose, and was clear of hay fever from June 16th onwards.	,,
19*	June, 1911. June, ,,	5 U.P. 17 U.P.	1 U.P. 3 U.P.	"The hay fever inoculations, although I came to you having hay fever rather severely, did me an immense amount of good, and I intend next spring ..."	Fairly satisfactory.
20*	June, 1911. July, ,,	17 U.P. 150 U.P.	1 U.P. 5 U.P.	"First inoculation (given during severe attack) gave immunity for two days. Second gave complete immunity from Monday till Sunday. Third (rather stronger than before) brought on attack which lasted three days. I have perfect confidence in its power of giving immunity if the right strength is found."	Satisfactory.

Thus, Columns 3 and 4 both denote an increase in pollen immunity during treatment. This increase as here shown varies partly no doubt with the individual, but also with the thoroughness with which the inoculations were undertaken. It might be thought that both an increased ophthalmo-reaction and tolerance of an increased dose were tests of the same thing, and that therefore they must run parallel; this was not the case. At the commencement of treatment the dose could not with advantage be increased as rapidly as the increase of the ophthalmo-reaction, while at the end of treatment there was a tendency to a sticking-point in the ophthalmo-reaction, but the dose could gradually be made larger without producing symptoms either clinical or laboratory.

It is claimed that this increase in immunity produced by pollen vaccine is in itself the best proof of the soundness of this line of treatment, whether prophylactic or phylactic. It is true that one does not know if this increase is sufficient for all purposes, but the change is certainly in the right direction, and must be doing good.

Clinical evidence in table.—In judging a system of treatment by "results" there are obvious sources of error which should be taken into account; and in criticising Column 5 let us give due weight to (1) the natural bias of the operator; (2) the bias of the patient; and (3) outside circumstances—i.e., luck, affecting the result. Every medical man so desires that his patient's condition shall be improved by his treatment that there is a constant tendency to detect such improvement in adventitious fluctuations of health. To avoid this danger most of the results were summarised for me either by the patients or their friends. On the patient's side there is also the desire for improvement, reinforced by the impression made on the mind by a rather novel system of treatment and a certain atmosphere of "science." As a set-off to such faith-healing, most of the patients had undergone several "cures" which they had been told were infallible, and they therefore submitted themselves to treatment in a critical, sceptical, or even hostile spirit. There is another point: any one who works at hay fever research will have a highly intelligent and critical material to work with—a very high proportion of the people in the above list have been accustomed by their position or employment to give discriminating judgments. Lastly, luck, or outside circumstances; was this year a better year for hay fever patients? Apparently not. The general, though not universal, opinion seems to be that the season was, on the contrary, more severe than usual—that it began and ended earlier. As some test of the season many of the patients were urged to select another hay fever case as similar as possible to themselves as a control case for observation; all these controls had much worse hay fever than the inoculated patient.

Considering all the cases generally, there seems little doubt that there has been a distinct amelioration of symptoms. This improvement took several forms; a greater freedom from attack, the attack not so bad as in former years, and the attack sooner over, the constitutional disturbance not so great, less asthma. The people who had already developed hay fever when they commenced treatment were, perhaps, the most generous in their comments, possibly because they had recently had a reminder of what hay fever was like.

Application of Treatment.

Diagnosis.—It remains to be considered how this treatment is to be turned to account prophylactically next winter and spring, and phylactically next summer. Whatever the treatment, the diagnosis is important; though an uncomplicated case will usually present no difficulty, yet it is sometimes convenient to have a test of susceptibility to pollen toxin, and this is almost a necessity when prophylactic inoculations are to be commenced in the off season. But there are many reputed cases of hay fever which are partly, and even wholly, caused by a bacterial infection; indeed, it seems probable that an attack of hay fever may be the starting point of a bacterial infection, or that a catarrh of the air passages may predispose to hay fever, and before treatment of any kind it is essential to disentangle these two factors. During the present research several so-called hay fever cases were excluded from treatment because the eyeball was unaffected by pollen toxin—one of these confessing to malingering, and the remainder being the victims of bacterial infections. A case treated by a colleague is a good illustration of the value of a diagnostic test. A lady reported to have hay fever had slightly inflamed eyes which streamed with clear tears; as she did not react to pollen toxin hay fever was excluded. The tears were found to be swarming with staphylococci, a vaccine was made, and in a short time the symptoms disappeared.

In the list of cases treated last season the first ophthalmo-reaction will be seen to vary between 5 U.P. and 170 U.P.; those who did not react to 5000 U.P. were said to give a negative test; there were no unaccountable cases—i.e., people whom subsequent events proved to have been negative giving a positive result, and *vice versâ*.

Initial dose.—Whether or no the help of such a test is required in fixing the diagnosis, it will at any rate be required in fixing the initial dose, should vaccination treatment be decided on. Noon suggested as a suitable initial dose one-third of a cubic centimetre of that dilution of pollen toxin which gives the ophthalmo-reaction. On this plan a man giving a diagnostic reaction of 6 U.P. would receive 2 U.P. hypodermically, and a man who reacted to 100 U.P. would receive 33 U.P. This seems to be about correct, or perhaps to err on the side of over-dosing, especially when hay fever is already developed. In this connexion it should be said that the cases in the tabulated list are not all to be taken as models, as experience was being gathered all the time. In addition, there were several deviations from the ideal course to suit special circumstances.

Subsequent doses.—The patient was, as a rule, re-inoculated every week or ten days: the larger doses were given after a longer interval, while the very small doses were repeated after three or four days. Those cases which were being treated phylactically usually finished treatment with the fifth or sixth dose, the prophylactic inoculations were naturally much more numerous, as an attempt was being made to produce as high an artificial immunity as possible.

All these doses were determined on with the assistance of ophthalmo-reactions. These were taken not only at the time of inoculating but also frequently between the doses; and it is urged that whenever this is possible it enables the operator to mark the success of his treatment, to detect mistakes, and, if necessary, to adapt his doses to the idiosyncrasies of his patient. Clearly that dose should be selected which will give the greatest increase to the immunity of the patient; if a dose or a series of doses fails to increase the patient's immunity as measured by the ophthalmo-reaction, then it is to be presumed that the dose is either too small to be efficient or so large as to be over-dosing the patient, and this latter will be the case if the resistance of the patient is not only not increased but is even diminished after the doses. As a result of such tests it was generally found advisable not to increase the dose quite as rapidly as the increase in the ophthalmo-reaction, at any rate at first. Later in the process of immunisation the ophthalmo-reaction ceased to rise so quickly, and it was sometimes possible to regain the 1 : 3 ratio between the dose and the reaction. Lastly, in the case of very highly immunised patients—e.g., Case No. 1—the ophthalmo-reaction at last became stationary, but the dose was still increased.

It is, perhaps, possible by the ophthalmo-reaction to detect three stages in immunisation. In the first stage favourable doses are followed by an immediate rise in resistance, but should not be followed by a corresponding increase in the size of the next inoculation. In the second stage a larger dose is required, giving first a slight negative phase followed by a slow rise in immunity. In the final stage the eye reaction becomes stationary, but apparently the doses may be increased with advantage so long as there is no evidence, either laboratory or clinical, of an overdose.

Rule-of-thumb inoculations.—Owing to the nature of hay fever there is no danger to life and only temporary danger to health by inoculating "blindly"—i.e., without controlling the doses by ophthalmo-reactions; but it is thought that in order to make a diagnosis and to fix the first dose, at least one eye-testing will be necessary. As a rule-of-thumb, the second and third doses seemed to be usually half as much again as the first dose, while the fourth, fifth, and sixth are perhaps twice as much as the first, though in several cases the size of the dose was increased more rapidly than this.

Pollen supply.—With regard to the pollen extract necessary for testing the eye and for injecting as a vaccine, Dunbar's method of extraction is to be followed. The brief directions given by Noon in the previous paper should enable anyone, who has sufficient time and a laboratory, to construct his own pollen dilution. This will prove inconvenient to many, and it is proposed that the Inoculation Department of St. Mary's Hospital shall make arrangements to put these dilutions of pollen toxin on the market through Messrs. Parke, Davis, and Co., the proceeds to go to the upkeep of the department as in the case of their bacterial vaccines.

A final word as to the species of pollen employed. Noon selected that of timothy grass (Phleum pratense), because the pollen of this grass gave in his hands the strongest extract as tested on the eyes of the patients. This spring I tested various pollens as they matured, rushes, sedges, grasses, &c., but none gave so strong an extract as this timothy grass. The pollen of Alopecurus pratensis gave good results, but only possessed one-quarter the strength of Phleum pratense. The grasses and flowers dreaded by the hay-fever patients differ considerably in different cases, and the question arises—Is one kind of pollen more active in one case and another in another case? Though the question

cannot be regarded as settled, apparently this is not so. For one reason, the ratio between the strength of, say, a phleum extract and an alopecurus extract remains about the same with different patients—i.e., 4 : 1. Furthermore, a patient inoculated with alopecurus pollen vaccine is found to become immune to the phleum pollen extract as tested by the ophthalmo-reaction. Apparently, therefore, we need not select different types of pollen for treating different patients.

Devonshire-place, W.

SOME POINTS IN INJURIES TO THE ELBOW-JOINT.

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INJURIES to the elbow-joint form a very large proportion of the cases submitted by surgeons to X ray examination, and of these a great number are cases of supracondylar fracture with displacement backwards of the bones of the forearm together with the small lower portion of the humerus. In an X ray examination of this injury (the supracondylar fracture) it is quite impossible at times to decide how much of the humerus is damaged; whether it is an epiphyseal separation or a true fracture above it. This difficulty is due, first, to the cartilaginous and transparent nature of the end of the humerus in children, and, secondly, to the extreme difficulty of keeping a child's upper arm steady during the X ray exposure, however short it may be. A displaced epiphysis may be replaced by the time the radiographer is asked to examine it, and if it goes back accurately into place he cannot tell in a recent injury whether it had been displaced or not. The difficulty of steadying a child's upper arm, and even the upper arm of adults, during an X ray exposure is well known to radiographers. Unsteadiness results in a blurred photographic plate and only gross injuries are decipherable. The lower fragment in any case is so small that the displacement is almost identical with that due to a true dislocation.

Simple dislocation of both bones backwards is a very rare injury in children, and any surgeon having to deal with a case presenting signs of backward displacement of the forearm in a child should suspect fracture of the humerus just above the condyles.

The readiness with which, in supracondylar fracture, the deformity can be reduced, only to recur at once when the limb is let go, and also the readiness with which the deformity recurs when the limb is actually put in splints, is well known to all who have handled such cases. It is therefore imperative, if the surgeon wants to protect himself against blame, as well as to furnish himself with the accurate knowledge that leads to successful treatment, that such cases should be radiographed some days after the limb is in the splints in order to make sure that the deformity has not recurred. To this end, splints should be used of wood or aluminium, or if of metal should be of the hoop iron pattern applied on the outside of the limb, so as to allow an X ray photograph to be taken without undoing the splint. If the bones are in good position no harm is done, and if not further attempts can be undertaken to correct the position of the bones.

Mr. Robert Jones of Liverpool has drawn the attention of the profession to the difficulty of treating these cases, and his paper read before the Surgical Section of the Royal Society of Medicine, and published in THE LANCET of Nov. 19th, 1910, p. 1479, is a masterpiece in the literature of joint injuries. I have adopted his method of treating these injuries in the first case by putting the limb up in a very flexed position, not an easy thing to accomplish with the ordinary splints, which do not go beyond a right angle. If splints are to be applied in the case of a child, cardboard cut like a V can be placed on the under side of the arm, or a thin strip of tin plate or light hoop iron or aluminium can be placed on the outer aspect of the bent limb, the metal being bent on the flat. Passive movement to "establish the right of way" should be begun early—that is, after seven days—and the direction "cause no pain" attended to during movement.

Fracture of the coronoid process of the ulna is, if it occurs at all, an extremely rare condition—that is, tearing off of the tip of the coronoid without fracture of the shaft of the bone. That is an injury to the bone similar in character to a fracture of the styloid or olecranon, and not associated with other injuries but dislocation.

My experience as an X rayist dates from 1896 (Roentgen's discovery was in 1895) and I am still actively engaged in this work, and up to the present I have never seen a case that to my mind presented unmistakeable signs of this injury in a "negative."

Mr. Jones points out the frequency with which, after apparently simple dislocation backwards of both ulna and radius, bony growths occur in the brachialis anticus muscle—a myositis ossificans. This condition I have met with on numerous occasions, all resulting from dislocation, and the subject was recently dealt with in the *Annals of Surgery* by an American writer.

The occurrence of bony growths in the muscle begins always near the coronoid and spreads upwards, and it seems to me that the muscle is torn near its attachment and does not lift off a plate of bone in the same way that the ligamentum patellæ does when it is torn from the tibia, or as the tendo Achillis does when separated from the os calcis.

Skiagrams show that in dislocation of both ulna and radius backwards at the elbow the tip of the coronoid process never gets beyond the lowermost point of the trochlear surface of the humerus. Even at that position the brachialis anticus must be tightly stretched over the forward projecting trochlear surface of the humerus and badly bruised. This damage is accentuated in many cases by ignorant attempts on the part of laymen to correct matters by vigorous pulling in a straight line, thereby stretching to bursting point the already over-extended brachialis anticus. I regret to say that many medical men resort to the same procedure in the belief that traction in a straight line can do no harm if not too vigorous, and will tire out the muscles and so facilitate reduction. It is quite immaterial whether force or not is used in this procedure—the damage is due to straightening the forearm, itself a powerful lever. By the act of dislocation the forearm has been put further away, in a downward direction, from the humerus than nature ever intended. The elbow now pivots on the top of the coronoid, and straightening the arm must elongate with irresistible power the already overstretched structures in front of the joint. I have always advocated, on this account, reduction of elbow dislocations while the joint is in the flexed position, and I have not found any special difficulty in this. By grasping the upper arm with interlocked fingers the pressure of both thumbs on the olecranon will frequently reduce the dislocation without other aid than that afforded by an anæsthetic. There is, of course, no objection to traction performed at a right angle—i.e., with elbow bent.

The coronoid process forms such a large mass of bone of a low truncated cone shape that *a priori* one would not expect it to be broken in the common accidents that cause dislocation. The teachings of the class-rooms of former days die hard, and attempts to classify injuries, to facilitate teaching, frequently led to undue importance being placed in students' minds on rare or suspected injuries. Recounts of these filled up the note-book or the examination paper and gave a rounded outline to a description of the fractures met with in any one bone. The ulna has two processes—"*argal*," both had to suffer—the styloid suffered in those days not from fracture but neglect, and damage to it in association with Colles's fracture was only recognised as of frequent occurrence on the advent of the Roentgen ray. Likewise the clavicle, divided into four parts for lecture purposes—each *had* to be fractured, and the portion external to the conoid and trapezoid ligaments was credited with getting broken with ridiculous frequency and amazing deformity. The X ray here has exonerated the bone at this place from anything except a very rare longitudinal split or dislocation from the acromion.

Dublin.

LITERARY INTELLIGENCE.—New editions of Sir Malcolm Morris's "Diseases of the Skin," Sir Arthur Whitelegge and Sir George Newman's "Hygiene and Public Health," and Sir Frederick Treves's "Surgical Applied Anatomy," revised by Professor A. Keith, are announced for publication by Messrs. Cassell in September, as well as "A Manual of Physics for Medical Students," by Mr. Hugh C. H. Candy, based upon the late Mr. Frederic Page's "Elements of Physics."