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A TIME OF CHANGE

When one looks around, whether across the narrow confines of our hospital or over our island and indeed over the world in general one is struck by the changefulness of our times. One must be on one's guard against assuming changes are too fundamental or more extensive than normal, since change could also be progress. On the other hand change could also be an aspect of decadence and this should be identified and opposed.

In our hospital there have been changes in the higher personnel and there may be more soon; when this is due to the mere passage of time it is, of course, inevitable and the only concern is that the new appointees should be able men who not only can but would be willing to lead the profession, rather than immure themselves in some ivory tower. So much can be done when the right person comes to occupy the right post. Certainly no position of eminence should be granted merely as a consolation prize to some party hack. It has not been like this in the past and one hopes it will not be so in future.

A wind of change is also blowing across the hospital buildings themselves. (Apart from non-metaphorical, all too present draughts). The prevailing spirit is one of improvement but here again one must not let the best of intentions lead one astray. A building is going up which is cer-

tainly aesthetically wrong; would it had been less obtrusive. Through the generosity of the 'Save the Children Fund', a British born organisation, one of the children's wards has been fitted with a type of air-conditioning equipment. This is right but there are many wards where similar equipment is more needed and somebody should see to this.

To deal with change in Malta and in the world at large would need far more space than we would like to use in this Gazette and some might think it has no medical linkage. Some of it, however, has. We believe, for example, that there is such a thing as mental hygiene and such a thing as mental corruption which could very well result from immoral public exhibitions such as cinema shows. When a film (we refer to M.A.S.H.) is not only against war (which may be, in the proper circumstances, an inescapable social necessity) but is held by responsible critics to contain "a mountain of filth, excesses and extremes" and a parody of what a Christian holds to be most sacred, one has no doubt even doctors should do something about it, as mental hygienists, if on no other grounds. It would be well if the name of the censors who have given the verdict should be given wide publicity so that the country should know to which gentlemen it is indebted.

But there are so many other things — such as the granting of an honorary degree to a callous instigator of the multiple murders of his own countrymen, amongst others. Perhaps one had better concern oneself with lethal microorganisms and cancer cells: in their favour one

can at least plead they have no consciousness and can have no conscience.

STRANGE POSTSCRIPT

We can add a curious postscript to Dr. Paul Cassar's paper in our preceding issue on the use of a chair for parturition. The London "Sunday Times" in its issue of the 12th. August published an article by Oliver Gillie giving the news that the use of a parturition chair is being once more resorted to in what the paper calls "Sweden's most modern hospital", the Huddinge Hospital in Stockholm, under the aegis of Dr. Christmas Ehrstrom. Incidentally Miss Sheila Grant of Edinburgh, an interested reader of this periodical, who drew our attention to the S.T. article (that week we had read the "Telegraph"), found that there is a parturition chair in the Museum of the Royal College of Surgeons in Edinburgh. A paper written in 1898 stated that one such chair, which had been given to Sir James Simpson, was in use at the end of the eighteenth and the beginning of the nineteenth century.

Apparently there is something to be said for the use of a birth chair and one watches developments with interest. Meanwhile one must not succumb to the present prevailing fashion of regarding anything Scandinavian as necessarily superior to what comes from the rest of Europe. The same article referred to above reports also another far less creditable reversion in Sweden (though certainly not occurring exclusively in that country) to what can only be considered as a shameful barbarism.

DOCTORS AND WOULD-BE DOCTORS IN THE LAW REPORTS

His Honour the Chief Justice

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This paper is the St. Luke's Day Oration delivered to the Malta Branch of the British Medical Association on the 18th October 1973 at the Medical School of the University.

Doctors (and, following the order in the title of this lecture, I shall come to would-be doctors later) figure in our law reports in several guises — as plaintiffs or defendants in civil actions, as witnesses and, lastly and more commonly, as experts. For the purposes of this lecture, I am confining my interest to doctors *qua* doctors as otherwise there are, of course, numerous instances of doctors figuring in the law reports as ordinary litigants. Obviously there is nothing to preclude doctors from joining in this national pastime which is court litigation and, as I said, there are several reported cases of doctors, even some of the most reputable ones, suing or being sued for damages in connection with traffic accidents, whereas in relation to traffic accidents I am obviously more concerned with doctors as experts assessing, for instance, (and this is by no means easy) the percentage of an injured person's permanent incapacity for the purposes of an action for damages.

I should like to start with a famous civil case in which a doctor unfortunately figures as defendant and I should like to do so because the case is concerned with the fundamental question of a doctor's responsibility arising out of the carrying out of his professional duties. The case, which is in the Law Reports (Vol. XXXV, Part 2, pages 55-56), was decided by the

Court of Appeal on the 2nd April 1951. In this case a father, on behalf of his son under age, sued a doctor for damages arising out of the fact that the son, who was under the professional care of the doctor, allegedly through the doctor's negligence, lost his foot and suffered permanent debilitation. Warrants of seizure and of impediment of departure, as well as a garnishee order, were also issued against the doctor.

The facts of the case were as follows. On the 18th March 1944 the doctor performed an operation on the boy's foot which had been paralysed through poliomyelitis. Next day the doctor visited the patient and, as he stated in evidence, found everything normal. He failed to visit him on the 20th but on the 21st he did visit him, after having first declined, on the insistence of the person who called him and he found the boy flushed and feverish. Again on the 22nd he failed to see the boy and on the 23rd the boy's mother took him to the doctor's house. The doctor tore open the bandage and, after some medication, applied another bandage on everything there was. On the 25th the boy's mother again went to the doctor and informed him that in the exposed part of one of the toes there was a blister. Notwithstanding this information, the doctor failed to go and see the boy. From the 26th onwards the mother started taking the boy to the doctor daily and the doctor continued to treat him regularly till August of the same year when the boy's foot, gangrenous and mummified, dropped off spontaneously as Professor Peter Paul Debono, to whom the boy's family had

turned, was uncovering it. The medical experts appointed by the Court reached the conclusion in their report that the gangrenous process had begun from one to two days after the operation, that is to say between the 19th and 20th March, and continued on its normal course till the foot's spontaneous amputation four months later and that the position could have been remedied had the doctor become aware of it in time. They said that in this case gangrene was occasioned by the pressure of the plaster bandage, which seriously obstructed the circulation, and added that it was to be expected that after such an operation the foot should swell and the bandage consequently tighten. They admitted that the doctor had not noticed the condition of the boy's foot in those first days after the operation, but felt that this was due to a professional error of judgment, an error in the interpretation of clinical facts, and that this error was not due to negligence.

Both the court of first instance and the Court of Appeal, however, disagreed with the experts' conclusion that there was no negligence, and this on the basis of the statements of the experts themselves. It was remarked in the judgment that, according to the experts themselves, the critical period was between the 19th and the 23rd and during this period the doctor had failed to see the patient on the 20th and the 22nd, and it was only on the insistence of a certain person that he went to see him on the 21st. The experts themselves stated in their evidence that common prudence did in fact suggest that the doctor should have seen the boy also on the 20th and added that in the period between the 20th and the 23rd the doctor should have gone to see the boy irrespective of any symptomatology which the boy presented on the 20th, but by reason only of the fact that the operation had taken place on the 18th, considering the nature of the operation itself. The experts themselves also stated that in this period between the 20th and the 23rd the symptoms especially local ones, increased in severity and this should have caused the doctor to become aware of the gangrenous process,

had he in fact gone to see his patient. Indeed, as I said, it was on the basis of the experts' findings themselves that both Courts reached the clear conclusion that there had been negligence on the part of the doctor.

The Court of Appeal agreed with the Court below that on the facts as established the doctor had not used the diligence of a "*bonus paterfamilias*" and had shown imprudence in not having continually kept, as he should have done, an eye on the patient in the days after the operation when the danger of gangrene was so much present and could have been avoided by his attention. He was thus at fault and was responsible for the consequences.

The Court of Appeal, quoting from Italian and French text-writers, held that it was clear from the authorities and the decided cases that a doctor was not responsible for damages resulting from an excusable professional error and this was excusable if it stemmed from the uncertainties and imperfections of the sciences and not from negligence or sheer incapacity. But the position was, of course, different if the error was, as the Court put it, "*grossolano*", which, literally translated, means "coarse", or if the damage was attributable to his not showing the prudence, diligence and attention of a "*bonus paterfamilias*", which, as you know, is the ordinary standard of care required by our law. This proposition, as indeed also the writ of summons itself, was based on the basic provisions of Sections 1074 and 1075 of the Civil Code, which provide that "every person..... shall be liable for the damage which occurs through his fault" and that "a person shall be deemed to be at fault if, in his own acts, he does not use the prudence, diligence and attention of a "*bonus paterfamilias*" but "no person shall, in the absence of an express provision of the Law, be liable for any damage caused by want of prudence, diligence or attention in a higher degree".

Another class of reported cases in which doctors figure, this time as plaintiffs, in civil suits and which illustrate the eternal hazards of credit, relate to doctors'

actions for the payment of professional fees. First of all, as you know, there is prescription, which is here used not as a medical term but as a Maltese and Continental legal term denoting one of the causes of extinction of obligations (by lapse of time) which is in general justified by the social necessity of ensuring the certainty of juridical relationships, but — and I quite realize this — can be also most infuriating. On the other hand, the running of prescriptive time may in some cases be suspended or interrupted. Procedurally prescription is a defence against an action and in civil matters cannot be raised by the Court of its own motion, but unfortunately is quite often cheerfully raised by the defendant, and this at any stage of the proceedings, even on appeal. One of the facts of life of universal application is that there is very little enthusiasm for payment, at least when one is at the paying end. No doubt you all know that, according to law, actions by physicians, surgeons and obstetricians to get payment for their visits or operations are barred by the lapse of two years. So please beware.

I am now thinking of one particular doctor (whose case, decided by the First Hall of the Civil Court in 1928, figures in Vol. XXVII, Part 2 pages 53-55 of the Law Reports) who must have found the defence that was set up against his action for the payment of professional fees perhaps much more disconcerting than just prescription. The patient, defendant in the suit, did not contest the fact that he had called the doctor to make use of his professional services, nor indeed did he contest the bill. His defence was only that the treatment which the doctor had given him, notwithstanding the doctor's repeated assurances that it would have been efficacious, had not produced the anticipated effect and that in fact he was worse. He added that he would not have entrusted his case to the doctor if he had not assured him about the result of the treatment, and in fact he had told the doctor not to start the treatment if he did not feel certain of its efficacy. It was established that the treatment had negative results and Professor Peter Paul Debono expressed the

opinion that the patient's illness was incurable.

The Court in this delicate case had regard to the relevant circumstances. It held that it was clear that the payment of a doctor's professional fees could not be subjected to the condition of the patient's recovery, notwithstanding the doctor's assurances and expressions of confidence in the result of the treatment which, rightly or wrongly, he thought would be conducive to recovery, provided — and this is a very important proviso — there was no evident bad faith or evident abuse of the exercise of his profession on the part of the doctor. In this case, bad faith, the Court said, "could not be presumed solely from the negative result of the treatment or Professor Debono's opinion that the patient's illness was incurable". The case was, of course, decided on its own merits, due allowance being made for the possibility in other circumstances of the presence of bad faith or abuse in the exercise of the profession, and this is quite understandable.

As I said, the Law Reports also show some interesting cases of doctors as defendants in criminal cases. I should like in the first place to refer to a reported case decided in 1917 which concerned a charge against a Sliema doctor of having refused to give his professional services when called upon so to do in an urgent case and which indeed relates to what is often an agonizing situation for a medical practitioner (Law Reports, Vol. XXIII, Part 1, pages 1083-1086). As you know, the Medical and Kindred Professions Ordinance (Chap. 51) provides in section 6 that it is the duty of every licensed medical practitioner to practise his profession whenever he is so required in cases of emergency, whether by day or by night, and without any wilful delay to render his aid and prescribe the necessary remedies. The Ordinance also prescribes penalties for offences against this provision.

The facts of this particular case were as follows. In the early hours of the 19th August 1917 a man was roused from his slumbers by a kind-hearted woman who told him that another woman, a neighbour, was ill and she asked for his help.

He found the sick woman so ill that he called a priest and the priest suggested that he should call a doctor. He then embarked on a series of fruitless peregrinations. Having gone first to one doctor with negative result, he then went to the doctor concerned in this case, making known to the person who peeped out of the window the object of his visit and the urgency of the case, but was informed by that person that the doctor could not attend to the case as he had only shortly come home. After having unsuccessfully sought another doctor at his residence and also unsuccessfully requested the address of another from the duty police officer, the man went again to the doctor concerned, but again with negative results. Then he went, again unsuccessfully, to call another doctor. The net result was that up to six o'clock in the morning no doctor had gone to see this woman. In court the doctor concerned pleaded in justification indisposition resulting from tiredness which necessitated rest. The Court of Magistrates held that, according to the teachings of jurists, the reason justifying a doctor's refusal to give his professional services when so required in cases of urgency had to be grave, and that not only had this doctor failed to show sufficient justification for his refusal, but the evidence showed that his defence was groundless. On appeal by the doctor, the appellate Court affirmed the judgment. It observed that the conditions for the existence of the contravention in question were, first, the urgency of the case in connection with which a licensed doctor is required to give his professional services and, secondly, the unreasonableness of his refusal to do so. The Court added that one could only adjudicate upon the urgency of the request on the basis of the circumstances antecedent to or concomitant with the request itself, that is to say on the basis of the circumstances in which the case presented itself and not of the subsequent circumstances; these might conceivably disclose that the apprehended urgency did not as such exist whereas it could be shown that the circumstances themselves did in fact justify at the time the apprehension of that urgency. With re-

gard to the second point, the Court said that, in order to decide on the reasonableness or otherwise of the doctor's refusal, it was necessary to have regard to the ground for the refusal, the ascertainment of the existence of such ground and its appreciation being left to the Court. Quoting from the French legal writers Chauveau and Helie, the Court made it clear that the assessment of such ground could not indeed be left to the individual appreciation of the practitioner to whom the request was made. Obviously this is a very delicate matter involving a fine appreciation of all relevant factors.

Other reported cases in this class relate to another important duty of medical practitioners under the Prevention of Disease Ordinance (Chap. 59). Section 5 of this Ordinance provides as follows: '*every*' medical practitioner attending on or called in to visit a patient shall forthwith, on becoming aware that the patient is suffering from a disease to which this part of the Ordinance applies, send to the Superintendent a certificate stating the name, age and address of the patient, and the disease from which, in the opinion of such medical practitioner, the patient is suffering". This provision, according to Section 38 of the same Ordinance with which it must be read, applies even where there exists only a reasonable suspicion that the disease is one of those specified in the said Section 38. A case of a charge under this Ordinance against a medical practitioner came before the Court of Magistrates in 1938. It did not present much difficulty from the evidential point of view. In this case, reported in Vol. XXX, Part 1, pages 543-549 of the Law Reports, it was established in evidence that the doctor, who had a sick child under his care, actually declared to the child's mother that the case was one of diphtheria, gave the child several injections of anti-diphtheria serum, warned the child's parents to say nothing about the case, created in them the fear that they would be arrested if they talked and stating that if he was caught he would be fined twenty pounds, asked them to hide the empty phials, advised them to remove their young daught-

er from the house, warned them not to admit anybody into the house and, notwithstanding all this, sent no certificate to the Sanitary Authorities and then expected to get away with it in Court. It is not surprising in the circumstances that when he took the witness stand he only made his position worse.

The case is interesting only because it involved an important question about prescription. We have seen that prescription, as a cause of extinction of civil obligations is not too friendly to the medical practitioner who is a little remiss in sending his bills. But in a criminal case, on the other hand, prescription can only operate in favour of the person charged, in this case the medical practitioner concerned. The Court of Magistrates accepted the doctor's plea, as it held that the doctor had declared the child to be suffering from diphtheria on the 20th December 1937 and the summons had been served on him on the 22nd March 1938, that is to say more than three months after the commission of the contravention. As in such cases the prescriptive period is 3 months the criminal action was thus barred by prescription and the doctor was acquitted. On appeal by the Attorney-General, however, the appellate Court reversed the judgment, found the doctor guilty and fined him. It held that the offence in question was a continuing one, that is to say one in which the course of action continues *de die in diem*, and in such cases the prescriptive period only commences to run on the day when the violation of the law ceases. In this case the appellate Court held that the permanence of the anti-judicial state ceased with the child's death, so as long as the child remained alive the doctor was still violating the law in not giving the prescribed notice. The boy died on the 23rd December 1937 at two o'clock in the morning, and the summons was served on the doctor on the 22nd March 1938. The criminal action against the doctor stood, saved, probably to the doctor's bitter disappointment, by just a narrow margin. Another question in connection with a charge against a doctor under this section arose in a reported case

of 1954 (Vol. XXXVIII, Part IV, pages 786-788 of the Law Reports). The doctor concerned submitted through his counsel that the provision in question was not to be construed as imposing a duty to send the prescribed certificate on *each* doctor having the patient under his care or called to visit him. It was contended on behalf of the doctor that it was sufficient if only one doctor sent the certificate in cases, like the one in question, of a consultation where there was thus more than one doctor involved. The Court — and its view was endorsed by the appellate Court — was unable to accept this contention in view of the clear wording of the law which, after all, was also consonant with the *ratio legis* in as much as otherwise, in the case of a plurality of doctors concerned, each might well rely on the other as to the sending of the certificate with the unfortunate consequence that no certificate might in the end be sent at all.

Enough of this rather unhappy though very interesting subject of criminal prosecutions; I would ask you now to transfer your attention from the dock to the witness-box which, I know, can sometimes seem hardly less unpleasant. In connection with this subject, I should like to refer to a case which, because it is only too recent, has not yet been reported but which may well eventually find its way into the Law Reports. This the case of **Balzan v Ciantar** which my colleagues and I on the Court of Appeal decided on the 24th November of last year.

No doubt you all know that where doctors are really and truly in fantastic demand as witnesses these days is in Rent Regulation Board cases. You also know that doctors are being continuously asked — I was going to say 'pestered' — to make out certificates attesting that one or the other or both of the parties in a rent case suffer from some disease or preferably from a multiplicity of them as, for the purpose of the assessment of the respective "hardship" of the parties, the more the diseases listed the greater appears to be the lessor's chance of recovering possession of his building or the tenant's chance of retaining it. Whilst in the old

days to call a man "baswi" very likely led to a case of slander, nowadays the parties in a recent case sport their rupture as if it were a family heirloom. In our procedural system a medical certificate is in principle of no evidential value unless the doctor who subscribed it confirms its contents on oath in the witness-box.

Now in the **Balzan v. Ciantar** case it was contended on behalf of the appellant before us in the Court of Appeal that a doctor's evidence as to the state of health of one of the tenants was merely an *ex parte* expression of opinion. It stated that a doctor having a person under his professional care and called by that person to give evidence on his behalf may be expected to testify, whenever this is relevant to the case, not only on the illness with which that person is affected (which has never attracted any objection), but also on what that particular person whose health background is after all normally known only to his personal doctor, should or should not do for the treatment, cure or relief of that illness. The doctor testifies on what he himself knows about the patient as such, and this does not relate only to the illness which he has diagnosed, but also to what the patient, in the state of health in which he has been found to be, should or should not do on account of that state of health. Obviously, the Court added, both one and the other of these matters necessarily imply a certain subjective appreciation, but in the circumstances this is in itself inevitable, and, contained within proper limits, in normal circumstances is not procedurally wrong. May I, however, add, by way of a sad postscript to this, that I have at times seen medical certificates which looked elegantly tailor-made for the case, and some even recommended that the patient should have the particular house he was after.

Lastly I should like to say something about doctors as court experts. Mention of doctors as experts is to be found practically everywhere in our Law Reports. In our legal system, as you know, the expert is appointed by the Court itself and I feel that this system has much to commend it. We find doctors as experts in practically

all reports of criminal trials on such charges as homicide and bodily harm. In one such case, which was decided by the Criminal Court in 1955 (Vol. XXXIX, Part IV, pages 914-915 of the Law Reports) the accused objected to the word *car* (clear) in the phrase "*jesponuh għall-periklu car tal-mewt*" (expose the victim to a clear danger of death) in the medical experts' report, on the ground that it is exclusively for the jury to adjudicate on this factor. The Court, however, overruled this objection on the ground that danger of death admits of certain gradations, ranging from remote danger to clear danger, and in the report this was correlated with the traumatic effect, the study of which is a matter which falls within the technical competence of the medical experts.

In civil matters, too, there are several reported cases relating to doctors as experts. In particular there was a time when the Courts held that it was impossible to entrust experts with the examination of the question of the mental sanity of a person — usually a testator — who was already dead at the time (Vol. XX, Part 1, page 193 and Vol. XXIV, Part 1, page 794 of the Law Reports). But more recently (Vol. XXXIV, Part 1, pages 108 to 133) a different view has been taken.

An interesting case arose in 1947 and is to be found in Vol. XXXIII, Part 2, pages 73-74 of the Law Reports. In a case of separation the husband, who was the plaintiff and was alleging adultery on the part of his wife, requested the Court to appoint medical experts to ascertain whether his wife, the defendant, was pregnant. The First Hall of the Civil Court held that in the field of private law the examination of the person of any of the parties for evidential purposes was not provided for and so, in the event of opposition on the part of the person concerned, such examination was not admissible.

A similar case, but with a more modern flavour, occurred in 1952 and is reported in Vol. XXXVI, Part 1 pages 297-298 of the Law Reports. In a case of illegitimate filiation in which the plaintiff was alleging that the defendant was the father of her illegitimate child, the defendant

asked the Court of Appeal to appoint an expert to carry out the necessary blood test on the plaintiff in order to exclude his paternity in respect of the child. The Court held that such a test was admissible whenever the parties consented to it. In this case both the plaintiff and the defendant had in fact consented; but as the mother was appearing in the case also as *curatrix ad litem* of the child, the question arose whether in this capacity she could give her consent on behalf of the child. The Court held that as it was in the child's interest that his paternity be established in a definitive manner and it did not appear that the test in question could be prejudicial to his health, it could in the circumstances supply this consent itself. A similar case is at present pending before us in the Court of Appeal and the relevant tests are actually being carried out. This, I think, evinces what I may call a prudent progressiveness in the Courts' approach to certain delicate problems.

Now I should like to draw here a very firm line dividing the first part of my lecture dealing with doctors from the second part concerning would-be doctors. But before dealing with these — and by would-be doctors I mean those who purport to exercise the medical profession without being qualified doctors — I should like to refer very briefly to those who, though qualified doctors, seek to exercise the medical profession without having first obtained the necessary licence to practice medicine in these Islands and (since 1959) being registered in the Medical Register, as provided in Section 4 of the Medical and Kindred Professions Ordinance (Chap 51).

A reported case of a foreign doctor or rather of a Maltese with a foreign medical degree who practised medicine in Malta without the requisite licence came before our Courts in 1939 (Vol. XXX, Part IV, pages 637-641 of the Law Reports). A person with such a Maltese surname as Mifsud, but a graduate of a French University *without a local licence*, practised medicine here and was convicted. He did not appeal against his sentence, but thought he was smart enough to get round it. He made arrangements with a licensed Maltese

doctor for the opening of consulting rooms in Strait Street, Valletta and the locally licensed doctor was paid three pounds a week apart from two shillings in respect of every patient, and what was left after deducting expenses went to the man who was referred to as the French doctor. This man was convicted of having contravened Section 4 of the said Ordinance (Chap. 51) and this time appealed against his conviction. The appellate Court held that it had been established in evidence that the man examined patients, made diagnoses and prescribed treatment, and that this did in fact constitute the exercise of the medical profession. Even if he did this without payment, the offence of the unlawful exercise of the medical profession would subsist as the purpose of gain was not a necessary ingredient of this offence, this having been established in the earlier case of *Salunto*. Nor did the presence of the licensed doctor alter the position at law for whether by himself or in conjunction with others, this man certainly did contravene the law.

The *Salunto* case referred to in this judgment, also a reported case (Vol. XXV, Part IV, pages 914-917 of the Law Reports), is an interesting one. It refers to a proper quack and a female one — not that female quacks are any worse than male ones. This woman admitted that she cured people by recommending or administering to them such innocuous substances as ordinary purges and that for this she used to get some food or a little money. The Court held that the offence of the unlawful exercise of the medical profession was not negated by the fact that the substances prescribed or supplied were innocuous (indeed by relying on such supposed cure the 'patient' in fact usually omitted or delayed the *proper* cure) or that the emoluments received were small.

In another reported case (Vol. XXXII, Part IV, pages 918-922 of the Law Reports) a much more serious view was taken of the defendant's misdeeds. A man without any professional qualifications posed as a medical specialist and even assured his "patients" that they would be cured by him within a specified time, receiving pay-

ment for his service. With intent to make gain, he prescribed treatments which were of no benefit whatever to his "patients". Moreover, he publicly represented himself as a doctor and even managed to figure as such in the telephone directory. The appellate Court held that this was not a case of a mere violation of the said Section 4 of Chap. 51, but that there were in this case all the ingredients of the much more serious crime of *truffa* under Section 322 of the Criminal Code, including that *mise en scene* which is typical of this crime. The man was given six months in prison where it is hoped he had occasion to meditate on the long arm of the law and sort out the major from the minor offence.

I do hope you have not found this little guided tour of our *giurisprudenza* un-

interesting. I, for one, always feel that there is a ring of reality about decided cases which to me at least is often more appealing than the writing of theoreticians. I do realize that I have often had to focus your attention on those doctors, indeed extremely few, who have fallen foul of the law and this may perhaps on the whole have appeared to you a little dismal. But it is the dark side of things that brings out more fully the brighter side and the medical profession in Malta has indeed a very bright record. After you have heard all this, I should not like any of you to look upon the law with even the slightest degree of unfriendliness, for may I conclude by saying — and I firmly believe this — that the law is indeed the best friend of an honest man.

NOTICE

This periodical is published biannually in June and in December. Contributions for the June issue are to reach the Editor at the Bacteriology Laboratory, St. Luke's Hospital, Malta, by the 1st May. They must be typewritten, with double spacing. References should be given by the author's name and by the year of publication. Papers, which are accepted on the understanding that they have not been published elsewhere, are to consist of reports of original work or studies or case histories.

We thank our advertisers for their valuable support.

WEEVER FISH STINGS

LOUIS ZAMMIT

B.Pharm., M.D.

There are various species of weever fish (Maltese *traċna*). Those found in the Mediterranean, belonging to the family Trachnideae, as listed by J. Barbara (1961), are:-

the different methods of treatment and management described has prompted me to write this paper. Victims are usually stung in the plantar aspect of their foot whilst walking or paddling in shallow

<i>Scientific Name</i>	<i>Maltese</i>	<i>English</i>	<i>Italian</i>
1. <i>Trachinus araneus</i>	Traċna	Spotted weever	Tracina ragno
2. <i>Trachinus draco</i>	Sawt	Greater weever	Tracina drago
3. <i>Trachinus lineatus</i>	Traċna tal-fond	Streaked weever	Tracina di fondo
4. <i>Trachinus vipera</i>	Straċna	Lesser weever	Tracina vipera

Table 1.

Some of these fish can lie partially buried in the sand in very shallow sandy water. They can inflict painful stings on the feet of victims walking or paddling in such places. The fish can be light brown or greyish in colour and can camouflage themselves very well in their natural habitat. They vary in length from 6 to 16 inches and have six hard dorsal spines as well as smaller opercular ones. The dorsal spine which is mostly hidden behind the gill cover is about $1\frac{1}{2}$ inch long and is hollow like a hypodermic needle. When the fish attacks its victim it injects a neurotoxin which causes considerable pain. In cross section the spine has a somewhat kidney-shaped outline — a point which it is useful to bear in mind when examining the puncture entry wounds of patients possibly stung by such fish. The fish is edible, and can be seen on sale in local fish markets or stalls especially in the month of November. Those offered for sale are however usually devoid of spines which are purposely removed by fishermen or fishmongers as a precaution.

The paucity of medical literature about this subject, and the vagueness of

sandy water — even at a few inches depth. It is quite possible that the patient simply steps on the fish, but I have seen cases whose entry puncture wound has been on the dorsum of the foot. Therefore, I think that the fish actually attacks its unfortunate victim. This can be substantiated by such accounts as given by patients No. 2 and 4 in Table 2.

Patient 2 (J.B.) caught the fish with his harpoon, did not recognize what it was and on trying to handle it to take it off the hook, the wriggling fish attacked him and stung him in his right thumb. Patient No. 4 (F.C.), was snorkling and noticed a 10 inch long fish which actually came towards him, and inflicted a sting on the right side of the abdomen — luckily the puncture wound was very small and appeared to be quite superficial.

As soon as the victim is stung he calls out that something in the sand has 'bitten' him. In clear water, bathers nearby hardly believe him as they usually can detect no cause in the form of crabs, sea urchins, broken glass bottles or other sharp objects in the area. The patient, however, soon displays great alarm and may even cry through the severe pain

No.	Patient	Sex	Date	Site of Sting	Emergency Treatment
1.	J.S.	M	29/8/69	Base of Right big toe, plantar aspect	2% Xylocaine
2.	J.B.	M	8/9/69	Right thumb	2% Lignocaine
3.	M.T.P.	F	9/9/70	Arch of left foot	2% Lignocaine plus incisions
4.	F.C.	M	13/7/71	Right paraumbilical area	2% Lignocaine; Systral 2ml I.M.
5.	C.J.O.	M	15/9/71	Left heel	2% Lignocaine
6.	E.M.	F	25/8/72	Dorsal aspect of Right big toe	2% Lignocaine
7.	I.M.B.	M	15/9/72	Plantar aspect right foot between big toe and second toe	2% Lignocaine
8.	C.A.	F	28/6/73	Dorsal base of middle toe	2% Xylocaine; Systral 2ml
9.	J.W.	F	14/9/73	Plantar base of left second toe	2% Xylocaine; Systral 2ml
10.	C.R.B.	M	16/9/73	Plantar base of left big toe	2% Xylocaine; Systral 2ml

Table 2

which renders him very anxious and nearly drives him hysterical. Fear grips the patient, because very soon the pain spreads proximally along the foot, ankle and leg up to knee level or even higher. This causes the victim to realise that he is suffering from some form of poisoning and his behaviour usually persuades his helpers to take him to the nearest hospital or first aid post or to call a doctor urgently to the spot. As I practice in the North of Malta where there are quite a few sandy beaches I have been called to such emergencies ten times since 1969 (Table 2).

On arrival at such emergencies, one finds a very restless patient complaining bitterly of excruciating pain. He is usually able to point to the tell tale single puncture wound inflicted by the fish, which is also the most tender spot. The entry wound can vary in size from 1 to 3 mm. in diameter and the larger ones can be seen to have a somewhat kidney-shaped peripheral outline consistent with the cross section of the fish's opercular spine.

A magnifying lens helps in examining the smaller puncture wounds. Around the wound an erythematous swelling usually starts to develop within minutes, and this swelling can spread to the whole foot. The patient is usually very anxious, frightened, perspiring, in obvious pain, but, remaining fully conscious, he will ask many questions as to the gravity of his condition.

Treatment

Clearly the first thing the patient needs is a lot of reassurance. One can explain that the pain is due to a weever fish sting and that it can be remedied. Having gained the patient's confidence I clean the wound and surrounding skin with acriflavine and surgical spirit and inject about 2ml of 20% Lignocaine or other local anaesthetic near the entry wound, so near in fact that part of the solution injected is made to ooze out of the puncture tract acting as an irrigation. Immediately this is done the patient experiences a dramatic retrograde improve-

ment in his pain which I have noticed characteristically to diminish down distally in a contrary fashion to its original spread. The patient is then left with just a slight soreness at the puncture site. A simple small elastoplast with gauze dressing is then applied and the patient is able to walk away immediately after treatment. Depending on the size of the swelling and allergic oedema, one of the anti-histaminics such as Incidal, Systral or Andantol tablets one t.d.s. can then be prescribed. If the swelling is pronounced one of the injectable forms of antihistamines such as Piriton or Systral is given intramuscularly at a different site. Perhaps in very severe forms one of the cortisones should be considered, but this has not proved necessary in the cases I have met so far.

The question then arises as to whether one should give anti-tetanus prophylaxis. I personally think that it is unlikely that the fish harbours tetanus spores in its spines unless its habitat happens to be polluted with sewage — but then that would hardly be a suitable place for swimming.

Prognosis

All the cases listed above which I have seen in the last five years have recovered completely. None of the patients needed transfer to hospital and no one developed any residual weakness or paralysis. Any swelling subsided gradually within two or three days. There have been no recorded secondary infections. I think that we should squash the local myth that if one is stung by a weever fish one can remain paralysed for life. Theoretically, however, some form of severe anaphylaxis can occur perhaps in some particularly sensitive individual.

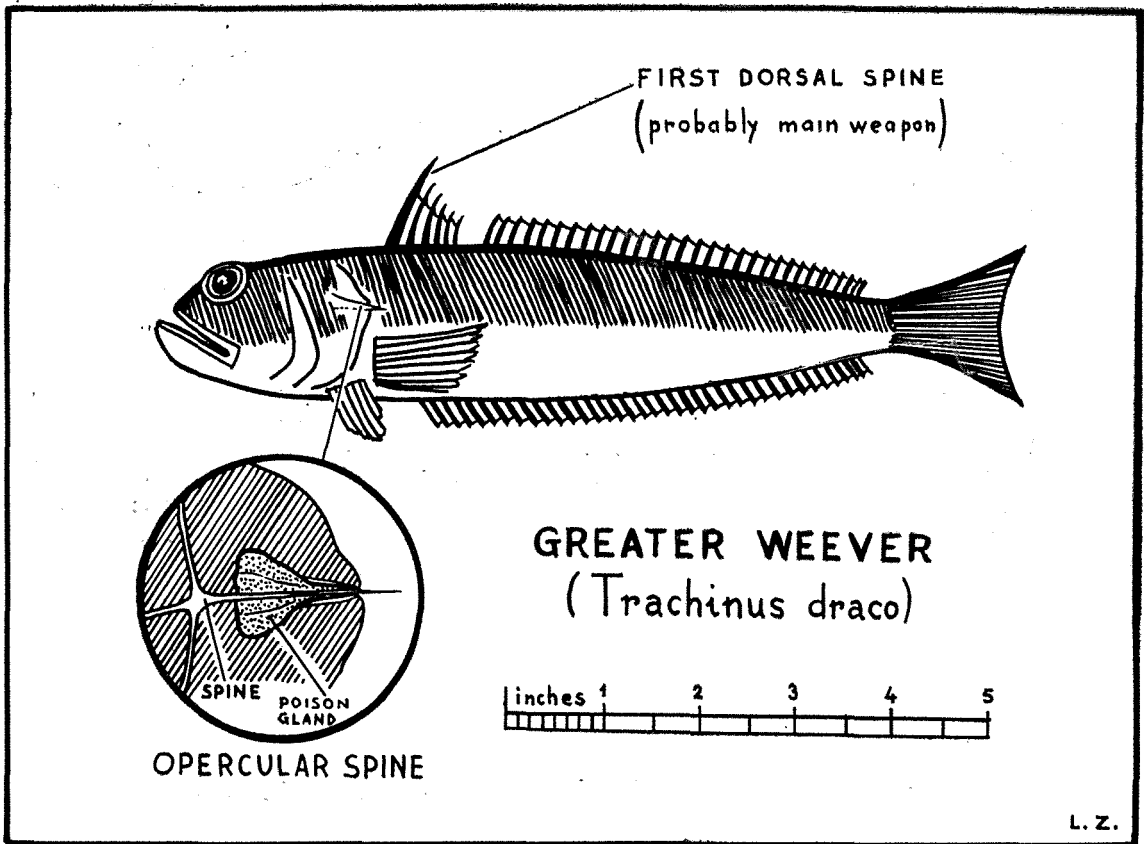
Discussion

I have often asked local fishermen what they do if they are accidentally stung by a weever which they might have caught out at sea, and some have told me that they split the fish itself, take its liver

out, and rub it vigorously on the puncture wound of the victim. It could well be that the fish stores or concentrates its own anti-venom in its liver. I do not propose to try this method, as an injection of a local anaesthetic has so far always produced good results and is by far a more sterile procedure. As far as I know there is no anti-weever fish venom serum available, but what has been said above might well make a good subject for research for our pharmaceutical faculty. The very quick relief after a local Lignocaine injection has led me to believe that the local anaesthetic besides acting directly on the sensory nerve endings, might have also a fortuitous and useful effect in neutralizing the fish neurotoxin. This can further be substantiated by the fact that the relief from pain is long lasting, even after the effect of the local anaesthetic lapses; otherwise one would expect that at least some of the pain would recur when the effect of the local injection wears off. I have heard of patients who have been treated differently e.g. with anti-tetanus vaccines, cortisones or antihistamines only, and who have experienced the pain for weeks if not months after the accident. The sooner the treatment is given the better as the neurotoxin is not given any chance to "fix" itself.

Besides on Mediterranean sandy beaches, weever fish can be found on the Atlantic coasts and in the South of England where it is also known as "Bishop fish", especially in Cornwall.

It might well be that the fish have some special aversion against some special persons, and, it is interesting to note that patient No. 10 (C.R.B.) recalled that he had been involved in a similar incident whilst on holiday in one of the south coast resorts in England, about four years before. Keeping in mind the thousands and thousands of people swimming in our sandy beaches, it must be stressed that such casualties are relatively rare and there is no cause for undue alarm. Perhaps one should advise the wearing of rubber slippers for paddling in shallow sandy waters especially in the month of September, the month in which 6 of my cases occurred.



Other methods of treatment have been suggested. Birch (1969) argues that as the venom is inactivated by heat, as a simple first aid remedy one should immerse the foot repeatedly in water as hot as the patient can bear. With all due respect I think that this method would actually add to the patient's discomfort, and might even encourage quicker spread of the neurotoxin by the vasodilatation thus provoked. Patients No. 1 (J.S.) and No. 4 (F.C.) tried this measure and reported that there was no noticeable improvement in the pain — if anything it became progressively worse. I think the same comments apply to Birch's suggestion of adding hyaluronidase to a local injection. I am of the opinion that as a first aid measure one should suggest the use of ice packs to encourage vasoconstriction and to limit the poison to as small an area and to keep it as peripheral

as possible. Evans (1943) advocates the use of 5% potassium permanganate injection. I will be recalled that potassium permanganate has been in vogue also for snake bites and scorpion stings, but the method has been largely abandoned by most casualty practitioners, as it seems very doubtful whether it has any beneficial effect at all. The injection of a local anaesthetic in the form of Lignocaine or Xylocaine has given me such good results that I have made it a point always to carry some in my emergency bag.

Coda

There are other Mediterranean fish which can inflict poisonous stings. Though not the subject of this paper, I think it opportune to mention them in the following list which is again after J. Barbara (1961).

<i>Scientific Name</i>	<i>Maltese</i>	<i>English</i>	<i>Italian</i>
<i>Scorpeona porcus</i>	Scorfna sewda	Small scaled scorpion-fish	Scorfano nero
<i>Scorpeona scrofa</i>	Cippulazza	Largescaled scorpion-fish	Scorfano rosso
<i>Helicolenus dactylopterus</i>	Skorfna tal-ghajn	Rock-fish	Scorfano di fondale
<i>Dasyatis pastinaca</i>	Boll	Common string-ray	Pastinaca
<i>Dasyatis violacea</i>	Boll tork	Blue sting-ray	Trigone viola

This is by no means a full list. My advice to amateur harpoonists and sub-aqua enthusiasts is to make sure that they know their fish carefully before handling the prized catch.

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ASTHMA — A NEW LOOK AT AN OLD DISEASE

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Historical outline

Asthma has attracted a great deal of attention over the centuries probably because its clinical manifestations of breathlessness and wheezing present themselves in such a dramatic manner. The word asthma is derived directly from the Greek asthma — meaning a hard drawn breath or panting. The first clinical description is attributed to Aretaeus the Cappadocian who, emphasizing the plight of the asthmatic patient, wrote: 'they eagerly go into the open air, since no house sufficeth for their respiration'.

In the early 17th century, van Helmont, himself an asthmatic, provided us with what is thought to be the first refer-

ence of allergy being involved in the aetiology of asthma. He has given us a vivid description of a monk who had attacks, 'as oft as any place is swept, or the Wind doth otherwise stir up the Dust'. This poor monk must have had quite a rough time, especially on Fridays, for van Helmont also describes him as having attacks when "he eateth Fishes fried with Oyl". To van Helmont should be given the credit for being the first to point out that asthma resulted from "a drawing together of the smallest terminal bronchi" an observation which has given rise to endless controversy ever since. We owe the modern concept of asthma to T. Willis, perhaps better remembered for his famous circle. Willis,

says of asthma, 'there is scarce anything more sharp or terrible than the fits thereof'. He describes two forms of asthma; pneumonic and convulsive; he associated the former with "obstruction of the bronchi by thick humors, swelling of their walls and obstruction from without" and believed convulsive asthma to be due "to cramps of the moving fibres of the bronchi". In 1698, Sir John Floyer, who like van Helmont was an asthmatic, published his classical book on asthma. He adopted Willis's classification, calling convulsive asthma: periodic, and pneumonic asthma: continued, and assigned as a cause for the paroxysms "a contracture of the muscular fibres of the bronchi".

For a long time asthma was considered to be a disease of moderate morbidity and negligible mortality. Indeed, Oliver Wendell Holmes is quoted in Osler's book as calling asthma "the slight ailment that promotes longevity" and the French physician Armand Trousseau called it "le brevet de longue vie". Until Huber & Koessler's paper in 1922, it had been claimed that death did not occur in the asthmatic paroxysm. Although the dangers of asthma are now fully appreciated, it is disturbing to come across statements in the literature such as "Bronchial asthma alone rarely causes death. When it does prove fatal it is due either to the concurrent bronchitis and bronchiolitis or to heart failure". (Spencer, 1968).

Between 1959 and 1966 a steady rise in mortality from asthma was observed in England and Wales, the increase being more pronounced between ages 5 — 34 years. Speizer and his co-workers (1968) showed that the rise was real and not due to a change in diagnostic methods or registration of cause of death. They subsequently examined the possible reasons and concluded that the increase in mortality was most likely to be due to changes in treatment. Sympathomimetic aerosols and corticosteroids were the only drugs to have been used by a large proportion of the patients who died. The use of corticosteroids, which had been introduced in 1951, did not seem to be related to the cause of death, and sympathomimetic aerosols, introduced in 1961, were incriminated. Fol-

lowing the publicity given to the possible dangers of excessive inhalation, there was a drop in sales which has been paralleled by a downward trend in the reported number of deaths due to asthma (Fraser *et al*, 1971).

Several mechanisms whereby sympathomimetic aerosols might be responsible for the increase in the asthma death rate have been suggested. The induction of fatal cardiac arrhythmias by sympathomimetic drugs, especially in the hypoxic state, is one of the explanations given by a number of workers, amongst whom Lockett (1965); Greenberg & Pines (1967) and Collins *et al*, (1969). Bass, in 1970 blamed the fluorocarbons, used as propellant agents in the aerosols, for producing arrhythmias. More recently, Conolly and his co-workers (1971), have claimed that prolonged administration of these bronchodilators might result in resistance being developed not only to the sympathomimetic drugs themselves but also to endogenous sympathetic stimulation. They suggest that this could have led to the deterioration, and finally to death, in asthmatic patients using sympathomimetic aerosols.

Aetiology and Pathogenesis

Asthma, which may best be regarded as a complex functional state which can be triggered off by a wide variety of agents, still presents a great number of difficult problems and there are far more questions to be asked than answers to be given. Although there have been several attempts at defining this condition — Ciba Guest Symposium 1959; American Thoracic Society, 1962; Scadding, 1969 — there is still no agreement between clinicians, respiratory physiologists, immunologists and pharmacologists on a final definition, as evidenced by a report of the Working Group on the Definition of Asthma, published in 1971.

The aetiology and precise pathogenesis of bronchial asthma are still uncertain although a great deal of evidence is now forthcoming about the various factors that are capable of triggering off an attack. The relative importance of a genetic predisposition, environmental allergens, im-

munological mechanisms, infection and emotional factors, in determining the different patterns of the disease is far from clear.

(i) Hereditary factors.

As early as 1916 Cooke and Van der Veer stressed the hereditary nature of allergic diseases. Williams and Williams in 1949 found that about 50% of the asthmatic patients gave a history of allergy in close relatives. Leigh and Marley in 1967 found that about 40% of first degree relatives of patients with asthma developed the disease by the age of 65 years. Rajka (1960) pointed out that what may be inherited is not the allergic manifestation but the allergic disposition. Although it has been suggested that atopy is determined by a single, autosomal, dominant gene with reduced penetrance, the exact genetic factor and the mode of inheritance are still far from certain, and although the clinical evidence of inheritance of atopic diseases is often very suggestive, the evidence is not as conclusive as it is sometimes made out to be.

(ii) Immunological aspects.

Bronchial asthma is often very broadly classified into two major sub-divisions, 'extrinsic' and 'intrinsic'. In extrinsic asthma, an external allergen can be demonstrated, the age of onset is usually early and a Type I (Gell and Coombs, 1968) immediate allergic reaction is generally the cause. The term intrinsic asthma was applied by Rackemann in 1947 to describe a group of patients in whom no external allergen could be shown (prick tests being negative to a wide range of antigens) and whose symptoms begin in adult life.

The type of hypersensitivity most commonly encountered in extrinsic asthma is that due to a Type I immediate reaction. In Type I allergy the antibody responsible for mediating the release of pharmacological factors responsible for this kind of asthma was originally termed "reagin" by Coca and Grove in 1925. Regain has recently been shown to belong to a separate class of immunoglobulin (Ishizaka *et al*, 1966; Johansson, 1967) and is now termed IgE,

(WHO, 1968). IgE is present in very small quantities in normal individuals, but levels of over 700 ng/ml, representing a 6 fold increase, were found in 63% of a series of patients with extrinsic allergic asthma by Johansson, in 1967. There are innumerable allergens that have been implicated in IgE mediated asthma. They include such commonly encountered substances in the environment as pollens, animal dander and fur, and the house dust mite, described by Voorhorst *et al* in 1964.

Besides the well established evidence for the role of immediate Type I allergy in asthma, it now seems probable that the disease may also be initiated by hypersensitivity mechanisms which do not involve reagin. Pepys in 1972 subdivided extrinsic asthma into atopic and non-atopic types. He has shown that precipitating, heat stable antibodies, which are complement dependent and known to be important in Type III reactions, may play a part in asthma developing slowly over several hours, becoming maximal about 7 to 8 hours after allergen exposure. In this type of extrinsic, non-atopic asthma it is the particular environmental exposure which is of primary importance, whereas in the Type I group it is the subject's constitution which is so. Late asthma of this type has been associated with *Aspergillus fumigatus* infection and has also been shown in bird fanciers using avian protein extracts and in workers exposed to enzymes extracted from *Bacillus subtilis*. In certain circumstances, e.g. bronchopulmonary aspergillosis there may be a combination of Type I and Type III reaction. The patients when challenged with extracts of *Aspergillus fumigatus* develop immediate airway obstruction which rapidly resolves, only to recur after 4-5 hours, when it is more severe and persistent.

Intrinsic asthma remains a very obscure form of the disease. There is no evidence in this form of asthma of any history of extrinsic allergy or a Type I allergic reaction to skin or inhalation tests. IgE levels in this group have been reported to be either normal or low. Blood eosinophilia tends to be higher than in extrinsic type.

Another type of asthma that cannot

strictly be included in the above classification is Exercise induced asthma. In patients suffering from this form of the disease, an attack of dyspnoea and wheezing come on some time after the patient has performed some kind of strenuous exercise. No satisfactory explanation is as yet available for this form of asthma.

(iii) Pharmacological mediators.

In man, definite evidence is now available that histamine, slow reacting substance of anaphylaxis (SRS-A) and a third factor, eosinophil chemotactic-factor (ECF-A) described recently, (Kay and Austen, 1971) are pharmacological mediators associated with asthma. Up to now, no reports on the release of kallikrein, bradykinin or 5-hydroxytryptamine from antigen-stimulated sensitized human tissue have been published; this is also true of the prostaglandins, E_1 , E_2 and $F_{2\alpha}$.

Histamine was shown to be released by an antigen-antibody reaction from human isolated lung by Schild *et al.* in 1951. There is still a great deal of controversy regarding blood histamine levels in asthma. Porter & Mitchell (1970) have recently reported blood histamine levels, in asthmatic children which were significantly higher than in a control group. These levels fell to near normal in the asymptomatic period and during long-term steroid treatment. The significance of histidine decarboxylase, the enzyme involved in the formation of histamine is still not sufficiently appreciated. It is known however that its activity can be very quickly increased as a result of stress and it is conceivable that this might well be one of the mechanisms involved in the triggering off of asthma during periods of particular stress.

There is a great deal of indirect evidence indicating that SRS-A has a role to play in asthma, (Brocklehurst, 1960) although the importance of such a role has not as yet been definitely evaluated. It is known that the contraction due to SRS-A is very long lasting, much more than that produced by histamine. All the evidence at present available seems to indicate that SRS-A is formed by enzymic processes

activated by the union of antigen with reaginic antibody, whereas histamine is released from a pre-formed store. (Brocklehurst, 1970)

(iv) Non-Immunological mechanisms.

In addition to the immunological aspects of asthma it has been suggested that this condition may also be due to a functional imbalance of the autonomic nervous system, a hypothesis first put forward by Eppinger and Hess in 1917. An important advance in the study of the autonomic nervous system was made by Ahlquist in 1948 who first suggested that the different pharmacological effects of adrenergic drugs on smooth muscle could be accounted for if one accepted the existence of two sets of receptors, which he designated alpha and beta, in or near the target organs affected by these substances. Beta adrenergic action, as produced for example by isoprenaline, is associated with bronchial smooth muscle relaxation, myocardial stimulation and peripheral vasodilation. Stimulation of alpha receptors is claimed to cause bronchoconstriction. The beta receptors were further subdivided into the B_1 receptors which are concerned with the effects on the heart and the B_2 receptors which are mainly associated with bronchial smooth muscle relaxation, by a group of workers led by Lands, in 1967. It is now generally believed that the B receptor is an enzyme, adenylyl cyclase. In 1968 Szentivanyi proposed the theory that the major cause of bronchial hypersensitivity in asthma was a partial beta-adrenergic blockade. This theory is supported by the results of McNeill (1964) who reported that propranolol, a B adrenergic receptor blocking drug, reduced the vital capacity in asthmatics and that this was not reversed by isoprenaline. Similar effects have been reported by Besterman and Friedlander (1965).

McDonald and his co-workers (1967) showed that the effect of propranolol on asthmatics could be largely prevented by atropine and hence the bronchoconstriction could be explained on the basis of unopposed vagal activity. Fleish *et al.* in 1970 put forward the idea that the effect of beta

blockers could be ascribed to their unmasking alpha adrenergic receptor activity in bronchial smooth muscle.

(v) Respiratory infection.

Acute respiratory infections are often known to trigger off attacks in asthmatics. The cause of this altered reactivity is unknown. There is some evidence suggesting a role for microbial products in the development of bronchial hyperreactivity. Cooke (1947) reported attacks of asthma developing in asthmatic patients following injections of autogenous bacterial vaccine. Ouellette and Reed in 1965 noted that asthmatics were more sensitive to metacholine following an injection of killed influenza virus vaccine; normal subjects did not show this increase in sensitivity. Various microbial products are known to be able to release some of the pharmacological mediators of bronchoconstriction. The nature of such microbial activity is not known but it is presumed to be a non-immunological direct effect on such cells as the mast cells (Szentivanyi, 1971).

(vi) Psychological factors.

It has been a long standing clinical observation that emotional factors and stress frequently precipitate attacks of wheezing in some asthmatic patients. Dekker and Green in 1956 showed that attacks of asthma could be regularly produced in some of their asthmatic patients through inducing anxiety by discussing with them emotionally charged situations derived from their case histories. In 1970, Zealley *et al*, investigating psychopathology in asthmatics concluded that traits of sensitivity, anxiety, obsession, dependency and low self confidence were commoner in these patients than in normal controls. They pointed out however, that psychopathology need not be implicated as the cause of the asthmatic diathesis; it is as likely that concomitant psychopathology only determines the clinical presentation. It thus appears likely that these various factors contribute to a different degree and in a different manner in various patients and act upon some final common path resulting in the clinical picture that

is so well known.

Pathology

Most of the knowledge at present available about the pathology of asthma has been obtained from lungs of patients dying in status asthmaticus. Little is known about the pathology of the less severe forms of asthma. However, important information has also been yielded from bronchial biopsy material and sputum studies. One need hardly describe the gross aspects but at post mortem there are two striking features. The lungs often appear over-distended and fail to collapse and Gough (1955) likened them to the lungs in a case of fresh water drowning. The other outstanding finding in any section of an asthmatic lung is the presence of a dense exudation in the bronchial lumen. A detailed description of the changes present in the bronchial mucosa of patients dying in status asthmaticus has been given by Dunnill (1960). Salvato (1959, 1968) biopsied the bronchial wall of asthmatic patients before and during an asthmatic attack and found significantly lower mast cell counts in biopsy material removed from patients during an episode of asthma than in biopsy material obtained from the same patients during the asymptomatic phase of the disease. His findings were corroborated by the work of Connell (1971). It is suggested that the paucity of the mast cells is almost certainly due to the fact that they are degranulated, and degranulated mast cells cannot be identified in tissue sections. It is well known that degranulation of mast cells occurs following anaphylaxis with the liberation of such biologically active substances as histamine, heparin and most probably SRS-A. It seems likely that mast cell degranulation in asthma has the same functional significance.

Connell (1971) also observed an inverse relationship between the eosinophilic infiltrate present in asthma and the mast cell content of the bronchial wall; the greater the number of eosinophils, the fewer the number of mast cells. It is tempting to infer that in asthma the tissue eosinophilia is secondary to massive

degranulation of mast cells; it is known for instance that eosinophils appear in mastocytomas only when there is disruption of mast cells (West, 1959). Although it has been demonstrated that eosinophils are capable of phagocytosing antigen-antibody complexes, little is actually known of their action in asthma, (Hansinger *et al*, 1972) or of the inter-relationships between eosinophils and mast cells in this condition.

One other striking feature in the pathology of asthma is the presence of marked hypertrophy of the bronchial muscle which was first described by Huber & Koessler in 1922. Dunnill *et al*, in 1969 found that 12% of the segmental bronchial wall was occupied by smooth muscle in cases of status asthmaticus compared with 4.6% in normals. The relative importance of bronchial muscle hypertrophy and muscle contraction, mucosal oedema and congestion, increased mucus secretion and the obstruction of small bronchioles by tenacious mucus plugs in the pathogenesis of bronchial asthma is still a matter of some controversy (Ellul-Micallef, 1973). But although "bronchospasm" has long been regarded as an important if not the main, component of bronchial obstruction in asthma, there has been little direct proof of this. Frankland (1968) rightly makes a plea for the word "bronchospasm" not to be used in reference to asthma as its use would seem to indicate a precise knowledge of the pathogenesis of asthma which at present we do not have. The dominant role of smooth muscle contraction in the pathogenesis of asthma is now being questioned by various workers, as the importance of mucosal oedema, increased mucus secretion and blocking of peripheral airways by tenacious mucus plugs is becoming increasingly more recognised. Dunnill (1960, 1969) speculated that the smooth muscle hypertrophy found in asthmatic lungs, where ciliary action is often defective, was a response to increased clearance of exudate, possibly by a milking action; as suggested in the cineradiographic study of Holden & Aradran (1957).

It seems probable that in the earlier stages of an attack active broncho constrict-

tion is the major factor, since dramatic relief is often obtained with sympathomimetic drugs, but when an acute attack becomes protracted or the condition becomes more chronic, the situation is complicated by mucosal oedema and by retention of very viscid mucus.

Since it was established that corticosteroid therapy is frequently of benefit in asthma, it has been tempting to postulate that failure of the adrenal cortex may be an underlying defect in some patients. Recently there have been reports of asthma occurring in patients with Addison's disease and in one of these asthma appeared to be the presenting symptom of adrenal insufficiency (Green and Lim, 1971, Harris and Collins, 1971). The infrequency of asthma in Addison's disease, variously reported as 0.5% (Maranon *et al*, 1956) and 4% (Carryer, 1960), however make the proposition most unlikely. Several papers on adrenal function in asthma have been published, some reporting inadequate basal function or inadequate response to stress and others finding no evidence at all of such dysfunction. Reviewing the evidence at present available in the literature, it seems fair to state that if appears that dysfunction of the hypothalamic-pituitary-adrenal axis is not a necessary predisposing factor for the development of asthma. But one cannot exclude the possibility that it may well be a conditioning factor in some patients, although the relative infrequent occurrence of atopic diseases in patients with Addison's disease lends little support to this conjecture.

Altered pulmonary function in asthma

Increased airway resistance (R_{aw}) may be said to be the physiological hallmark of bronchial asthma. This increase in resistance to the flow of air is well reflected in the physiological indices used as tests in its detection and monitoring. In general the forced expiratory volume in one second (FEV₁) and the maximum mid-expiratory flow rate (MMFR) and peak expiratory flow rate (PEFR) are found to be consistently decreased from the predicted and are usually well related to the severity of symptoms. The ratio of the

FEV₁/FVC is also found to be reduced. However, it is now recognised that subjective improvement is not always necessarily reflected in a similar change in the tests mentioned above. Raw as measured by body plethysmography provides a direct measurement of the resistance to the flow of air. Various studies using plethysmography have been carried out in asthmatic patients both during the symptomatic phase as well as following therapy. The Raw is always increased, frequently very considerably and the specific conductance (SGaw), that is, the conductance divided by the thoracic gas volume at which Raw is measured, correspondingly decreased during the acute phase, both indices returning towards normal values as the patient's condition improves (Pelzer and Thomson, 1969, Ellul-Micallef *et al*, 1972). An increased airway resistance has been found to be present even during the asymptomatic phase in some asthmatics. (Bernstein & Kreindler, 1963).

A number of reports have appeared in which measurements of total lung capacity (T.L.C.), functional residual capacity (F.R.C.) and residual volume (R.V.) in asthmatics were found to be elevated, thus reflecting the presence of a certain degree of hyperinflation. In general, the more severe the degree of airway obstruction the greater the amount of hyperinflation present, as shown by an elevated R.V. and F.R.C. and both indices tend to decrease following treatment. In some of the patients reported on by Woolcock & Read (1965) the F.R.C. during acute asthma was greater than the T.L.C. after recovery. In these patients tidal breathing during severe obstruction was taking place at a higher level than the point of maximal inspiration after recovery. Mead, Milic-Emili & Turner (1963) hold the view that inhibiting reflexes normally limit the degree of voluntary lung inflation; if this is true, then one must presume that such reflexes are modified in asthma. The vital capacity is generally decreased in asthma and is usually more severely diminished the greater the degree of airway obstruction. Such a decrease in vital capacity not infrequently persists in the asymptomatic

phase. Hyperinflation is not only present in the acute phase of the disease. Lung volumes have also been reported to be elevated in chronic asthma, returning towards predicted normal values following corticosteroid therapy (Ellul-Micallef *et al*, 1971).

The increase in F.R.C. may be compensatory to the decreased bronchial calibre found in asthma, and to a certain extent this may have a guy-rope effect in maintaining the patency of the airways. This, however, is not obtained without considerable cost to the patient, for as the lung volume increases, compliance diminishes progressively so that the further inspiration of a given volume of air will require the production of a higher transpulmonary pressure difference because the subject is breathing on a flatter part of the pressure-volume curve.

Various workers amongst whom are Gold *et al* (1967), Woolcock & Read (1968) and Finucane and Colebatch (1969) have reported a reduction in the lung elastic recoil pressure in asthmatics both during exacerbations as well as in asymptomatic phases. The cause of the loss of elastic recoil of the lungs in asthma is unknown. The lung elastic recoil pressure is dependent on two factors: the tension exerted by surfactant and the elastic properties of pulmonary tissue. In emphysema the fibre network making up the pulmonary tissue is disrupted and elastic retraction of the lung would be expected to be, and is, in fact, reduced. In asthma however, this network is intact and hence other factors must be responsible for the loss of elastic recoil. It has been suggested that prolonged distension of the connective tissue of the lungs causing temporary structural deformation is a possible explanation. Another alternative that has been put forward is that the change could be related to the forces exerted by surfactant. There is however very little evidence to support either possibility.

One other parameter that is causing a lot of controversy in asthma is the pulmonary diffusing capacity. (Tco) Over the past five years a number of papers have appeared in which this has been found to

be decreased (Palmer and Diament, 1969, 1970; Levine *et al.*, 1970). Results by equally reliable workers have shown the T_{CO} to be remarkably normal (McFadden & Lyons, 1968; Daly, 1971). The difficulty in sorting out the apparent discrepancy of the diffusion capacity values in asthma obtained by various workers can be ascribed to three main factors: patient selection, variation in degree of airway obstruction and differences in technique. Thus there is not infrequently difficulty when selecting patients, in differentiating between those suffering from asthma and those with chronic bronchitis with a degree of emphysema. However, the interpretation of reports of T_{CO} in asthma is perhaps most seriously hampered by the variety of methods used in its determination. It is obvious that each method measures something different and probably none measures the true diffusing capacity of the 'pulmonary membrane'. The transfer of gas in asthma thus appears to be more impeded by failure to deliver inspired gas to the alveolar surface than by interference with diffusion through the 'pulmonary membrane' as happens in pulmonary fibrosis or emphysema.

Very little attention was paid to changes that occur in blood gases during asthma until comparatively recently. Bates and Christie in 1964 stated that "the patient with moderately severe bronchospasm but not in status asthmaticus only rarely shows any significant abnormality of arterial oxygen saturation of CO_2 tension". It had been generally assumed that the $PaCO_2$ is usually normal or low, due to hyper ventilation, until the terminal stages of status asthmaticus, when the $PaCO_2$ rises rapidly and respiratory failure supervenes. Tai and Read in 1967 were the first to report CO_2 retention with $PaCO_2$ values ranging up to 200 mmHg and marked respiratory acidosis with a blood pH as low as 6.81, in twelve patients in status asthmaticus admitted to their care. Their data showed that in other patients with only moderate clinical severity considerable hypoxaemia could also be present. Similar results have now been reported by a number of different workers.

They found a general correlation between the degree of reduction of the FEV_1 and the extent of disturbance of blood gas tensions in patients with moderately severe asthma. They pointed out that FEV_1 levels of less than 1 litre were especially associated with a significant reduction of arterial PO_2 ; at the same time they emphasized that the correlation was not good enough to make FEV_1 levels greater than a litre a reliable index of a fairly normal PaO_2 . The same conclusion was reached by Rees *et al.* in 1968, who stated that since increases in FEV_1 were not always accompanied by a rise in PaO_2 , such changes could not be relied upon to indicate improved oxygenation. Rees, Millar & Donald in 1968, followed the clinical course and arterial blood gas tensions of 24 patients in status asthmaticus and found that hypoxaemia was invariably present, was frequently quite marked and persisted despite intensive therapy sometimes for weeks. Most patients were normocapnic or even hypocapnic. When severe hypercapnia was present the patients generally died. They found that the pulse rate correlated well with PaO_2 and in the severely hypoxaemic patients the frequency exceeded 130 beats/min. It is now generally accepted that hypoxaemia, often of a dangerous degree, may be present in asthmatic patients, and that severe hypercapnia is not usually present except terminally. When the $PaCO_2$ is high this is usually of grave prognostic significance. The accompanying disturbance in acid-base balance as reflected in the arterial blood, shows that hypercapnia in most of these patients probably develops acutely. Chronic elevation of $PaCO_2$ is relatively uncommon in asthma — the converse of what occurs in chronic bronchitis.

The increased renal reabsorption of bicarbonate which is an important defence against respiratory acidosis both in adults and in children thus appears to be too slow a mechanism to be of great importance in acute asthma, in which dangerous hypercapnia may develop very acutely. Mithoefer *et al.* (1968) have found that correction of the respiratory acidosis by infusion of sodium bicarbonate was valuable in treat-

ing intractable asthma, but others seem to have had less success with this approach (Flenley, 1971). The mechanism of hypoxaemia with or without CO₂ retention implies a maldistribution of ventilation and perfusion in the lungs which is shown by an elevated alveolar to arterial oxygen tension difference, (A-a)DO₂, and higher than normal dead space-tidal volume ratios (VD/VT). Elevated values for (A-a)DO₂ and VD/VT have now been shown to be present both during the acute attack (Field, 1967), in chronic asthma (Ellul-Micallef, 1972) as well as during the asymptomatic phase (Levine *et al.*, 1970).

Conclusion

Although no agreement has yet been reached on a final definition of asthma, (Working Group on the Definition of Asthma, 1971) none would contest that the main pathophysiological hallmark of this disease is an increase in airway resistance to the flow of air due to widespread narrowing of the airways. The actual site of such narrowing is still a matter of some controversy (Ellul-Micallef, 1972b, Bainbridge *et al.*, 1973). Hyperinflation frequently occurs and it has now become widely recognized that this may be present when the more common spirometric indices used for detecting airway narrowing are normal, indicating an attempt on the part of the asthmatic patient to overcome the obstruction present by breathing at a higher lung volume. Further research is necessary to elucidate the precise nature of the changes in lung elastic recoil and transfer factor that have been reported in asthma. Blood gas changes in this disease, often of a severe nature, are now an established fact and appear to be mainly due to V^A/Q abnormalities. The aetiology and pathogenesis of this condition as has been shown is still far from clear and a lot of work still remains to be done to try and unravel this problem. Bearing all this in mind it is perhaps not surprising that treatment for asthma is anything but satisfactory, even in centres which have been specifically set up to deal with it.

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TEACHING OF MIDWIFERY IN MALTA AT THE BEGINNING OF THE NINETEENTH CENTURY

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The British Medical Association (Malta Branch) prize in the medical essay competition for 1972 was awarded to Dr. Paul Cassar for this paper.

Some years ago I stated that a Chair of Midwifery was set up in our University in 1833 but that the subject was already being taught since 1802 by the Lecturer in Obstetrics at the Women's Hospital in Caltetta (Cassar, 1965a).

The document

I have now come across a document which not only confirms that midwifery was being taught to medical students in the very early years of the 19th century but which also gives us a picture of the state of midwifery at that period. The discovery of this document is worth recording as it furnishes us with the earliest "textbook" of midwifery known to have been used in our medical school.

It consists of a manuscript volume containing the series of lectures delivered in Italian by the teacher of obstetrics at the Civil Hospital of Valletta, of which the Women's Hospital formed part. This

manuscript belonged to the medical student (later Doctor) Salvatore Bardon who qualified M.D. in Malta in 1818. It bears the title:— *Trattato dell'arte ostetrica dettato e spiegato dal Perille Signor Dr. Francesco Butigiec (sic) nello Studio Pubblico del Grand'Ospedale Nazionale de' Maltesi. Principiato li 18 ottobre 1804.* (Treatise on the Art of Obstetrics dictated and explained by the Most Illustrious Dr. Francesco Butigiec in the Public Study of the National Grand Hospital of the Maltese. Commenced on the 18th October 1804). (Fig. 1). It comprises sixty-five *Titoli* or chapters totalling 247 folios (31 cm. x 21 cm.) with another three folios listing the contents or titles of each chapter.

The subject matter covers the different aspects of obstetrics very comprehensively and ranges from the detailed anatomy of the pelvis with its various organs and of the gravid uterus; the clinical signs of pregnancy; abortion; normal and abnormal labour; management of the puerperium; twins and superfoetation; manual correction of the various malpositions; the use of instruments and the performance of Caesarean section in the

Trattato
 Dell'Arte Ostetrica
 Dattato, e Smiegato dal
 Penite: Sig.^{ro} D. Francesco
 Butigie, nello Studio
 Pubblico del gran Ospedale
 Nazionale de' Malteri
 Principiato li 18. Ottobre 1804.

Salvatore Bardon

living and the dead mother; the care and feeding of the new-born (Fig. 2).

It is intended, in this paper, to present a general idea of the basic teaching of Dr. F. Butigieg and to consider in detail some of the more salient points dealt with by him.

The course of lectures was spread over a period of almost one year and eight months commencing on the 18th October 1804 and ending on the 11th June 1806.

Midwives and obstetricians

In his introductory lecture he deplores the fact that the "science of obstetrics which, in truth, is the most useful and necessary part of surgical-medicine" had been left in the hands of "inexperienced women or ignorant men not only in the past but also in our, so-called, enlightened times". In most instances, continues the lecturer, the process of birth is a "function of nature and is effected in accordance with its laws" and all the midwife needs to do is to wait until the baby slips safely from the maternal passages into her hands and to tie the umbilical cord; however, it is important that there should be "wise, honest, and well-trained midwives of good morals who would be capable of dealing efficiently with cases of difficult labour and abnormal presentations of the foetus especially when the modesty of the pregnant woman does not allow her to be assisted by the male sex". For "how many unhappy mothers have had to suffer irreparable damage for their whole life because of the inexperience of midwives? How many deliveries that should end happily are rendered difficult?" Dr. Butigieg, however, felt optimistic for the future and envisaged that the situation would change for the better for "now thanks to the paternal solicitude of this happy and ever praiseworthy government, this school has been established to further the study of obstetrics and to enable midwives to become capable of dealing effectively with the dangerous circumstances in which pregnant women sometimes find themselves especially during labour. Thanks to the knowledge thus acquired

the darkness that in the past had enveloped obstetrics in profound negligence will be dispersed".

After tracing the rise in reputation and status of the obstetrician from Roman times to the dawn of the 19th century, the lecturer delineates the physical and psychological characteristics that the obstetrician should possess. This practitioner must be "intelligent, self-controlled, calm, modest, prudent, and gentle; without any physical defect in his appearance; very considerate with his patients especially during operations; charitable towards the poor who need his help; neither very young nor very old; possessing a small hand to facilitate its introduction inside the uterus when he has to change foetal mal-presentations and to detach the placenta adherent to the fundus of the uterus".

The religious factor

The pangs of childbirth are accepted as an inevitable accompaniment of labour on religious grounds. "Owing to the sin of our first parents," comments the lecturer, "God condemned woman to bring forth her children in pain; and the art (of obstetrics) does not have sufficient means to prevent it"; but "while God has ordained that woman should face the dangers of pregnancy and labour... as a punishment for having eaten the forbidden apple, He has, through the study of the anatomical structure and physiological mechanisms involved in child-bearing, provided us with the means of assisting her in her trying situation".

Dr. Butigieg did not question the authoritatively established creed of his time; but his religious orthodoxy did not preclude him from initiating his students into the physiology and psychology of the act of coitus. In fact the frankness of the following descriptive passage is equalled only by the sensitiveness of feeling that permeates the whole paragraph. "Pregnancy does not occur," he says, "unless it is preceded by the copulation of the two sexes and unless both partners take an active part. When this happens, it is a good omen for the occurrence of

Tavola
 Dei Trattati, dei Titoli, e delle
 Materie contenute nei
 Quaderni dell'Arte
 Ostetrica.

<u>Titolo</u>	Quaderno I.	Pagina
Della Pechi. . . .	Quaderno I.	
Dell' Ovo Sacro. . . .	"	9.
Dell' Ovo Cecigo. . . .	"	13.
Dell' Ovo Ileo. . . .	"	14.
Dell' Ovo Ichio. . . .	"	16.
Dell' Ovo Rube. . . .	"	17.
Dell' Ispazione della Ova della Pechi. . . .	"	19.
Delle parti contenute dentro la Pechi		
Della Donna. Quaderno II.		
Dell' Utero. . . .	"	25.
Dei Legamenti larghi, e rotondi dell' Utero. . . .	"	29.
Dell' Ovario. . . .	"	30.
Della Tromba Falloppiana. . . .	"	32.
Dei Vasi sanguigni delle descritte parti. . . .	"	33.
Della Vagina, e condotto dell' Utero. . . .	"	35.
Dell' Utero Inguineo. . . .	"	38.
Della Klacoma. . . .	"	40.
Dei Vasi Ombelicali. . . .	"	42.
Dell' Uraco. . . .	"	43.
Del Cordone Ombelicale. . . .	"	44.
Della Partizione, Circolazione, e Situazione		
del feto nell' utero Materno.		
Dei Segni della gravidanza, modo per Esplorarla. . . .	Quaderno III.	48.
Regolamento delle donne nel corso della loro gravidanza, non avendo molestie, da alcun accidente considerabile.		
Delle Malattie delle donne in conseguenza del concepimento. . . .	"	53.
Del Vomito sintomo ordinario nelle Gravidie. . . .	"	54.
Della febbre conseguenza di concepimento. . . .	"	55.
Delle Epistomie. . . .	"	57.
Delle Vertigini nelle Gravidie. . . .	"	"
Dei Dolori delle Mammelle, Pubè, Inguina, e che attaccano le Gravidie. . . .	"	68.
Dell' Edema.		

conception if there is a desire for copulation on the part of the woman who thus experiences an extraordinary rapture during which she reaches orgasm simultaneously with her partner. Thus the ejaculate of the male is forcefully projected and avidly absorbed by the uterus. As fecundity occurs, this rapture is followed by a feeling of relaxation and lassitude of the body which quivers with a slight chilly feeling. The woman experiences a sensation of flooding, motion and swelling of the uterus, a slight colicky pain in the umbilical region and tightness and swelling of the abdomen. All this happens within a few moments".

Regimen during pregnancy

What regimen should a woman follow during pregnancy? She is not to take baths lest she provokes uterine bleedings and the premature expulsion of the foetus; neither wear very tight clothes nor ride in a caleche or engage in undue exertions such as moving and lifting heavy objects. On the other hand she is advised to avoid rough roads and walk only on smooth streets. She is to shun strong purgatives such as hellebore, scammony and colocynth as they may cause her to abort; constipation, however, is to be overcome by means of clysters. She is warned against the practice — then prevalent — of drawing blood in the seventh month. Gravid women were "so attached to this usage that they thought it impossible for them to lie in without resorting to such a measure".

A common notion was the belief that the unfulfilled wishes of pregnant women had a bad effect on the foetus or else resulted "in an alteration of (the mother's) imagination which affected the foetus in such a way as to produce a defective baby or a monstrosity". Dr. Buttigieg did not share this belief. However he held that the "irritability of the nervous system is communicated to the uterus producing convulsions in this organ and sometimes abortion".

Management of labour

When the time of delivery approaches, the midwife "must first of all prepare

the articles needed for the occasion; i.e. hot woollen clothes, used linen cloths, towels, silk threads to tie the umbilical cord and a razor for cutting it; receptacles with hot and cold water; cordials and broths to sustain the strength of the mother and the vigour of the foetus and thus ensure his quick exit from the uterus"; and finally the parturition chair.

As this item of obstetric furniture has been dealt with in a separate paper (Cassar, 1973), a few words about it will suffice. At the time of Dr. Buttigieg, parturient women were delivered in the sitting position. The chair provided for this purpose differed from an ordinary one in two ways:— (a) the seat had a horse-shoe aperture cut in it, and (b) an arm rest was fixed on each side of the seat so that the woman by holding on to each arm-rest during her pains was able to increase the force of the uterine contraction by bearing down.

When the pains became more frequent and delivery appeared imminent, the midwife girded her waist with a towel and seated herself in front of the patient.

After cutting her nails short and removing all rings from her fingers, "she smears the index and middle fingers with oil or butter and gently dilates the vagina". She is warned not to try to hasten delivery but to "have patience and wait for the effect of the pains". She may, however, facilitate the exit of the baby by "applying hot fomentations on the mother's abdomen, anointing the vagina with fresh butter or placing the woman over a receptacle containing hot water so that the vapour will soften and relax the passage".

Expulsion of placenta

The umbilical cord was not cut and tied immediately on the birth of the baby but after the expulsion of the placenta. When the placenta was late in descending from the uterus, a quite ingenious device was employed to hasten its detachment. The baby, still attached by the cord to the placenta, was placed on a pillow filled with feathers in such a way that the cord was stretched tight. The weight of the baby flattened the pillow and as the infant

slowly sank into the pillow it exerted a gentle traction on the cord and on the placenta pulling the latter slowly away from the uterine wall. Another way of achieving the same end was to lay the baby on a leather-bottle filled with water, the liquid being let out slowly through tiny holes in its sides thus ensuring its gradual emptying with drawing out of the placenta. It is of interest to note that a very similar method of extracting the placenta not referred to by Dr. Butigieg was described by Hippocrates (c. 460-380/370 B.C.) The infant was placed on two bladders filled with water. Each bladder was then punctured with a stylus to allow the water to flow out slowly thus pulling gently on the cord (Milne, 1970a).

Dr. Butigieg attached great importance to the proper manner of ligating the umbilical cord to prevent leakages of blood with consequent risk to the life of the infant. He comes down very hard on the midwives of his time who, after severing the cord, instead of tying it, were in the habit of burning the cut ends over the flame of a candle. He surmised that this "abuse" was either the vestige of an old "unreasonable" custom or else a means "for increasing the number of gifts which the midwives received on these occasions". Dr. Butigieg confesses that he could not trace the origin of this practice. It is to be remarked, however, that an almost identical method is referred to by Soranus of Ephesus (98-177 A.D.) in his treatise on obstetrics for midwives where he advises them to cauterize the umbilicus with a heated spatula after cutting off the umbilical cord (Milne, 1970b).

Care of the new-born

There was, in Dr. Butigieg's days, a strong prejudice against washing the baby immediately after birth because mothers "believed that bathing could be fatal for the baby although common sense supported by experience showed the contrary". One, however, was to do his utmost to overcome the resistance of Maltese mothers "who, influenced by inexperienced midwives (whom they trust

more than the doctor), fear that their newborn baby will succumb to various undreamt of illnesses if washed".

It is recommended that "one third of generous wine be added to two-thirds water" to facilitate the removal of the "mucosity" covering the baby's skin. A decoction of chamomile mixed with a small amount of Venetian soap may also be poured in the bath water. If the mother persists in her refusals to have the baby washed, one must at least try to convince her to allow the cleaning of the baby's body with a sponge soaked in a mixture of wine and tepid water "to promote and preserve transpiration" from his skin.

Dr. Butigieg was against the swaddling of the baby because it hampered the physiological functions and the growth of the body. No more clothes were to be worn than were justified by the temperature of the season. The arms and legs must remain free "to perform all the natural movements which strengthen the limbs and promote the free circulation of blood so necessary for their nutrition and development".

Breast feeding

He stresses the importance of breast feeding for "it must be confessed that the best food for the baby is the mother's milk... She, therefore, cannot be excused from the strict obligation of suckling her infant", except in cases of illness and when her milk is deficient. He ascribes the poor production of milk to the wearing of tight and unyielding corsets and explains it by the humoral pathology then in vogue, i.e. the corset by compressing the breasts, the lumbar region and the lower abdomen, "squashes and obliterates the small vessels and thus obstructs the passage of the milk; in this way all the humours are deviated towards the uterus. These occurrences are frequent among women living in the towns who become cachectic and incapable of procreation".

The baby must be breast-fed according to a set time-table by day and by night and "not at all hours when he is awake or when he cries; indeed an attentive mother knows well how to distinguish

between the crying provoked by hunger and that due to pain or some other cause... She must refrain from breast-feeding when she is under the influence of anger or of drink or after sexual intercourse. Experience shows that some babies are liable to develop convulsions from the ingestion of milk from women who are upset by violent emotions”.

When the mother is unable to breast feed her baby, she is to be substituted by a “good wet-nurse in whose selection one has to pay attention not only to the quality and quantity of the milk but also to her moral character... She must be of moderate age, not too young but not too old; of an even temperament; healthy and strong. Brunettes are preferable to blondes; and those of medium weight to women who are too fat or too lean. Her teeth must be healthy and beautiful without any signs of scurvy. The breasts must neither be too large nor too small; with visible veins, a prominent and tuberculated areola and rather long and well-formed nipples. She must be of good conduct, not subject to fits of anger or melancholia and not given to wine or lust”. One has to keep in mind when engaging “country-women, who are brought to the towns for this purpose that, although while they live in the countryside they have a good and abundant supply of milk, this may easily alter due to the change of air and food and the lack of their customary exercise”. A wet-nurse who has been breast-feeding for three months is to be preferred to one who has been doing so for a longer period as in this case there is the likelihood that she may dry up.

The milk must be “sweet, white, odourless and of a medium consistency”. It is, therefore, necessary to test its suitability. “The milk is squeezed from the breast after cleaning the fingers and is collected in a glazed receptacle or silver spoon. Without these precautions one may be easily deceived for milk takes on the odour of the squeezing fingers or unglazed receptacle and is altered by emotions. Before tasting it, it is also necessary to rinse one’s mouth with plain water. Its consistency is shown by the way it drips when it is poured; if it is too thick it

flows with difficulty; if it is too thin it leaves a trace like water”.

When human milk is not available, the baby is given “cow’s milk mixed with one-third water or else goat’s milk which is more analogous apart from the fact that the goat allows the baby to suck her breast”.

The *puerpera* was not allowed out of bed before eight to nine days and she was advised to ensure that the air in her room was “neither too cold nor too hot”. The curtains of her bed were not to be pulled shut except when the windows of her room were opened to renew the air.

Instruments for abnormal delivery

A distinction was made between difficult labour — when delivery could not be effected without the help of the ‘expert hands’ of the obstetrician or mid-wife such as in cases of malpresentations of the foetus which required manual correction; and impossible labour — when manual correction proved ineffective and the obstetrician had to resort to the use of instruments to effect delivery.

The instruments at his disposal were:—

(a) The lever (*leva*). The lecturer is full of praise for this instrument the origin of which he ascribes to “the celebrated Englishman (sic) Roonhuysen”. The existence of this instrument, he says, “was not known to obstetricians for a period of sixty years. It was considered a mystery for by its means the head of the foetus could be released from its wedging in the vagina and delivery rendered easy... It has the advantage that it can be easily concealed by the operator from the sight of the parturient woman so as not to frighten her. The lever is made of box-wood and has a curved extremity. The obstetrician keeps it hidden up the sleeve of his coat, then with charming manners and gentle persuasion convinces the patient to allow him to explore her passages. Having obtained her consent he examines her and makes sure where the head has become impacted. He then pulls out the lever secretly from his sleeve and introduces its curved extremity inside the vagina pushing it up between the pubic

bones and the occiput of the foetus. Then he lifts the other end of the instrument until it reaches the union of the pubic bones, moves it forward, backward and laterally to free the head and allow its descent naturally; meanwhile with his other hand he supports the perineum to prevent its laceration which can be very troublesome during the puerperium". The lever was also recommended in the various forms of face presentations when manual correction proved ineffective.

(b) The forceps of Smellie and of Levret were recommended for the extraction of the malpositioned foetus after attempts at manual correction or the use of the lever had failed.

(c) The *Speculum matricis* "which serves to examine the condition of the vagina and uterus".

(d) The hooks of Levret which may be sheathed (with leather?)

(e) The *tire-tete* (*tira-capo*) of Mauriceau for the extraction of the head of the foetus after craniotomy when the head becomes impacted against the bones of the pelvis.

(f) The fillet or lack — a cord or ribbon-like loop — for tying the baby's feet in foot presentation and applying traction.

(g) The trocar to empty the cranium and the abdomen of the baby when these cavities were filled with liquid.

(h) The *perforator* to pierce the bones of the skull of the dead baby imprisoned in the mother's womb and remove the contents of the cranium. The skull bones were then reduced to pieces and extracted by the *tire-tete*.

(i) The toothed forceps (*tenaglia*) to break the parietal bones of the dead foetus before extracting it from the womb.

Practical instructions were imparted to the students on the psychological approach and bedside manners to be adopted when the need arose of using instruments in cases of impossible delivery. They are reproduced here, in translation, in full. "After warning the relatives of the bad state of the patient, the obstetrician must,

first of all, advice her to receive the Holy Sacraments in accordance with the rule imposed by the Church on the faithful in case of infirmity. He must do this prudently and gently and without frightening her. When the religious function is over, the obstetrician again approaches the woman and, with encouraging words, reassures her that the pain which she is about to endure will not be so severe as she might be imagining.

If the woman fails to be persuaded by these gentle ways, the obstetrician must make her aware of the dangers she would face if she refused his assistance. The exhortations of her spiritual director may also be helpful in convincing her of the necessity of submitting to the operation by appealing to her conscience to save the soul of her baby which would certainly be lost without the salutary administration of Baptism.

Operative procedures

Having signified her willingness to undergo the operation, the patient is placed in the most comfortable and convenient position for the operation in accordance with the dictates of decency owed to her person. She is instructed to remove personal ornaments and to free herself of clothing and girdles.

The bed must be exposed on all sides with the sheets and coverings reaching to the floor. At the foot of the bed is placed a basin which must be large enough to hold the liquids and other contents that attend delivery. Pieces of clothing are to be kept handy to cover her body and thus offset her embarrassment which tends to render delivery more difficult.

The patient is examined to ascertain whether she is strong enough to resist surgical intervention. The obstetrician must note if the face is pale; the eyes dull; the voice feeble and the abdomen too tense. He looks out for signs of inflammation of the uterus or of impending syncope with cold sweats and coldness of the extremities. If such signs are present, the obstetrician must remind the relatives of the very precarious state of the woman and of the risk of death. He must also

insist that a competent physician be present during the operation to judge of the manner in which the patient was being treated and thus be in a position to defend himself from the evil tongues which in sinister events are wont to attack the most capable operator.

The woman is covered with a sheet for the sake of decency. The obstetrician smears the instruments with oil or fat and dips them in a vase containing tepid water so that they will not be cold when they come in contact with her genital parts. He then girds himself with an apron and places himself comfortably in front of the patient. He introduces his hand forward very slowly into the vagina under cover of the sheet already mentioned and dilates the passages very gradually with his index and middle fingers. Having ascertained the nature of the obstacle impeding delivery, he will carry out that operative procedure and use those instruments which the situation warrants. Having terminated the operation, he cleans his hands and places the patient in the most comfortable position to enable her to rest and recuperate from her pains and sufferings".

Section of the symphysis pubis was recommended when natural delivery was impossible owing to a narrow pelvis. "This operation was not unknown to the celebrated anatomist G.B. Morgagni as his pupils testify. He carried it out on the cadaver and showed that by incising and separating the symphysis one could increase the space of the pelvis and thus facilitate the exit of the foetus from the deformed obstructing pelvis. Spurred by this finding, Don Alfonso Le Roi carried out the incision on six occasions with great success. The same results were reported by Sigault of Paris who performed it on the 1st October 1777." It was also courageously and successfully done by "several others".

We do not know whether Butigieg ever performed the operation himself. The various steps which are to be followed by the obstetrician are those laid down by "renowned operators" of his time.

"The operation", he states, "commen-

ces with the introduction of a syringe in the urinary bladder of the patient so as to maintain the neck of this viscus away from the pubis to prevent injuring it during the incision of the symphysis..... Having cut the skin, one must look out for the external pudendal artery which..... has sometimes been accidentally severed". The muscles, ligaments and the cartilage are cut. The pubic bones are then separated from each other thus permitting the exit of the foetus through the enlarged outlet. After the birth of the baby, the mother is kept in bed resting on her back with the lower limbs extended and held close together. The cut ends of the pubic bones are then approximated and kept in place by bandaging the pelvis.

Caesarean section

The lecturer deals extensively in no less than 12 folios with the history of Caesarean Section in the living and reviews the merits and weaknesses of the arguments adduced by various authors for and against the operation. He reports instances of prominent personages who were born through Caesarean Section from the beginning of the 16th century to his own times. "Thanks to the sound knowledge", he comments, "obtained from modern anatomical studies and confirmed by authoritative rational observations, many unfortunate mothers have been saved from the cruel jaws of death together with their babies". Obstetrics had advanced so much that "at present it has been raised to the status of a science because it is based on well founded physiological and anatomical notions and supported by an undeniable series of successes". In fact these advances have shown "how barbarous were the precepts of past obstetricians who taught that in an impossible delivery the life of the mother was to be spared in preference to that of the foetus..... without considering the availability of the means, gained by experience, leading to the conservation of the lives of the two individuals; and among such means to save mother and child, we have at our disposal the operation of Caesarean Section or hysteriotomy".

Some writers had criticised the operation because of the profuse haemorrhage which sometimes accompanied it; but, argued Dr. Buttigieg, if one were to condemn it because of this blood loss, then the surgeon should refrain, for the same reason, from performing amputations, extirpating cancerous breasts, removing nasal polypi and carrying out lithotomies and other operative procedures usually attended by profuse bleeding.

Caesarean section caused no permanent damage to the uterus; indeed this organ returned to its former state after surgical intervention so much so that women, who had undergone the operation, later became pregnant and gave birth to offspring in a natural manner. The lecturer also referred to case reports, published in the *Memorie dell'Accademia Reale di Chirurgia* of Paris, of women who underwent the operation seven times with successful results. Dr. Buttigieg was so convinced of the usefulness and practicability of the operation that he did not hesitate to recommend it also in such other conditions as extra-uterine pregnancies, tumours of the pregnant uterus and extrusion of the foetus into the abdominal cavity following rupture of the uterus.

Performing Caesarean Section

Not every surgeon, however, was competent enough to perform the operation because, besides knowledge, an extensive experience was also required. Having enunciated this prerequisite Dr. Buttigieg goes on to describe in detail the various steps to be followed by the surgeon. The operator must first of all obtain the consent of the patient and induce her to receive Holy Communion. Having determined that the woman was fit to undergo surgical intervention, the operator was advised to obtain a second opinion from a physician. This was a precautionary self-protective measure; in fact, in some places in Italy, it was the custom to secure permission to operate from the local judge so that if the operation was not attended "by a happy result, the surgeon could defend himself against an accusation of incompetence".

The urinary bladder was voided by means of a syringe and the bowels emptied by a clyster. The patient was placed alongside the edge of the bed with her head and chest somewhat elevated. After exposing the abdomen a line was drawn "with a pen dipped in ink..... extending from the upper lip of the iliac bone to the union of the last true rib with its cartilage". The incision was made mid-way between the line thus drawn and the *linea alba*.

In cutting the skin and underlying tissues with the bistoury care had to be taken not to damage the epigastric artery. Having opened the abdominal cavity, the omentum and intestines were held by an assistant at the upper end of the incision to expose the uterus. The womb was cut antero-laterally avoiding injury to the Fallopiian tubes, the round ligament and the main branches of the adjoining blood vessels. Having cut the membranes, the surgeon pushed his hand inside the uterus and extracted the foetus with the placenta.

The uterus was left unsutured but the incision in the abdominal wall was closed by six or eight stitches of waxed threads which were tied over "a small pad of waxed taffeta". The whole was covered with a dressing 'soaked in hot red wine' and a bandage applied. The dressing was changed every 24 hours. The patient was then turned towards the side of the incision to facilitate the draining away of blood from the abdominal cavity to the outside. Her lower limbs were maintained in the flexed position to ensure the relaxation of the abdominal muscles.

The Church and Caesarean Section

The operation of Caesarean Section on the dead had become a burning issue in the 18th century and both the church and the state had enacted decrees enforcing its performance so much so that "when no surgeon was available, the priest himself was obliged to carry it out" under the penalty of "fulminating excommunication". The position had not changed at the dawn of the 19th century, hence the reason why Dr. Buttigieg launches, in his last lecture, into a survey of the origin and historical development of Caesarean Section in the dead and into a long discus-

sion on its theological, ecclesiastical, legal and ethical aspects. He lists a number of prominent persons who were born through-post mortem Caesarean Section such as St. Gerard, Bishop of Constantinople (1001 A.D.?); St. Lambert (1154), St. Raymond Non-nato (12th century) and Cardinal Niccolò Sfondrati (1590) who later became Pope Gregory XIV. He then reviews the various theological opinions of his day regarding the time when the soul entered the foetus, i.e. whether at conception, or three days later or at the fortieth day — which last view was favoured by the church.

He exhorts his students not to neglect to perform the operation and reminds them of the injunctions of the church and especially of Pope Gregory IX, St. Thomas Aquinas and St. Charles Borromeo; and finally quotes extracts from the edicts of the 9th August 1748 of King Ferdinand IV of Sicily on the matter.

COMMENT

Midwives

As early as the second decade of the seventeenth century the practice of midwifery in Malta was regulated by protomedical decrees issued from time to time such as those of the 2nd August 1642 and of the 24th September 1722. These enactments were later incorporated in the legal codes published in 1724 and 1784.

No woman was allowed to practice as midwife unless she was first examined and approved by the *Protomedico* or Chief Government Medical Officer and granted the requisite warrant which she had to submit for renewal to every successive *Protomedico* soon after his appointment. An official register of approved midwives was deposited at the Grand Court. These provisions were still in force at the beginning of the last century during the time of Dr. Buttigieg (Cassar, 1965b).

Midwives were examined by the bishop or his vicar whenever he paid a pastoral visit to their parishes to test their knowledge concerning the proper administration of the Sacrament of Baptism *in casu necessitatis*. The midwives also submitted, for inspection and renewal by the bishop,

the warrant of the *Protomedico* authorising them to practice midwifery and the licence issued by the Episcopal Curia. These procedures are recorded in the account of the pastoral visit of Fra Paulus Alpheran de Bussan of 1744 (Ms. 190, C.A.M.). They were in operation as late as 1906 (*Visita Pastorale*, 1906). It is of interest to remark that in England the bishops remained the licensing authorities as late as the eighteenth century (Johnstone, 1952a).

The lack of skill and of proper training of midwives obtaining in Malta in Dr. Buttigieg's time was also to be found in other countries. In Edinburgh, for instance, even as late as the 1830's 'unqualified often disreputable midwives still exerted considerable sway' although as early as 1726 midwives were being instructed in their work (Shepherd, 1969a). More than one hundred years later, Florence Nightingale, commenting on the state of midwifery in England in 1871, stated: "Midwives are so ignorant that it is almost a term of contempt" (Nightingale, 1871).

In Malta an attempt was made by the surgeon Dr. Giuseppe Antonio Cren to start a course of instruction for midwives in 1772. Dr. G. Imbert, one of the Senior Physicians at the Holy Infirmary, however, opined that such lectures could only be "scandalous and full of inconveniences" as the midwives were so ignorant that they did not even possess a knowledge of the basic principles of anatomy or of the technical terms used in their art; and there the matter ended.

The Order of St. John was chased away from Malta by the French under Napoleon in 1798. After two years of warfare and disruption of civilian life, the Maltese Islands passed under British protection in 1800. During the re-organization of the economy and public administration of the Island, one of the first acts of the British Commissioner, Sir Alexander Ball, was the re-establishment of the University on the 6th November 1800 and the resumption of medical studies (Cassar Pullicino, 1958).

Official initiative for the teaching of obstetrics to medical students and the training of midwives in Malta dates since March 1802 when Dr. Buttigieg was appointed

Teacher of Obstetrics at the Women's Hospital at Valletta. Thus besides imparting "the obstetric art" to medical students "in writing and orally" Dr. Butigieg also held a separate class for midwives who were taught "orally and given explanations, where needed, in the national language as best he could". As the lectures were delivered in Italian and as the midwives did not have a good command of this language, the explanations were made in Maltese (*Piano per il regolamento dell'ospedale di Malta*, 1802a).

These developments account for Dr. Butigieg's reference, in his introductory lecture, "to the paternal solicitude of this happy and ever praiseworthy government" of His Britannic Majesty in contrast to that of the Order of St. John which had failed to grasp the opportunity provided by Dr. G. A. Cren's offer to initiate the proper training of midwives.

The school of midwives, however, functioned very erratically during the nineteenth century. The teaching of obstetrics was still "very much neglected" by the mid-century when, to remedy matters, Dr. G. Clinquant was appointed to teach "the practical part" of midwifery to a number of women (*The Malta Mail*, 1854); but even as late as the last quarter of the century the position was very unsatisfactory as the candidates who presented themselves for training were illiterate. Indeed the Chief Government Medical Officer, Prof. S.L. Pisani, who had written a text-book for midwives in Maltese in 1883, wrote as follows to Government on the 18th February 1897: "I tried on one occasion to produce midwives of a better class — I did not succeed — only one had the courage to become a midwife but after a while she gave it up and did not continue to practise. I remember having engaged her to attend on an Austrian lady, the wife of an officer in the Black Watch. At the last moment, when her services were required, she deserted me and instead of herself she had the impudence to send me an ordinary nurse" (Files, Vol. 55, 1897).

It was not until 1915 that the training of midwives was placed on a sound footing (Cassar, 1965c).

Pains of childbirth

Dr. Butigieg held the view, on religious grounds, that the pains of childbirth were an inevitable accompaniment of labour. This idea went back to Biblical times when the Lord is quoting as saying to Eve: "In sorrow thou shalt bring forth children" (Genesis, Chap. iii, v. 16) — an attitude that was perpetuated by the Christian church until quite recent times. But, apart from religious considerations, Dr. Butigieg remarks apologetically that the art of obstetrics in his days did not have the means of preventing the pains of labour. That is quite true but it is tempting to speculate whether he was aware that one of his contemporaries — Humphry Davy — had suggested in 1800 the inhalation of nitrous oxide to eliminate the pain of surgical operations. The medical profession had ignored this idea and it was not until the 19th January 1847 that anaesthesia, in the form of ether inhalation, was first administered to a woman in difficult labour owing to a deformed pelvis. The pioneer was James Young Simpson of Edinburgh who had to struggle against the criticism and opposition of moralists and theologians. General anaesthesia during labour gained acceptance only after 1853 when Queen Victoria was given chloroform by John Snow (1813-58) when she was delivered of a son, the Duke of Albany, on the 7th April of that year (Shepherd, 1969b, Radcliffe, 1967a).

Bloodletting

Dr. Butigieg condemned the routine bloodletting to which pregnant women resorted, in Malta, during the 7th month of gestation. It appears that this measure was taken as a precaution against the development of eclampsia which occurs usually after the twenty-eighth week. The idea was to rid the body of the noxious substances causing the convulsions.

Bloodletting or phlebotomy was not a remedy limited to pregnancy but, since ancient times, had been prescribed for the relief of a diversity of ailments. In Malta, for instance, it was carried out during the plague of 1592-93 and in that of 1675-6 with the aim of eliminating the "bad humours" circulating in the body. In the 18th century,

it was the routine procedure in the surgical wards of the Holy Infirmary at Valletta to prevent undue inflammation in wounds; and until the 1830's it was the standard method of treatment in fevers. (Cassar, 1965d).

Although bloodletting began to lose its importance in the 19th century, 'heroic phlebotomy' was still the main treatment prescribed for eclampsia at the Rotunda Hospital in Dublin in the early years of the century and even as late as 1839 it was being recommended for this condition by Sir Charles Bell (1774-1842) (King, 1958. Falkiner, 1947; F.M.G., 1955 a.).

The popular usage, therefore, that was current in Malta in the days of Dr. Butigieg was not a folk remedy but had the backing of the accepted medical thinking of the time.

Mother's wishes

Dr. Butigieg discounted the popular belief that the unfulfilled wishes of pregnant women affected the foetus in such a way as to result in the birth of a deformed baby. In this respect he was ahead of his time and of a contemporary colleague — Dr. Salvatore Bernard (1724-1806) Medical Superintendent of Santo Spirito Hospital at Rabat — who held that if a pregnant woman experienced an unsatisfied craving for some object, such as a fruit or a flower, the infant would be born with a birth-mark representing the colour and shape of the object desired. More fundamental bodily changes could be induced in the offspring and Dr. Bernard reports the case of a woman who, having gazed for some time at the picture of a Moor, gave birth to a dark skinned child (Cassar, 1949).

The view that the imagination of the mother could influence adversely the formation of the foetus and lead to the birth of a "monster" was still upheld by some members of the profession abroad as late as the fourth decade of the century (*Il Filocamo*, 1841).

It is of interest to know that such notions form part of the current folklore of the Maltese Islands so much so that pregnant women are warned to keep away from ugly and deformed people lest the newborn should come to resemble them. Neigh-

hours are also always ready to allow a pregnant woman to sample their cooking if she remarks on its smell or else expresses the desire to partake of it.

Asepsis

Dr. Butigieg's directions to his medical students to anoint their fingers with butter or some other type of lubricant when performing vaginal examinations and to smear obstetrical instruments with oil or fat before introducing them into the genital passages undeniably show a lack of appreciation of the importance of surgical cleanliness. It is worth noting, however, that he was not alone in this respect. Hundreds of years before him Hippocrates (4th cent. B.C.), in describing the usage of uterine dilators, recommended the smearing of the instruments with oil before their introduction into the cervix (Milne, 1970c) while several decades after Dr. Butigieg lubrication of the hand and forearm with butter was still resorted to in 1839 by Sir Charles Bell (1774-1842) the distinguished surgeon of London and Edinburgh, before the performance of manipulations (F.M.G., 1955 b.).

The concept of infections had not yet evolved at the beginning of the 19th century. Indeed when, in 1846, Ignaz Semmelweis (1815-65) introduced in Vienna the washing of hands with chlorinated water in his lying-in-wards he was vehemently attacked by his senior colleagues in spite of the dramatic drop in the mortality rate of his puerperal fever cases (Shepherd, 1969c). It must also be recalled that it was only on 7th April 1864 that Louis Pasteur (1822-95) publicly announced his experiments confirming the germ theory of disease and that it was not until 1865 that Joseph Lister (1827-1912) began to apply Pasteur's findings in operative surgery, publishing the encouraging results of his antiseptic treatment with carbolic acid in 1867.

Obstetricians, however, were very slow in adopting his antiseptic methods, which did not come into general use before 1880 (Radcliffe, 1967b). In fact, in 1883 Prof. S.L. Pisani, who held the Chair of Midwifery of our University, was still recommending to his students-midwives the smearing of their fingers with oil when

performing vaginal examinations (Pisani 1883a). In April 1890, however, Dr. G.F. Inglott was using "antiseptic vaseline" on his hands when carrying out podalic versions. He prescribed "antiseptic irrigations" of the uterus following these procedures (*La rivista medica*, 1890).

Breast feeding

Dr. Butigieg's emphasis on the importance of breast feeding cannot be gainsaid. His maxim that "the best food for the body is the mother's milk" has the support of modern paediatricians. Dr. Butigieg was aware that it contained the essential elements for the nutrition of the baby; what he did not know is that it also provided immunity against certain infantile diseases. At a period when the Maltese Islands were in a poor shape socially and economically after two years of war and indigence breast feeding was easily available and cheap.

It is significant that many paediatricians to-day are campaigning vigourously, as Dr. Butigieg did almost one hundred and seventy years ago, on the advantages of breast feeding in several parts of the world (*Medical News-Tribune*, 1971).

Scurvy

In describing the desirable qualities of a "good wet-nurse", Dr. Butigieg rightly stresses the condition of her teeth which "must be healthy and beautiful and without any signs of scurvy". Although the discovery of Vitamin C did not happen until one hundred years later, it was well known by the beginning of the nineteenth century that scurvy could be prevented by drinking the juice of sour oranges and lemons. Indeed the first to point out the anti-scorbutic properties of these fruits was Solomon Albertus in 1593 but up to the eighteenth century scurvy remained a dreaded disease among seamen and civilians deprived of fresh vegetables, until Dr. James Lind (1716-94) published a treatise dealing with its cause and treatment in 1753.

French editions of Lind's book were published in 1756 and 1775 and it is not unlikely that Dr. Butigieg may have read one of these translations.

There is no doubt that scurvy occurred in Malta in an endemic form in the

eighteenth century. In fact the surgeon Michel'Angelo Grima refers to the disease among surgical patients under treatment at the Holy Infirmary of Valletta in 1773 (Grima, 1773) while in 1791 a Sig. de Sirabode obtained the licence from the *Proto-medico* to sell in Malta an anti-scorbutic decoction which "preseved from the scurvy" and which was publicly recommended by several highly placed knights such as the Bali de la Tour du Pin, General of the Galleys of Malta, and the Bali de Loras, Marshall of the Order of St. John (*Avviso importante*, 1791).

Dr. Butigieg had lived through the blockade of the French in Malta in 1798-1800 when scurvy proved to be the most formidable killer among French troops and he must have retained a vivid picture of the plight from this scourge of the French and of the Maltese besieged in Valletta during those years.

Instruments

An intriguing feature about the handling of instruments — such as the lever — was the instruction to conceal their use from the sight and knowledge of both the patient and bystanders. This was due to the fear prevalent in those days of the use of instruments on the part of parturient women and to the concern of the obstetrician that should anything go wrong with the confinement, the blame would be cast upon him for having applied the tools. Concealment was possible because it was then considered shameful for a woman to reveal the nakedness of her body. Out of consideration, therefore, for feminine feelings of decency and propriety, the woman was kept covered during obstetrical manipulations by a sheet that stretched from over the patient to the shoulders or lap of the doctor; thus he could carry out the required manouvres and handling of instruments under cover of this sheet without being detected by the patient or those around him (Johnstone, 1952b).

The instruments mentioned in the lectures are:—

- (a) The lever of Hendrik van Roonhuysen (b. 1622) which was made known in 1753 (Cianfrani, 1960a). Dr. Butigieg incorrectly states that Roonhuysen was an English-

man. He was Dutch. Roonhuysen also produced a forceps believed to have been the family secret sold to a party of Dutch doctors in 1699 by the Englishman Hugh Chamberlen senior (Radcliffe, 1967c). Dr. Butigieg might have confused the nationality of the two men.

(b) The forceps of Smellie and of Levret which the lecturer recommended. William Smellie (1697-1763) was familiar with the forceps that had been used by Chapman (1733), Giffard (1726) and Dusee (1733) — all very similar to the original Chamberlen instrument (1650). However he was not satisfied with them and from 1745 to 1749 he improved the forceps by shortening it, providing it with the so-called "English Lock" and applying the pelvic curve.

The Andre Levret (1703-80) forceps was initially a straight one but in 1751, Levret produced a curved one. Just as Smellie dominated British midwifery, Levret was the leading contemporary figure in continental obstetrics (Johnston, 1952c; Radcliffe, 1967d).

(c) The *speculum matricis* (or vaginal speculum) which dated since Roman times. Specimens have been excavated from the ruins of Pompeii (79 A.D.). The speculum came into use again in Europe in the 16th and 17th centuries when it was employed both to inspect and to dilate the vagina (Radcliffe, 1967e).

(d) The blunt hook employed for bringing down the thighs in a breech delivery. It was abandoned in the present century.

(e) The perforator which had the form of a pair of scissors with the sharp edge on the outside (Radcliffe, 1967f).

Caesarean Section

An edict inculcating the obligation on medical men to perform Caesarean section was published in Malta on the 14th June 1788 by Archbishop Fra Vincenzo Labini who governed the Diocese from 1780 to 1807. In the absence of a physician or surgeon, the Parish Priest was enjoined to carry it out himself; if he failed to do it, he would be committing "a grave sin to his spiritual and temporal peril". The Parish priest, therefore, had to learn to perform the operation and to keep ready for that purpose "some iron or

implement" with which to open the mother's abdomen for the extraction of the baby.

The regulations of the Civil Hospital Valetta made it obligatory, in 1802, upon the Principal or Senior Surgeon of the Women's Hospital "to render his assistance in difficult deliveries and to perform the Caesarean operation when required" (*Piano per il regolamento dell'ospedale di Malta, 1802b*). We are, however, left guessing as to whether the operation was to be performed on the living or only on the dead. We are unaware, too, whether Dr. Butigieg ever carried out the operation himself.

It is known that post-mortem Caesarean section was performed in Malta in 1813 and 1837. The issue of Caesarean section on the dead became a thorny one in Malta during the cholera epidemic of 1867 when the Archbishop of Malta warned the Police Physician of Gudja (the equivalent of the present District Medical Officer) not to neglect to perform the operation on the corpses of pregnant women to try to save their offspring. Several such operations were carried out in that year on dead women.

In his lectures to student midwives in 1883 Prof. S.L. Pisani told them that they had to be prepared to perform the operation on the dead themselves in the absence of a doctor. He also stated that the operation was indicated in the living in cases of a narrow pelvis and that it had been carried out by surgeons on many occasions with the survival of the mother and the baby. He leaves us in the dark, however, as to whether he ever attempted the operation himself (Pisani, 1883b). Indeed the first recorded Caesarean section to be performed on the living in Malta did not take place until 1891 (Cassar, 1968).

ALTERED SOCIAL CUSTOMS

Owing to the changes in the social customs and cultural variables that have occurred in our manner of living since the time of Dr. Butigieg, some of the aspects and objects of everyday life to which he refers in his lectures are unfamiliar to the present-day reader. The following notes are intended to clarify these facets and to

help recapture the local socio-cultural atmosphere of the period.

The Calesse of Caleche

The commonest means of transport at the time and for many years afterwards was this two-wheeled, mule-driven carriage. Although it was "roomy" it was at best an uncomfortable contraption that must have been very trying to pregnant women owing to its jolting movements (Mac Gill, 1839a; The Malta Mail, 1850).

A visitor to the Island many years later wrote in 1887 that he was glad to see the disappearance of "that hideous vehicle the *caleche* which ought to have become obsolete half a century since". It was replaced by the *karrozzin* on four wheels in which one could "travel about with ease and comfort" (Raven, 1887).

Corset

The ill-effects of improperly fitting corsets were being stressed by obstetricians towards the mid eighteenth century (Cianfrani, 1960b).

This garment was usually made of cotton reinforced with whale-bones. Others were made of leather at the beginning of the nineteenth century. They compressed both the chest and the waist. Tight lacing, in spite of its condemnation by the medical profession, was still fashionable in Victorian times (The New Universal Encyclopedia, n.d.).

Goat's milk

Evidence derived from the representation of the goat on pottery from Hal Saflieni temple, dating since 2400 B.C., points to the existence of this domestic animal in our Islands since pre-historic times. Presumably it was, then as now, the main source of fresh milk available for our ancestors. In Dr. Butigieg's time, cow's milk was also to be had and, where breast feeding was not possible, he recommended cow's milk for babies diluted with one third of water. However, he preferred goat's milk because (a) it "is more analogous (to human milk)" and (b) "the goat allows the baby to suck her breast". An amusing and tender description of how this was effected was written by an eye-wit-

ness in 1839 when this custom was still prevalent:— "But where is there anything to match the intelligent looking goat of Malta, the assistant nurse to the ladies of the Island? The Malta goat is taught to suckle children, they soon acquire the art and appear to like it; it is truly astonishing with what intelligence they do their work. They leave their pasture when they think the child requires a suck, bleat at the door until admitted, scamper to the nursery where the little urchin is placed on a pillow on the floor, the goat lies down beside it, a tit is placed in its mouth, and then it sucks its fill; or, when Nanny is of opinion it has had enough, she rises, goes through her gambols, then bounds off to feed. We have known families where the same goat has suckled five or six children; the children became attached to their quadruped nurse, smile at her gambols and cry when they think she is neglecting them" (Mac Gill, 183b; *Repertorio di conoscenze utili*, 1843a).

It is hardly necessary to remark that in those days no one had any inkling that in goats' milk might lurk the dangerous germ of Undulant Fever; indeed it was not until a century later that Dr. Themistocles Zammit showed, in 1905, that the goat was the reservoir of the microbe and that its milk was the vehicle by which the germ was transmitted to human beings.

Canopied beds

The beds of Dr. Butigieg's days were the four-poster i.e. provided with a wooden or iron framework supported on vertical poles one at each corner of the bed. From this framework draught proof curtains hung down on the four sides of the bed. This type of canopied bed is seen depicted in *ex voto* paintings showing the sick room of the early nineteenth century. A few of these four-poster beds are still extant in Malta in private houses.

Swaddling

An injunction of Dr. Butigieg, which reflects credit on him, was his condemnation of the swaddling of babies as it hampered the physiological functions and growth of the baby. But swaddling persisted for many years afterwards.

Dr. John Hennen describes the manner in which Maltese infants were clothed in the early twenties of the last century in these words:— "In early infancy they are swathed round from the shoulders to the toes, the arms being laid along the sides and included in the bandage so as to present a very striking resemblance to an Egyptian mummy" (Hennen, 1830a).

This custom was not peculiar to the Maltese Islands but occurred elsewhere in the Mediterranean. The same writer remarks on the "singular method of dressing" infants in Corfu, by swathing them very tightly "with a roller from the toes to the neck binding down the arms" (Heenen, 1830b). This custom was being condemned by pioneer paediatricians during the 1740's (Cianfrani, 1960c). In Malta it was still extant one hundred years later though it was being branded as a "torture" and censured by an educational journal in 1843 (*Repertorio di conoscenze utili*, 1843b). With the passage of time the arms were no longer included in the binding but the trunk and feet were still being encircled by a roller (*fisqija*) within living memory. In fact the author possesses the roller that bound his trunk and feet as an infant.

In spite of these restraints on bodily movements, however, no great harm seems to have befallen Maltese babies; so much so that their activity, especially as swimmers and divers, was "extremely striking" and a crippled child is said to have been a rare sight (Heenen, 1830c). The same observation was made by a British resident, who had lived in Malta for upwards of thirty years, when he asked in 1839:— "Where is the country in which there are fewer rickets or deformed children than here?" (Mac Gill, 1839c).

Administration of Holy Sacraments

The practice of administering Holy Communion to patients suffering from a serious illness was in conformity with the provisions prescribed by the Lateran Council of the Church held in 1215 under Pope Innocent III. Besides, the ancient belief that disease was the result of sin still occupied men's minds at the beginning of the last century and, therefore, it was

quite in keeping with this trend of thought to exhort the patient to atone for sins committed and to enter into a state of grace before undergoing treatment.

Physicians and surgeons had to make a declaration of faith, in the presence of the Bishop, before they were admitted to practice in Malta, while the Synodal Constitutions published in 1591 and again in 1625 obliged Maltese doctors, when called to see a sick person in bed, to persuade the patient to receive the Sacraments. The doctor was debarred from visiting the patient after the third day if he had not complied with this ruling. These conditions, which prevailed in other Catholic countries, were so strictly observed until the end of the 18th century that no patient was assigned a bed at the Holy Infirmary of Valletta until after he had confessed and received Holy Communion (Cassar, 1965e). This ruling was modified in 1802 but it was still obligatory on the Hospital Chaplains attached to the Civil Hospital to administer these two Sacraments to every newly admitted patient (*Piano per il regolamento dell'ospedale di Malta*, 1802c).

Who was Dr. Francesco Butigieg?

An extensive and prolonged quest to discover some biographical data about Dr. Butigieg and to catch a glimpse of his life and personality was fruitless and we know nothing except the little we can glean from a perusal of his lectures.

This internal evidence provides us only with a means of assessing his (a) academic background and (b) teaching methods.

Academic background

The authorities quoted by Dr. Butigieg range from the time of the Hippocratic writings in the fourth century B.C. to his contemporary Jean Louis Baudelocque who died in 1810. The following annotated and representative list of the authors he mentions in his lectures shows the extent and nature of the medical literature with which he was familiar. The authors are listed in chronological order:—

Anaxagora (500?-428 B.C.) is reputed to have been the first to practice anatomical dissection on animals. Quoted as maintain-

ing that the foetus nourishes itself through the umbilical cord. (Castiglioni, 1948a).

Democritus (b. circa 460 B.C.) was the teacher of Hippocrates and renowned for his zoological studies and investigations on the physiology of generation (Castiglioni, 1948b. Cianfrani, 1960d). Quoted concerning the difficulty of ascertaining the death of the foetus *in utero*.

Hippocrates (c. 460 — c. 380/370 B.C.) established medicine as an independent discipline from philosophy. He advocated a natural as against a divine origin of disease. Quoted (a) in support of Anaxagora's idea of the function of the umbilical cord, (b) as a warning to women to abstain from intercourse in early pregnancy, to avoid "stimulant clysters" and venesection as these may cause abortion and (c) as estimating the duration of pregnancy to be 263 days.

Aristotle (384-322 B.C.) Though not a physician this naturalist and philosopher laid the foundations of biology and embryology (Guthrie, 1947a). Quoted as maintaining that the foetus derived its nourishment through the umbilical cord and that hydadtiform moles were caused by "absence of heat".

Galen (130-200 A.D.) was a first class clinician and prolific writer whose medical teachings prevailed until the time of William Harvey (1578-1657) and even later. Quoted as confirming that the cord is the means of conveying nourishment to the baby and that though respiration may cease in asphyxia of the new-born, the heart may still be beating imperceptibly.

Avicenna (980-1037 A.D.), Persian physician, wrote the *Canon of Medicine* which was still used as a textbook in many medical schools as late as 1650. Quoted as stating that baths may cause bleedings in pregnant women and in ascribing mole formation to "excessive heat".

Ambroise Pare' (1510-90), a prominent French surgeon, reintroduced podalic version after many centuries of neglect. He opposed Caesarean Section in the living as he did not think it possible for the mother to survive the operation (Cianfrani, 1960e). Quoted in connection with his opposition to Caesarean Section.

Gabriello Fallopius (1523-62) held the Chair of Anatomy at Padua. He accurately described the human ovaries and the tubes which have been since named after him (Cianfrani, 1960f). Quoted in the description of the anatomy of the fallopian tubes.

William Harvey (1578-1657) studied anatomy and embryology at Padua. Apart from describing the circulation of the blood in 1628, he carried out experiments on the chick embryo and published his observations on the development of the foetus in 1651 in *De generatione animalium*. This work has been regarded as the first original book on midwifery by an English author (Cianfrani, 1960g; Guthrie, 1947b). Quoted in connection with the anatomy of the human ovary and with his theory about the conception of twins.

Paolo Zacchia (1584-1659) was the compiler of the first treatise on legal medicine giving a systematic shape to forensic medicine (1620). Quoted as holding that a mole is the result of conception and therefore its presence in an unmarried woman was to be regarded as evidence of "violated chastity"; and as maintaining that the foetus received its soul at conception.

Francis Glisson (1597-1677), Professor of Physic at Cambridge, gave the first accurate description of the capsule of the liver (1654) and wrote an account of infantile rickets (1650). Quoted in explanation of the breast pains experienced by pregnant women as being due to communication between the uterus and the mammary glands by means of blood vessels and nerves.

Thomas Sydenham (1624-89) opposed theorising in medicine and insisted that medicine could be learned only at the bedside of the patient. Dr. Buttigieg calls him the "incomparable Sydenham". He is quoted in connection with the sinister significance of the appearance of convulsions in pregnancy.

Francois Mauriceau (1637-1709) was the first to describe brow presentation and to report a tubal pregnancy. In 1664 he removed a mole by intrauterine finger manipulation (Cianfrani, 1960h). Quoted

in the course of a discussion on the causation of false pregnancy.

Frederich Ruysch (1638-1731) was a Dutch anatomist who ascribed mole formation to disease of the ovum. He is quoted in explanation of the breast pains of pregnant women as already stated under **Francis Glisson**.

Archibald Pitcairn (1652-1713), Professor of Medicine at Leyden, tried to explain the functions of the human body on a mechanical basis. He is quoted in support of Galen's views of asphyxia.

Pierre Dionis (d. 1718) gave the first clear description of interstitial pregnancy and discussed the arrest of the impregnated ovum in the passage of the uterine cavity (Cianfrani, 1960i). He is quoted in connection with his manoeuvre of turning prolapse of the hand into podalic version and then effecting delivery.

Hendrik van Deventer (1651-1724), a leading Dutch obstetrician, initiated studies on the various forms of the bony pelvis and on the mechanism of labour. He has been called one of the founders of modern obstetrics (Castiglioni, 1948c; Cianfrani, 1960j). Quoted in connection with the difficulty of determining that a foetus has died *in utero*.

Caspar Bartholin (1655-1738), son of Thomas, described the vaginal glands named after him (Cianfrani, 1960m; O'Mallel; 1970a). Quoted in connection with the anatomy and function of the vaginal glands and with reports of cases of successful Caesarean Section on the living.

Hermann Boerhaave (1668-1738), Professor of Medicine at Leyden, was the central figure of European medicine in the first quarter of the 18th century. Quoted in connection with the anatomy of the umbilical cord and with the warning that a new-born baby with asphyxia is not to be considered dead because he may not appear to be breathing for his heart may still be beating imperceptibly.

Lorenz Heister (1683-1758), a pupil of Boerhaave, was an outstanding German anatomist and surgeon. Quoted in support of the view that the foetus obtained his nourishment through the umbilical cord.

Gian Battista Morgagni (1682-1771), the founder of modern pathology, correla-

ted the post-mortem finding with the clinical features of disease in a work which he published in 1761. Quoted in support of Galen regarding cases of new-born asphyxia and in connection with the pathology of uterine obliquity.

Jean Astruc (1684-1766) is known for his reference to bimanual examination of the pelvis and for reviving the use of the vaginal speculum (1761) (Cianfrani, 1960l). He is quoted as ascribing swelling of the lower limbs in pregnancy to "suppressed menstruation".

Richard Manningham (d. 1759) was the founder of the first hospital for lying-in women in London (1739) which later became known as Queen Charlotte Hospital. Quoted as stating that false pregnancy is produced by accumulation of air and water in the abdomen.

Alex Munro (1697-1767) was the first of a family of four Munros who occupied the Chair of Anatomy at Edinburgh for one hundred twenty-six years, each son succeeding the father (Cianfrani, 1960m). Quoted in confirmation of the idea that the foetus nourishes itself through the umbilical cord.

Gerhard van Swieten (1700-72), a pupil of Boerhaave, brought clinical medicine to Vienna and re-organised the Old Medical School of that City. Quoted as stating that oedema of the legs in pregnancy is due to pressure of the uterus on the iliac veins; that uterine bleeding is one of the most dreaded complications of pregnancy; and that Caesarean Section must be performed on dead pregnant women.

Albrecht von Haller (1708-1777), a pupil of Boerhaave, has been acclaimed as the founder of modern physiology. Quoted as showing that foetal asphyxia may exist with continued action of the heart.

Andre Levret (1703-1780), a renowned obstetrician from Paris, devised a curved form of forceps to fit the pelvic curve (1751). Quoted in connection with the fatal results of uterine bleeding in pregnancy.

Jean Louis Baudelocque (1748-1810) devised a method of gauging the diameters of the normal and the contracted pelvis

in living women and correlating their relationships to the size of the foetal head (Cianfrani, 1960n). Quoted with regard to the means of correcting the obliquity of the uterus.

This survey of the authors consulted by Dr. Butigieg shows why his lectures are saturated with the medical literature and the theological views developed during the passage of hundreds of years. Medical knowledge of classical Greece is represented by four authorities; the early middle ages and the sixteenth century by two each; and the seventeenth and eighteenth centuries by eight and by twelve respectively. Indeed though Dr. Butigieg was teaching in 1804-06, his medical education and obstetrical experience did not belong to the nineteenth century but were inevitably those of a medical man of the eighteenth century. To us in the late twentieth century many of his authorities appear antiquated with hardly any claim to scientific merit but we must not judge them by present standards. It must be borne in mind that in his days ideas did not go out of date quickly because the accumulation of knowledge was slow and therefore books became obsolete less rapidly than they do now. The medical journal, though first appearing in the late seventeenth century, did not develop into the important medium for the diffusion of medical thought until the nineteenth century (World Health, 1972). Considered in the context of Dr. Butigieg's time, therefore, his medical reading represented the best in the literature of his period. Some were the giants of medicine and surgery — Pare, Harvey, Sydenham, Boerhaave, Morgagni and van Swieten; several others were responsible for some famous "firsts" in obstetrics and gynaecology; a few more were no less outstanding. Andre Levret, for instance, is considered one of the most important obstetricians of the eighteenth century while Francois Mauriceau and Hendrik van Deventer have been called the founders of modern obstetrics and gynaecology (Cianfrani, 1960o).

Teaching methods

Dr. Butigieg wrote Italian without any flourishes in a concise, clear style denoting

the presence of an orderly mind. He based his teaching on the practical rather than on the theoretical aspects of his subject. There is, however, no evidence that he gave clinical demonstrations or made use of "machines" or models of the female pelvis as had already been done by William Smellie (1697-1763) in London (Johnstone, 1952d). It is of interest to note, however, in this connection that one such model had been brought to Malta in 1772 by Dr. Giuseppe Antonio Creni, a surgeon in the service of the Order of St. John, from Bologna where he had studied surgery and where clay and wax models of pregnant uteri were being manufactured under the supervision of Giovanni Antonio Galli (1708-82), a lecturer in surgery at the University of that city (Cassar, 1965f; O'Malley, 1970b).

Although no pregnant woman would wish to be treated to-day by the methods and instruments described by Dr. Butigieg no one will object to the maxims he inculcated in his students regarding the psychological management of their patients. Indeed his humane approach reveals a great deal of tact and of tolerance of human foibles and a deep sympathy and concern for women in childbirth.

He was certainly a man of piety and strong religious convictions as the last words of his concluding address to his students amply shows:— "Let us end by offering a thousand and one thanks to the Most High for all the benefits showered upon us not only during the past years but also during this course of lectures; and let us pray that he may deign to be well-disposed towards us in the exercise of our profession for the benefit of pregnant women".

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CYSTS OF THE JAWS

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The clinical behaviour of cysts of the jaws has been under close scrutiny over the last few years as it has been found that there is in some types a distinct risk of recurrence, (Bramley & Browne 1967, Fickling 1965, Toller 1967). This recurrence may occur even after as long as 20 years (Browne 1970), so that long term follow-up is essential. The clinical and histological features may be important clues in determining the prognosis and the risk of recurrence of the various jaw cysts. We have collected the data of jaw cysts seen at the Dental Department, St. Luke's Hospital during the decade 1960 — 1969 in order to establish a base line for future comparative studies.

Classification

Classification of cysts is based on clinical, radiological and histological features, with different authors giving emphasis to one or other of the features. We have followed the classification given by Killey and Kay (1972). The chief difficulty is the placing of the so called 'residual' cyst'. We have included all the residual cysts as 'periodontal — residual', except those showing keratinisation which we listed as 'odontogenic keratocysts'.

The relationship of the 'primordial cyst' to the 'odontogenic keratocyst' is also undecided and we have not distinguished between the two types.

Results

Incidence

There were 49 patients with cysts of the jaws and histological examination was made in 31 cases.

Table 1

Incidence of Cyst Types

Odontogenic	
Periodontal	No. of Cases
(a) Apical	. 15
(b) Lateral	. —
(c) Residual	. 13
Dentigerous	. 9
Odontogenic Keratocyst	. 6
Fissural	
Nasopalatine	
(a) Incisive canal cyst	. 2
(b) Cyst of the papilla palatina	. —
Globulomaxillary	. —
Nasolabial	. —
Median Mandibular	. —
Median Fissural	. —
Bone Cysts	
Solitary Bone Cyst	. 1
Stafne's Idionathic Cavity	. —
Aneurysmal Bone Cyst	. —
Multiple Cysts	. 3
TOTAL	49

The preponderance of periodontal cysts (30.6%) agrees with most large surveys reported (Fickling, 1965; Killey & Kay, 1972), as does the percentage incidence (16.3%) of dentigerous cysts. Comparison of the incidence of the odontogenic keratocyst is difficult as various authors have different views, some dis-

Table 2. Age Distribution

	Periodontal		Dentigerous	Odontogenic Keratocyst	Nasopalatine	Solitary B.C.	Multiple Cysts	Total
	Apical	Residual						
0-10	1	-	2	-	-	1	-	4
11-20	7	1	1	1	-	-	-	10
21-30	1	2	1	1	1	-	1	7
31-40	2	1	1	-	-	-	-	4
41-50	2	3	3	-	-	-	1	9
51-60	2	6	1	1	1	-	-	11
61-70	-	-	-	1	-	-	1	2
71 +	-	-	-	2	-	-	-	2

tinguishing the primordial cysts as a separate entity (Fickling, 1965). The incidence of odontogenic keratocysts (12.3%) in our series closely resembles that of Hjorting, Hansen *et al* (1969) of 11.2% who used similar criteria in classifying the cyst types.

cyst. McIvor (1972) states that odontogenic keratocysts with the radiological features of dentigerous cysts occur in a relatively young age group, commonly cause expansion of bone, are larger than average on presentation and do not recur after removal.

Table 3. Sex Distribution

	Periodontal		Dentigerous	Odontogenic Keratocyst	Nasopalatine	Solitary B.C.	Multiple Cysts	Total
	Apical	Residual						
Male	8	10	8	5	1	1	3	36
Female	7	3	1	1	1	-	-	13

Age Distribution

Peak incidence occurred in the 2nd and 5th decades: The apical periodontal cysts responsible for the peak in the second decade (70%) while the residual periodontal cysts that in the 5th decade (55%). The youngest patient was 6 years old, the eldest was 77. The keratocysts which occurred in the 6-8th decades were clinically residual cysts, whilst the two occurring in the younger age group had radiological features of an apical periodontal and a dentigerous

Sex Distribution

There is a higher overall incidence of jaw cysts in males (35) than in females, which accords with the finding of other authors, (Cabrini, 1970; Killey & Kay, 1972).

Killey and Kay (1972) point out that this finding may reflect a tendency for females to be more dentally conscious than males, which could influence the periodontal cysts but it is difficult to see it could affect the other cyst types.

Table 4. Site Distribution

	Periodontal		Dentigerous	Odontogenic Keratocyst	Nasopalatine	Solitary B.C.	Multiple Cysts	Total
	Apical	Residual						
Maxilla	12	11	6	2	2	—	2	35
Mandible	3	2	3	4	—	1	2	15

Site Distribution

Much emphasis has been made on the site of cystic lesions especially on those which are not related to the crown or root of the tooth, as the site may be an important clue in defining the cyst type and prognosis of the lesion (Bramley & Browne 1967, Flickling 1965, Hjorting-Hansen 1969, McIvor 1972).

There is a greater tendency for cysts in the maxilla (71%) than there is in the mandible.

- (a) Apical periodontal cysts: In the maxilla 75% were located in the anterior region, 25% in the posterior region. The incidence in the molar regions of both the maxilla and mandible approximate each other.
- (b) Residual periodontal cysts: There is a very low incidence in the anterior region of the maxilla and a high one in the posterior region. This is related to the expansion of the cysts into the antrum rather than intraorally whilst still in the apical periodontal form, and left behind as residual cysts.
- (c) Dentigerous cysts: In the upper arch dentigerous cysts were mostly related to unerupted canines. Those in the lower arch were predominantly associated with unerupted canines, premolars and third molars.
- (d) Odontogenic keratocysts: These were

found most frequently in the body and ramus of the mandible. This type of cyst was also found in the maxilla; Ratio Maxilla: Mandible 1:2. These findings agree with those of McIvor (1972).

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ACUTE APPENDICITIS FOLLOWING MOTOR VEHICLE ACCIDENT

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This paper concerns a 21 year old male, weighing 115 pounds and 5 feet 5 inches in height who was driving his car when he was involved in a minor accident on December 10, 1970. The patient's car which had stopped at an intersection was struck in the rear by a truck. On impact the patient was thrown forward and suffered a whiplash sort of injury to his neck, a contusion to his forehead and a steering wheel injury to his abdomen in the right lower quadrant. The patient received emergency treatment at a hospital where his head and neck were X-rayed and was discharged the same day to be treated by his family physician.

Next day this patient was seen in his doctor's office. The presenting complaints and symptomatology referred again only to a contusion to his forehead, and to his stiff neck; there was some right lower quadrant minor abdominal pain. Outwardly there was no evidence of contusion or any skin markings on the lower abdomen.

Over the weekend the patient had epigastric pain and nausea and vomiting. He had coffee grounds vomit which at the time he attributed to some virus infection.

On the Monday the patient went to the Emergency Department of another hospital, complaining of severe abdominal pain. The diagnosis of acute appendicitis was considered very likely. However, the patient's pupils were noticed to be unequal and a minor strabismus was noted in one eye. A neurological consultation was requested. The neurologist ascertained that the neurological findings were unrelated to the abdominal findings and the acute abdomen had to be treated on its own merits. His temperature was 36°.7C. White count was 16,200. His abdomen was very tender in the right lower quadrant at McBurney's point with rebound tenderness.

Next day the patient was operated for

acute appendicitis. There was no free fluid in the peritoneal cavity but the omentum occluded the operative field completely. The caecum and the area of the appendix were covered with dense, thickened, fibrinous, oedematous adhesions. The appendix was retrocaecal and retroperitoneal in position and was kinked on itself. A point of perforation was noted at the site where the appendix was folded on itself. The appendix was removed in a standard fashion. The patient tolerated the procedure well.

The post-operative course in the first twenty-four hours became tempestuous. The patient went into haemorrhagic shock. The haemoglobin went down to 7 grams. He had a tense abdomen. Exploratory laparotomy showed gross intraperitoneal haemorrhage. The source of bleeding was not clearly determined, in spite of the fact that a second midline upper abdominal incision was made to exclude any bleeding from the spleen or liver. The only finding was a small amount of sanguinous ooze from the region of the appendicular stump. At the time it was thought that this might have been the site from which the haemorrhage originated. Blood transfusion was given. Recovery was subsequently uneventful and the patient was discharged from hospital on the 29th December.

Pathology Report. The specimen consisted of an appendix measuring 6.5 x 0.6 cms. The appendix was dilated. The external serosa showed fibrous exudate. The lumen contained a large quantity of purulent and blood tinged material. The mucosa was necrotic in the midportion. The rest of the mucosa was congested.

Diagnosis. Acute suppurative appendicitis.

Cases of Acute Appendicitis as a Result of Blunt Injury to the Abdomen

In looking through the medical

literature there was not one case of acute appendicitis recorded resulting from blunt trauma to the abdomen.

Blunt Injuries to the Abdomen

Blunt injuries to the abdomen are becoming quite prominent due to the increasing number of motor vehicle accidents. All structures forming the abdominal wall and its organs can be affected in these blunt injuries, such as fractures of the vertebral column with or without paraplegia; injuries to the abdominal aorta; injuries to the liver and spleen; injuries to the pancreas and common bile duct; injuries to the gastrointestinal tract such as the stomach, duodenum, small intestine, large bowel; or injuries to the kidneys and genitourinary tract. Some of these injuries are well known while others are not so common. Here are some of the more unusual cases recorded in medical literature classified as to type of organ injured.

1 — Aorta

A 54 year old woman was involved in a head-on motor vehicle accident, at a moderate speed, suffering a steering wheel injury to the abdomen. On exploration she was found to be suffering from a partial disruption of the abdominal aorta which was causing a subintimal dissection of the abdominal aorta with partial and subsequently total occlusion of the superior mesenteric artery and the left renal artery resulting in gangrene of the terminal ileum and of the left kidney. There were normal femoral pulses in both limbs. In spite of a total abdominal colectomy and resection of the gangrenous terminal ileum followed by ileosigmoidostomy the patient died on the second postoperative day from anuria.

2 — Complete Transection of the Common Bile Duct

A 25 year old man was admitted to hospital three hours after an automobile accident in which he had been forcibly thrown against the steering wheel. Initially it was thought that he was uninjured. Three hours later, however, he developed acute pain in the upper abdomen for

which he was subsequently operated. A rupture of the common bile duct with no other associated abdominal injuries, was found. The tear was repaired and the patient made a complete recovery.

3 — Rupture of the Duodenum

The largest published statistics indicate that duodenal rupture occurs once in 100 cases of internal injury resulting from blunt trauma to the abdomen. Out of 101 surveyed cases of rupture of the duodenum caused by blunt trauma to the abdomen, 23 were victims of automobile accidents (of whom 13 were steering wheel type of injuries to a driver not protected by a seat belt), 11 were victims of other transportation agents (such as train, streetcar, bicycle and motorcycle), 19 were injured in falling from a height or when hitting the abdomen against an edged object, 20 sustained a blow to the abdomen (such as by a fist, a foot, a horse's hoof), 17 were crushed between a moving and an immobile object (usually between a truck and a platform or wall), in 11 the cause of injury was not reported, not determined or different from those above.

4—Intramural Haematoma of the Jejunum

Until 1966 less than 75 cases of symptomatic duodenal haematoma had been recorded in medical literature. Most cases were reported to have been caused by a blow with a blunt object with rare mention of seat belt. There is one case report of a 12 year old girl who was involved in an automobile accident. She was seated in the back seat with her seat belt placed over her abdomen. She presented to the Emergency Department with ecchymoses and pain in the back over the upper lumbar and lower thoracic vertebrae and a seat belt mark over her upper abdomen. Thirty-one hours after admission the patient developed symptoms of acute upper gastrointestinal obstruction for which she was operated. On the fourth hospital day laparotomy revealed a large hematoma in the wall of the jejunum. The hematoma was between the muscle layers and was very adherent to the inner layers of the jejunal wall.

5 — Gangrene and Slough of Small Bowel

A 56-year old woman suffered a steering wheel injury in her right flank. There was no evidence of external trauma. The vital signs were within normal limits. Supine and upright X-rays did not demonstrate any free air but there was moderate "diffuse ileus". Over the following three days she had temperature elevations to 103°F. Her abdomen was distended and tender and she began to pass tarry stools for which she was given three units of blood. On subsequent laparotomy she was found to have a free segment of gangrenous bowel completely devoid of mesenteric attachments with intraperitoneal free faecal material. To avoid further peritoneal contamination, exploration of the cavity was limited and the free ends of the bowel were not identified. Multiple drains were inserted in the cavity with a Chaffin tube and the wound was packed open. On the eighth post-operative day a laparotomy was performed and an ileo-transverse colostomy was made. The patient was discharged ten days later having been in hospital for thirty days.

6 — Abdominal Aortic Rupture

Rupture of the abdominal aorta was described in a 31 year old man who survived the injury caused by blunt trauma in a motor vehicle accident and was admitted to hospital in no acute distress. Due to alteration of his vital signs he was operated upon twenty-four hours later and a tear was found at the aortic bifurcation which was repaired, the patient proceeding to complete recovery.

Mechanism of Blunt Traumas to the Abdomen

Blunt injuries to the abdomen may cause trauma to the abdominal organs in one or more of the following ways:

1 — A crushing force. A viscus or organ may be crushed against the spine or pelvic bones by a violent, direct external force applied to the abdominal wall such as by a steering wheel or a seat belt. Such a direct blow may cause a contusion or a tear to the wall of the organ or to its blood supply or to both. The areas of the

gastrointestinal tract that are likely to be injured by such a force are the parts that are relatively fixed such as the duodenojejunal junction and the ileo-caecal junction as well as any adherent loop of bowel.

2 — Blow-out injury. Compression of the abdomen by sudden deceleration may cause a blow-out injury to a viscus that contains fluid if the viscus is sealed at both ends and presents as an airtight compartment. The sudden compression may cause an explosive force within the viscus to tear the wall of that organ.

3 — Shearing force. This kind of injury may occur when there are two fairly large organs at opposite ends which move in opposite directions while attached together to a relatively fixed centre. Such a shearing force may cause a tear of the relatively fixed duodenum when the stomach and the liver on its one side and the intestinal mass on the other side move rapidly in opposite directions. A similar injury may occur at the ileo-caecal junction which is relatively fixed, having the mobile large bowel on the one side and the small bowel on the other side.

4 — Sudden and extensive hyperextension of the lumbar spine may also cause a tear of the aorta or the duodenum.

5 — Perforation of a wall of an organ may be caused by a "jetstream" ejection of fluid through a small aperture in a viscus such as the stomach, gallbladder or the caecum. Sudden abdominal compression by ejecting the fluid contents through a narrow outlet in a viscus such as the pylorus or cystic duct may cause a tear in the wall of the duodenum or the cystic duct, if the force of the stream is sufficiently great.

6 — Rapid deceleration by causing sudden compression of the abdomen followed by a sudden decompression may cause a special type of shearing force injury which has been described as a "whiplash" abdominal injury. The importance of such an injury lies in the fact that no direct contact with the abdominal wall is necessary. The mechanism of action producing this type of injury is the same as that resulting from the cracking of a whip or a whiplash injury of the neck. The organs most susceptible to this kind of in-

jury are those which are relatively mobile and attached by a mesentery such as the small bowel. The point of fixation is represented by the root of the mesentery and the shearing force is transmitted along the somewhat radially arranged arteries. A wave-like motion is transmitted through the mesentery to the bowel. When the force is of major proportions a rupture of the primary mesenteric artery or a detachment of the mesentery from the bowel wall or its root may result.

Anatomical Considerations

The appendix is not immune to intra-abdominal injuries.

These are some of the anatomical considerations which make the vermiform appendix susceptible to inflammation following injury:

1 — The narrow lumen and serosal covering of the appendix. Trauma to the appendix stimulates immediate hyperplasia of the lymphoid tissue in the submucosa. This could block the lumen of the appendix with accumulation of secretions causing passive congestion and edema in the appendiceal wall resulting in obstruction to the circulation with secondary infection.

2 — The appendix lacks a true mesentery which would help to absorb any congestion or edema of the appendicular wall.

3 — The arterial blood supply is an end artery arrangement lacking arterial anastomosis. Any blockage of the arterial blood supply would therefore result in gangrene of the appendicular wall.

4 — The position and size of the vermiform appendix may vary from patient to patient and each injury has to be taken on its own merits.

Mechanism of Blunt Trauma to the Appendix

1 — A crushing injury to the abdomen may compress the appendix between the external abdominal force and the pelvic bone. The result of such an injury may be a contusion, a laceration or a transection of the appendix depending on the type of blunt trauma and the position of the appendix.

2 — A sudden compression-decompression abdominal injury may cause kinking of the body of the appendix resulting in obstruction to the lumen with subsequent obstruction to the blood supply.

3 — A crushing injury to the abdominal aorta or to the superior mesenteric artery or to its ileo-colic branch may similarly cause vascular injury in the form of arterial spasm, laceration or transection of the artery, thrombosis or embolism resulting in acute appendicitis.

Discussion

In this case the driver was a very lean individual. He was not expecting a collision. His abdominal muscles would therefore be in a relaxed position. He was thrown forward across the steering wheel suffering a crushing abdominal injury in the right lower quadrant. The vermiform appendix was retro-caecal in position, and therefore relatively trapped behind the caecum. The haematemesis and post-operative intraperitoneal haemorrhage were inexplicable and it is quite possible that there was a concomitant vascular injury to the abdominal aorta or to the superior mesenteric artery. The symptomatology developing on the second and third day after the accident was referable to the appendicitis. On the fourth day the clinical diagnosis of acute appendicitis was made. On the fifth day an acute suppurative appendicitis with an area of perforation was determined at surgery. Acute appendicitis is a common occurrence in young people, 21 years of age or younger and the cause is not always very clear. Many writers at one time or another have suggested trauma as a very likely cause of acute appendicitis in this most active and violent age group.

Conclusion

There are many recorded cases in the medical literature where it has been determined that blunt injury to the abdomen may injure any organ or structure within the abdomen. There were, however, no recorded cases of acute appendicitis resulting from blunt abdominal trauma.

The vermiform appendix is not immune to blunt abdominal trauma. As a

matter of fact, by its anatomy and position, it is a very vulnerable structure.

This is one case recorded in this paper where acute appendicitis has followed a steering wheel injury. It is hoped that this incident will draw attention to similar cases considering the great frequency of motor vehicle accidents.

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PILONIDAL SINUSES AND THEIR TREATMENT

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This paper deals with 25 patients suffering from this complaint who were treated in the simple manner popularised by Millar and Lord. A pilonidal sinus is a common enough condition in Malta. It is unusual for a surgical out-patient session not to include a patient with this complaint. Extensive operations with wide excision of tissue were formerly the rule. Simpler procedures are at least as effective. Healing is more rapid and the operation could be an out-patient procedure.

Aetiology

This is still argued about but most people to-day believe that the condition is acquired rather than congenital. It tends to occur in thick-set young dark hairy 'white' men and it is thought to be due to actual penetration of the skin by loose hairs in the natal cleft. The hairs of black men lack the penetrating property of Caucasian hair: one of us (R.O.P.) during 15 years in Nigeria did not see one case of pilonidal disease. Similar lesions occur in the armpit and the navel as also in the hands of barbers. The almost discarded theory of congenital origin related the lesions to imperfect closure of the neural canal. Nevertheless, on occasion one is impressed by the mass of homogeneous hair present in a nest: it is difficult to believe that it all entered from without.

Pathology

There are one or more midline pits in the natal cleft, deep to which is a cavity lined with granulation tissue and usually containing hair. Tracks may run forward from the cavity either in the midline or laterally; these tracks too are lined with granulation tissue and they too may contain hair and discharge on the surface.

Principles of treatment

Excise the pits, remove the hair and allow free drainage of the cavity and of the tracks. Shave the part regularly, say every week until healing has taken place.

Technique

Under local or general anaesthesia a small elliptical incision is made to excise the pits and expose the underlying cavity which is not however excised completely. Any lateral tracks are enlarged and any lateral sinus excised. The tracks are cleared of any hairs by means of bottle brushes. A small dry dressing is applied and this is changed daily after the patient has had his bath.

Complications

These are two. Firstly, haemorrhage, easily treated by pressure. And secondly, abscesses in the lateral tracks, due either to poor drainage or to retained hair. No such complications occurred in this series.

Recurrence

The disease recurred in 5 patients. In 3 of these it appears that a new growth of hair was restarting the process: careful and regular shaving ensured complete healing within six months of operation. Two cases required a second operation at which more hairs were removed from the lesion; they healed within four months from the date of the first operation.

A table describing the patients and their disease now follows. The patients were predominantly young adult males. 15 healed completely within eight weeks with the technique described above and 19 within three months.

	INITIALS	AGE	SEX	Mode of Presentation				Degree of Hirsutism			Hairs in Lesion			COMPLETE HEALING AT 3/12.			
				SWELLING	PAIN	DISCHARGE	SINUS (noticed by patient)	ABSCESS	HEALING < 8/52	HEALING > 8/52	RECURRENCE	SLIGHT	MODERATE		MARKED	NONE	FEW
1	PG	20	M	X		X				X							X
2	LA	18	M			X				X	X						
3	AA	23	M	X	X	X		X		X				X			X
4	RM	18	F	X	X	X		X		X							X
5	GE	27	M	X						X							
6	VC	28	M		X	X	X			X				X	X	X	X
7	SE	27	M		X	X	X		X								X
8	PJ	18	M		X	X	X		X								X
9	GC	32	M		X				X	X							X
10	CG	21	M		X	X	X		X					X			X
11	DC	24	M		X	X			X					X			X
12	FS	27	M	X	X	X		X		X					X		X
13	CV	33	M			X	X	X		X					X		X
14	DE	22	M			X	X		X						X		X
15	LA	20	M			X	X	X		X	X			X	X		
16	EF	24	M			X				X					X		X
17	BF	27	F			X		X		X	X			X			
18	CE	17	M		X			X			X				X		X
19	AP	24	M		X	X				X							X
20	IJ	29	M	X	X	X		X		X					X		X
21	SJ	24	F		X	X				X					X		X
22	AG	21	M			X	X	X		X	X				X		
23	BJ	28	M			X				X							X
24	ZJ	28	M	X						X					X		X
25	AE	30	M			X				X							X

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A FLAVOBACTERIUM CULTURED FROM THE BLOOD OF A PATIENT WITH MENINGITIS

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Introduction

Meningitis may be caused by several distinct species of bacteria, viruses and protozoa. The initial clinical diagnosis is usually confirmed by chemical and cytological examination of the C.S.F. and the causal pathogen identified by bacteriological and virological techniques. Bacterial meningitis is often caused by *Neisseria meningitidis*, *Haemophilus influenzae* and various streptococcal species. Less common causative organisms belong to the Flavobacterium group. These are Gram-negative, slender, non-motile bacilli having restricted biochemical activities and are often resistant to several antibiotics, including penicillin. Some strains produce a pronounced yellow pigment.

The earliest description of this organism was given by Franklands (1889) who isolated it from deep wells in Kent. However, owing to incompleteness in the original description, one cannot be certain of its exact identity. Thereafter, several authors recorded the isolation of bacteria with characteristics similar to those described above and in circumstances suggesting that they were pathogenic for man. More recently, outbreaks of meningitis in new born infants caused by Flavobacteria were recorded by Vandepitte, Beeckmans and Buttiaux (1958) in the Congo and by Brody, Moore and King (1958) and George, Cochran and Wheeler (1961) in the United States. Cabrera and Davis (1961) put forward evidence to suggest that Flavobacteria usually lead a saprophytic existence but may also colonize

the human nose.

The Flavobacterium genus contains 2 groups designated group IIa, named *Flavobacterium meningosepticum* and group IIb tentatively classified as *Flavobacterium* sp. (King, 1959). Strains in group IIa are often associated with infant meningitis and, unlike members of group IIb which produce a pronounced yellow pigment, show little or no pigmentation. These 2 groups although closely related show some differences in other biochemical reactions which enable laboratory workers to distinguish them (Tatum, 1970).

Clinical features and laboratory investigations

A 5-year old boy was admitted to St. Luke's hospital on the 5th November, 1973 with a history of mild frontal headaches for the previous 2 days. The pain later extended to the occipital region and to the neck. He vomited once, a few hours prior to admission to hospital.

On examination, his general condition was fair. The temperature was 101°F and the pulse rate was 140/min. Neck rigidity was present and Kernig's sign was positive. No other abnormalities were detected.

A diagnosis of meningitis was made and a lumbar puncture performed. The fluid was clear and the C.S.F. pressure was found to be within normal limits. The chemical and cytological examination gave the following result:-

Physical findings: fluid clear and co-

lourless. Globulin test: positive. Proteins: 40 mg/100 ml. Glucose: 44 mg/100 ml. Cells: 30/cu. mm. the great majority of which were polymorphs. Bacteriological examination of the sample was negative both on direct examination and on subsequent culture.

Other investigations included Hb estimation, WBC counts and blood urea levels. All were found to be within normal limits.

The patient was put on Penicillin 2 mega units 8 hourly, Chloramphenicol 125 mg 6 hourly and Sulphadiazine 125 mg 6 hourly. He recovered fairly rapidly and became afebrile on the 3rd day after admission. The CNS signs subsided about this time. He continued to make good progress and was discharged from hospital on the 8th day after admission.

Blood culture was also performed on admission. This consisted in taking 5 ml of blood under aseptic conditions from a suitable vein and inoculating it into a Castaneda bottle. This is simply a medical flat bottle of 100 ml. capacity in which is prepared a double (solid/liquid) medium. Tryptose agar constitutes the solid phase and covers one broad side of the bottle to a depth of about 5 mm. The liquid phase is made up of 35 cc tryptose phosphate broth with an anticoagulant which is added to each bottle after the solid phase has set firmly. The metal cap which has a rubber lining on the inside is perforated by a central hole of about 4 mm in diameter. Blood taken from a patient with a syringe is inoculated directly into the liquid phase of the medium without opening the bottle.

The inoculated blood culture bottle was incubated in an upright position at 37°C and examined daily. The solid medium was subcultured from the liquid phase on alternate days by gently shaking and tilting the bottle so that the liquid medium just covered the solid phase. On the third day after incubation, a yellowish confluent growth was detected. A Gram stain showed a small rod about $1.5\mu \times 0.4\mu$ which was Gram-negative and non-acid-fast. Subcultures from the original blood culture bottle were made onto appropriate media and further tests to enable identification of this bacillus were carried out.

The bacillus was found to be non-motile. It grew well on tryptose agar after 24 hours at 37°C forming smooth circular colonies which showed pronounced yellow pigmentation with a faintly greenish iridescence. The pigment was insoluble in water. No haemolysis was observed on blood agar. Growth on MacConkey's agar was not present at first but occurred later after some subcultures had been done. No growth at all was seen on SS agar. The catalase and oxidase tests were positive. Citrate utilization (Koser's), M.R. and V.P. tests were negative. Urea (Christensen's agar) was not hydrolysed. Indole production was very weak. Gelatin was hydrolysed by the third day. Growth was maximal at 37°C with no growth occurring at all at 5°C. Acid production was negative in liquid carbohydrate nutrient media employing several sugars. To test whether the attack on sugars was of the oxidative or fermentative type, the oxidation-fermentation (O-F) test of Hugh and Leifson (1953) was employed using glucose and sucrose. Acid production from glucose was observed in the open tube by the 3rd day; the result was doubtful in the sealed tube. The test was negative for sucrose in both tubes. On testing the organism for antibiotic sensitivity it was found that it was sensitive to chloramphenicol, moderately sensitive to trimethoprim-sulphamethoxazole and gentamycin and resistant to penicillin, streptomycin, amoxil, tetracycline, polymyxin, and penbritin. The cultural characters and biochemical reactions are summarised in Table 1 and compared with King's groups IIa and IIb.

With these findings we tentatively placed the isolate in the *Flavobacterium* genus and possibly belonging to King's group IIb.

Slide and tube agglutination tests with the patient's serum against a suspension of the cultured organism were negative. Nasal and throat swabs taken later from the patient and his 10-year old sister were negative for *Flavobacterium*.

Discussion

In a blood culture examination we always presume that a growth obtained after incubation is a potential pathogen which is

Characters	<i>Flavobacterium meningosepticum</i> Group IIa	<i>Flavobacterium</i> sp. Group IIb	Isolate referred to in text
Gram stain	negative	negative	negative
Motility	non-motile	non-motile	non-motile
Pigment (yellow)	none or very slight	pronounced	pronounced
Growth on MacConkey's agar	usually positive after several subcultures	usually positive after several subcultures	positive after several subcultures
Growth on SS agar	none	none	none
Catalase	positive	positive	positive
Oxidase	positive	positive	positive
O-F medium unsealed tubes (glucose)	acid some delayed	acid some delayed	acid by the 3rd day
Indole	weakly positive	weakly positive	v. weak positive
Urea hydrolysis	negative	negative	negative
Citrate utilization	negative	negative	negative
Gelatin liquefaction	positive	positive	positive
Pathogenicity	associated with infant meningitis	recovered mainly from adults	recovered from 5-yr old child

Table 1. Comparison of some characters of isolate referred to in the text with those of King's groups IIa and IIb.

causing a bacteraemia or septicaemia in the case concerned. Although blood is taken under strict aseptic precautions, contaminations do at times occur. This was shown by Cameron, Rae and Murphy (1931) who made blood cultures from 100 healthy individuals and obtained positive results in 18 cases. Of the positive blood cultures, 12 were shown to be due to large spore-bearing bacilli and were regarded as contaminants. Some, at least, of the remaining 6 positive blood cul-

tures which included isolations of *Staph. aureus* and of diphtheroids were also dismissed as contaminants. Some cases are clear cut in the sense that it can be safely stated that the organism cultivated from the blood is causing the underlying disease in the patient. Thus, the isolation of *Salmonella typhi* or *Brucella melitensis* from the blood, especially if relevant clinical signs and symptoms are present, is irrefutable evidence that the patient is suf-

fering from the particular disease. At other times it is difficult to state whether an isolate is the cause of a bacteraemia or septicaemia or whether it is a contaminant picked up, say, from the patient's skin during the blood taking procedure. Points to help decide the issue include correlation of a particular positive blood culture with the clinical picture, repeated blood culture examinations and the performance of other supporting bacteriological tests. In the case of culturing *Staph. albus* from the blood, to mention one example, a diagnosis of an infection with this organism should never be made from the result of only one test. A bacteraemia due to this organism can be safely assumed following repeated isolation.

In the case under discussion, one can argue that the cause of the meningitis may have been the Flavobacterium which was cultured from the blood but for some reason not from the C.S.F. In favour of this statement is the fact that this organism is now recognised as being one of the causes of meningitis and culturing it from the blood is at least evidence of its presence in the tissues. It is not inconceivable that it may have found its way also into the C.S.F. Other possibilities include the proposition that the cause of the meningitis may have been some other type of organism and the positive blood culture was a separate, unrelated event. This however seems unlikely as it is difficult, although not impossible, to imagine a double pathology of this nature. Lastly, the Flavobacterium may have been picked up as a contaminant from the patient's skin or from some other source during the blood culture procedure. In favour of this argument is the mild nature of the disease in this case (although this may have been due to early diagnosis and prompt successful treatment), the absence of leucocytosis and the fact that the patient's serum did not contain antibodies against the organism supposedly cultured from his blood.

As an additional note it may be mentioned that this child comes from a family of 4 children including himself. One brother died soon after birth. The other 2

siblings were both admitted to hospital in May 1973 with meningeal signs. One, a brother of 11 years was diagnosed as 'Fever' accompanied by meningeal irritation but no C.S.F. or blood culture examinations were carried out. The illness was mild and the patient was discharged from hospital after a few days stay. The other, a 10-year old sister was admitted to hospital with severe meningitis having a total of 13,300 cells/cu. mm in the C.S.F., the majority being polymorphs. A coagulase negative staphylococcus was cultured from the spinal fluid but this was thought to be a contaminant. The patient eventually recovered. Although a definite correlation between these three cases of 'meningeal involvement' cannot be proved, it is peculiar that 3 siblings in the same family should be affected by a common disease within a span of 6 months.

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DIVERTICULA OF THE RIGHT COLON: Report of 8 Cases

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Summary

Diverticula limited to the caecum and ascending colon occur infrequently. In a survey of 5094 barium studies and 80 post-mortems there were 8 cases with diverticula limited to the right colon. The cases are presented and the relevant literature reviewed.

Introduction

Diverticula of the caecum and ascending colon are relatively infrequent and are often solitary. Several cases of right-sided diverticula have been described since the first case involving the caecum was reported by Potier (1912). Most are cases of caecal diverticula and only 33 cases of diverticula of the ascending colon have been found reported in the literature (Table 1). However, many of the reported cases of right-sided diverticula, although anatomically involving the ascending colon above the level of the ileocaecal valve are referred to as diverticula of the caecum (Table 2).

In a survey on the incidence of diverticular disease in Malta based on radiology and necropsy studies, 8 cases of diverticula limited to the right colon were found from a total of 5094 barium studies and 80 post-mortem investigations. Three cases had solitary diverticula of the caecum, three a solitary diverticulum of the ascending colon and 2 multiple diverticula of the ascending colon. Only 1 case was associated with clinical symptoms.

Case Reports

Case 1. — A 73 year old female presented with fairly severe painless melaena in 1959. Radiological investigations, lapa-

TABLE 1

Reported Cases of Diverticula Limited to the Ascending Colon	
Author	Age and Sex of patient
Geist	(1933) F 48
Stetten	(1936) F 35
Visconti	(1936) M 10
Bearse	(1939) F 19
Carroll	(1943) F 56
Fairbank and Rob	(1947) F 50 M 38
Shaw and Seigler	(1950) F 42
Bosworth and Landau	(1951) F 56
Reid	(1951) F 70
Vaughn and Narsete	(1953) M 50 F 67
Inglis and Hampson	(1959) F 55 M 54 F 36 F 25 F 37
Daniels and Wood	(1960) M 39
Lloyd Williams	(1960) M 53 F 53
Miangolarra	(1961) M 55 M 47 M 57 M 59 F 77 M 68 M 56 M 58 F 54 F 73
Wagner and Zollinger	(1961) F 41 F 41 F 60

TABLE 2

Reported Cases of Diverticula Limited to Ascending Colon Referred to as Caecal

Author	age and sex of patient
Leonardo	(1930) F 63
Bennett-Jones	(1937) F 28
Baker and Carlile	(1943) M 34
Schnug	(1943) M 30
Levine	(1939) M 31
Collins	(1950) M 68
	F 26
Costin and Gaston	(1950) F 67
Kron and Spencer	(1950) F 28
Lauridsen and Ross	(1952) M 29
	M 31
Barb and Pearl	(1956) M 30
Parker and Serjeant	(1957) M 33
Anscombe <i>et al.</i>	(1967) F 42
	F 57

rotomy and sigmoidoscopy were all initially negative. The episodes of melaena recurred at variable intervals and a solitary caecal diverticulum situated on the medial aspect of the caecum was first detected by barium enema in 1961. The patient died of cerebral thrombosis in 1970.

Case 2. — A 49 year old male was referred for investigation of loss of weight and loss of appetite in 1972. A barium meal showed a duodenal ulcer and multiple diverticula in the proximal half of the ascending colon; no other diverticula were visible in other regions of the colon. Treatment for duodenal ulcer led to marked clinical improvement.

Case 3. — A 51 year old male died in a traffic accident. At post-mortem a solitary diverticulum was found on the posterior aspect of the caecum, between the taenia mesocolica and the taenia omentalis. Serial histological sections showed this diverticulum to be of the false type.

Case 4. — A 73 year old male presented in 1973 with progressively deepening jaundice and marked loss of weight of recent onset. He died 4 days after admission. A post-mortem examination revealed carcinoma of the ampulla of Vater. A

solitary diverticulum was present on the antero-medial aspect of the ascending colon, between the taenia mesocolica and the taenia libera, about 4 cm above the ileocaecal valve. Serial histological examination showed this diverticulum to be of the false type.

Case 5. — An 85 year old male, presenting with retention of urine in 1973 showed rapid deterioration in his condition. Post-mortem examination revealed bronchopneumonia and prostatic hyperplasia and cystitis. 5 diverticula were found in the lower ascending colon, the most proximal diverticulum being 3 cm above the ileocaecal valve. 4 diverticula were situated medially between the taenia libera and the taenia mesocolica and 1 diverticulum was situated between the taenia mesocolica and the taenia omentalis. No other diverticula were found in the other regions of the colon. Serial histological examination of 1 of the diverticula showed it to be of the false type.

Case 6. — A 57 year old male who died suddenly, was found at post-mortem to have had myocardial infarction and pulmonary oedema. A solitary caecal diverticulum was present at the level of, and just anterior to, the ileocaecal valve between the taenia libera and the taenia mesocolica. Serial histological examination showed it to be of the false type.

Case 7. A 68 year old female who died suddenly was found at post-mortem examination to have had thrombosis and coronary insufficiency. A solitary diverticulum was present in the ascending colon, 17 cm above the ileocaecal valve, between the taenia libera and the taenia mesocolica.

Case 8. — A 62 year old male died suddenly and postmortem examination revealed cerebral oedema and ventricular failure. A solitary large inflamed diverticulum was present in the ascending colon, 14 cm above the ileocaecal valve, between the taenia libera and the taenia mesocolica.

Discussion

Diverticula of the right colon are usually asymptomatic unless they give rise

TABLE 3
Percentage Incidence of Diverticula Limited to Right Colon

Author	No. of Patients with Diverticula	Caecum	Ascending Colon	Right Colon	Remarks
Ochsner and Bargaen	(1935) 208	—	—	3	Clinical series
Willard and Bockus	(1936) 72	—	—	5.5	Clinical series
Mayo and Blunt	(1950) 202	1	0	—	Surgical series
Slack	(1962) 26	0	0	0	Postmortem series
Molteni <i>et al.</i>	(1967) 154	—	—	4	X-rays series
Parks	(1968) 111	0	2.7	—	Postmortem series
Parks	(1969) 461	0	0	—	Clinical series
Tagart	(1969) 98	0	1	1	Clinical series
Painter	(1972) 70	0	1.4	—	Clinical series
Present Survey	257	0.4	0.4	—	X-rays series
	20	10	20	—	Postmortem series

to complications. Asymptomatic diverticula can only be diagnosed radiologically or at post-mortem: radiology, however, tends to underestimate the incidence of this condition and may give a misleading picture of the extent of the disease. The incidence of diverticula limited to the right colon given by various authors varies (Table 3).

There is general agreement that right-sided diverticular disease occurs at an earlier age than the more common left-sided form and it is equally distributed between the sexes. The average age incidence given by various authors for right-sided diverticula treated surgically ranges between 39 and 41 years (Schnug, 1943; Anderson, 1947; Byrne *et al.*, 1950; Lauridsen and Ross, 1952; Wagner and Zollinger, 1961). In contrast, the average age in a series of 144 patients undergoing surgery for diverticular disease of the sigmoid colon was 53.6 years (Pemberton *et al.*, 1947), while that of patients with all types of diverticular disease was 54 years (Mayo and Blunt, 1950). In our necropsy series

the average age of patients with diverticular disease of all types was 66.1 years and that of patients with diverticular disease of the right colon was 66.6 years, while our barium study survey showed that these 2 average age incidences were similar. Thus, in both surveys, the average age of patients with right-sided diverticula was not significantly different from that of patients with all types of diverticular disease.

Diverticula of the caecum and ascending colon are regarded by most investigators as being usually of the solitary type (Geist, 1933). Nicholas *et al.* (1962) found that 80 per cent of the caecal diverticula in their series were solitary. Burgess (1940) however, suggested that cases of apparent solitary caecal diverticulitis may be accompanied by adjacent non-inflamed diverticula and that a careful barium enema study should be made to rule out other diverticula. Others (Busch and Friedfield, 1942; Case and Shea, 1953) claim that caecal diverticula occur more often as part of generalised diverticular

disease. Six of our cases were solitary and 2 multiple. Many distinguish solitary diverticulum of the right colon from widespread diverticular disease with involvement of the caecum or ascending colon (Jonas, 1940; Kazmierski, 1950; Barb and Pearl, 1956). Perry and Morson (1971) point out that although solitary right-sided diverticulum is a well recognised entity, multiple diverticula involving the caecum and/or ascending colon and limited to these regions are extremely rare in persons of Caucasian origin. This condition, however, seems to be the more common type of diverticular disease in certain Oriental races. In both our radiology and necropsy series, diverticular disease limited to the right colon was significantly less common than left-sided diverticular disease and the diverticula were usually solitary, thus conforming to the usual pattern of distribution.

The major complications which may arise from diverticula of the right colon are acute and chronic inflammation and gastrointestinal bleeding. Acute inflammation is the commonest complication, the condition closely mimicking acute appendicitis if the diverticulum is in the caecum or lower ascending colon, or cholecystitis if the diverticulum is in the upper ascending colon. The correct diagnosis is in fact rarely made preoperatively, but is usually suspected if a patient has had a previous appendectomy.

Diverticula of the right colon are uncommon. They rarely give rise to clinical symptoms but should be considered and excluded in the differential diagnosis of doubtful lesions of the right colon.

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SEVERANCE OF THE OPTIC NERVE AT THE OPTIC FORAMEN CAUSED BY LEAD PELLETS

A report on two cases

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SUMMARY

This is a report on two cases of sudden and complete loss of sight, following upon a laceration of the optic nerve near the optic foramen by means of a single lead pellet. (Such cases are considered to be of interest because they are uncommon and because of the almost identical clinical findings).

Injury to the optic nerve may be indirect or direct. In indirect injury, the nerve damage may be the result of the displacement between the optic nerve and the dural sheath, where it is attached to the bone that is in the bony canal. This mechanism may explain (1) the optic nerve atrophy following a head injury most often subsequent to a fall from a bicycle and (2) the optic atrophy which appears after an eyelid injury in children. The optic nerve may also be involved in a fracture of the orbital roof, implicating the superior orbital fissure and the optic canal.

It is well known that radiographic evidence of damage to the orbital roof and apex of the orbit is often difficult because of the complicated architecture of the bones and their obscuration by dense surroundings. Injury to the optic nerve was found in 30 cases out of 750 (4%) basal fractures (Birsch Hirschfeld 1930).

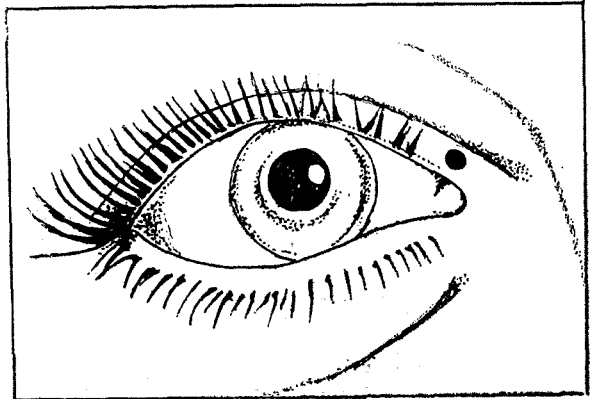


Fig. 1.

The optic nerve may suffer direct injury in penetrating wounds of the orbit by a great variety of sharp objects or by missiles. If the nerve is severed in front of the entrance of the retinal vessels into the nerve, examination of the fundi shows a picture resembling that of an embolism of the central retinal artery. When the nerve is cut behind the entry of the retinal vessels, optic atrophy appears within 3 to 6 weeks.

The report on two cases of sudden permanent loss of vision following upon injury of the optic nerve at the optic foramen by means of a lead pellet from a shot gun is

of interest because it is uncommon. The almost identical clinical findings provide another source of interest.

G.F. aged 41 years, early in the morning of 19.4.72 was struck in the right eye by a lead pellet. He noticed a sudden and complete loss of sight.

The upper lid showed a small perforating wound near the inner canthus. There was total ophthalmoplegia, ptosis and some degree of proptosis. Light perception was absent. There was no direct pupillary reflex. Reflex pupillary reaction was present (superior sphenoidal fissure syndrome).

Fundus examination showed a large subretinal haemorrhage on the middle nasal quadrant. Tension of the eyeball was normal. Radiological examination revealed a lead pellet lodged very near to the optic foramen. There was no evidence of bony orbital damage (fig. 2).

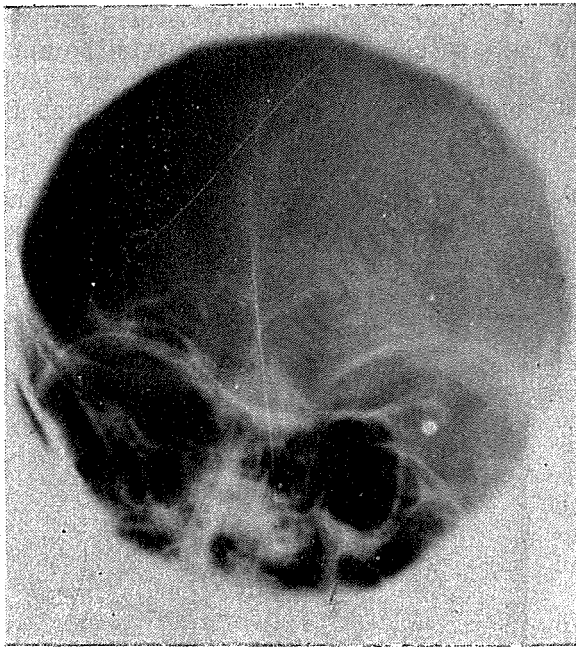


Fig. 2.

A gradual restoration of the ocular motility took place during a period of three weeks. However, the pupil remained fixed and dilated. Reflex pupillary reaction was present all the time. There was no return of light perception.

Examinations of the fundus carried

out on the 20.11.73 showed a large atrophic choroidal patch along with extensive pigmentary disturbance at the level of the 30c meridian. There was complete optic atrophy.

An X-Ray examination showed that the lead pellet remained in the same site opposite the optic foramen.



Fig. 3.

Case no. 2: C.C. aged 27, on 26.10.73 was hit by a lead pellet in the right upper lid. He complained of sudden and complete loss of vision.

Examination showed a small perforating wound of the upper lid near the inner canthus. There was a moderate degree of ptosis. Otherwise, the movements of the ocular muscles were normal. The direct pupillary light reflex was completely absent. The consensual reflex was present. The tension of the eyeball was normal. Fundus examination showed a yellowish line in the choroid running in an antero-posterior direction at the level of the 30c meridian. Radiological examination showed a lead pellet very near the optic foramen (fig. 3). There was no movement of the foreign body on up and down views.

Examined after a month, the optic disc is already showing a marked pallor. There was no return of light perception.

The changes in the fundi, seen in these two cases, must have been caused either by a tangential grazing of the sclera

by the pellet, or by the concussion waves travelling through the semi-fluid orbital contents.

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THE ELECTROCAUTERY IN THE TREATMENT OF CICATRICIAL ENTROPION AND TRICHIASIS

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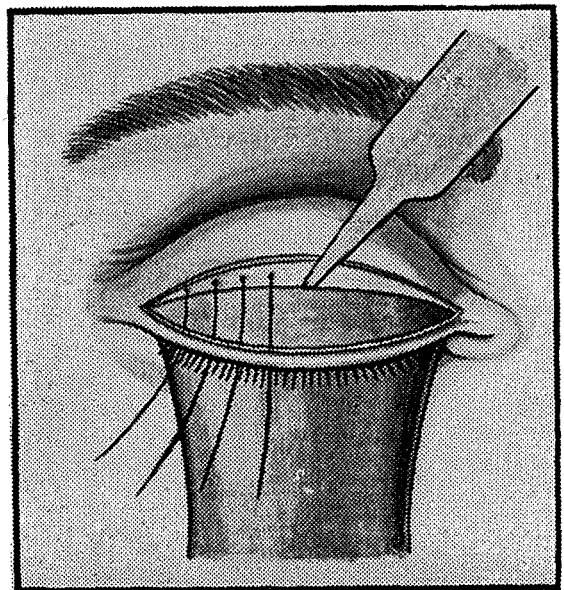
Summary

A new technique is described, where in cases of cicatricial entropion of the upper lid, the electrocautery is used instead of the scalpel to excise a wedge-shaped band from the deformed tarsus in order to restore to a normal position the inturned lid border.

The most common cause of cicatricial Entropion and Trichiasis, generally of the upper lid, is long standing Trachoma. Both the conjunctiva and the tarsal plate share in the disease process. The end result, deformity of the lid and the turning in of the lid border, is caused by conjunctival scarring and softening of the tarsus. In addition, the follicles of the cilia are diseased. Instead of growing forward as they normally do, the cilia slant backwards through the tarsal border and become curved and distorted (Trichiasis). The pernicious effect of these changes on the cornea need not be discussed.

The aim of surgical treatment is to prevent corneal damage, by restoring to a normal position the inwardly rotated lid margin and getting rid of the Trichiasis. A combination of an entropion and Trichiasis operation is necessary. (Tarsoplasty). The operation should relieve the entropion permanently with the least amount of deformity. An operation which has given consistently good results is that carried out according to Snellen's technique. The

main steps are the following: — A wedge shaped band of tissue is excised from the thickened tarsus, along its whole length. — Three or more double armed mattress silk sutures are introduced into the upper margin of the pared area in the tarsal plate. These are then passed through the lower margin of the same area and through the lid margins to emerge just above the line of the cilia. The two ends of each suture are then bound on a small glass bead.



(Fig. 1)

In this way, the lower part of the tarsal plate is bent forward on itself, thus everting the lid margin along with the line of distorted cilia.

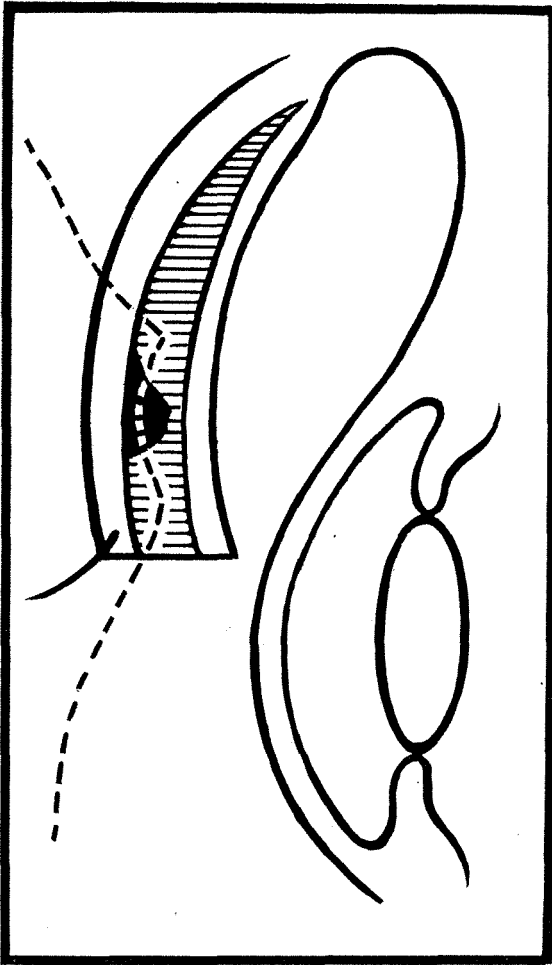


Fig. 2.

It is here suggested that instead of using a Bard-Parker knife to carve out the wedge of tissue from the thickened tarsus, very often not a simple and easy step, one might use the electrocautery.

The point of the latter, heated to a bright red glow, is applied to the surface of the tarsus until a groove of the required depth and width is obtained. A small curette is used to clear the burnt-out debris and clean the groove. Care is taken not to perforate the tarsus and conjunctiva. The sutures are subsequently introduced as already described.

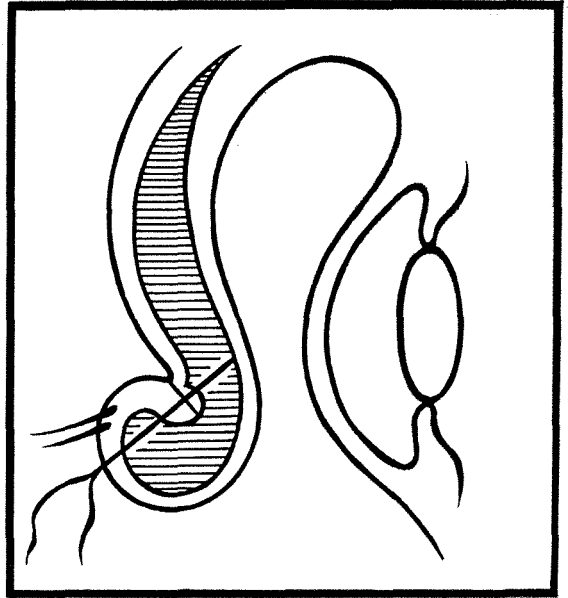


Fig. 3.

This technique is considered to be simpler and easier to carry out than paring the deformed tarsus by means of a scalpel. Moreover, the induced fibrous tissue contraction after the application of the electrocautery, is another factor in favour of this technique.



Just after the operation.



Ten days after Sutures have been removed

Eight cases were operated upon in this way. The results were satisfactory. In one case, a good result was obtained even without the use of sutures.

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BLIND LOOP SYNDROME — EXTENSIVE DIVERTICULOSIS OF THE SMALL INTESTINE

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Mr. C.T., aged 53 years, presented himself at Surgical Out Patients on 1.8.73 with a history of progressive weight loss and ill-health over the past three years. Despite a reasonably good appetite the weight loss and asthenia had been more marked in the past six months. During the past fortnight he had developed anorexia, diarrhoea (approximately two watery stools daily) and occasional hypogastric pain. He had vomited three times but there was no haematemesis. However, on five occasions, during the past three years, he had passed stools strongly suggestive of melaena. There was nothing else relevant in the past medical history. He smoked thirty cigarettes per day.

On examination, the most salient feature was the marked asthenia and pallor of the patient. There was no peripheral oedema. The cardio-vascular and respiratory systems were normal. There was nothing obviously abnormal to be seen or felt in the abdomen and in the rectum.

The patient was admitted to hospital where the following investigations were done:

Hb. 11.8 (80%). W.B.C. 17,400 per c.mm (neutrophils 76%, eosinophils 1%, basophils 1%, Lymphocytes 15%, monocytes 7%).

The blood film showed neutrophilia with normal R.B.C.s and platelets.

E.S.R. 110 mm in the first hour.

Urinalysis within normal limits.

Blood urea 26mg.‰.

No occult blood present in the stools.

Examination for agglutinins negative to *Salmonella* and *Brucella*.

Total serum proteins 6.5 gm. Serum albumen 2.7gm. The electrophoretogram showed marked reduction in albumen with increase in α_1 and α_2 and a slight relative increase in γ -globulins.

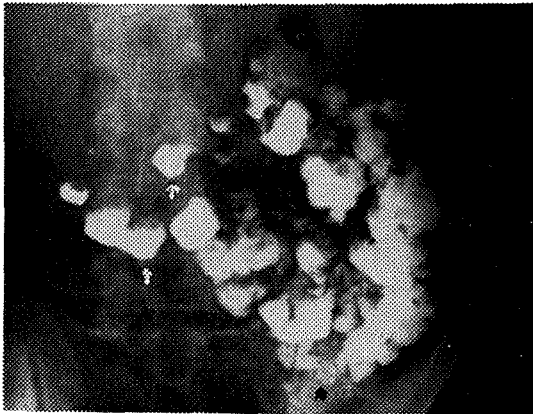


Figure 1

Diverticula of the small bowel with fluid levels.

X-ray of the chest showed the heart to be normal with no evidence of active lung disease.

Barium meal and follow through: "no lesion seen in the oesophagus, stomach or duodenum. The follow through examination shows a picture of malabsorption in the small intestine. There are some fluid levels probably due to mild ileus".

The clinical course was progressively downwards, the patient becoming weaker and more emaciated. At this stage the clinical impression was that the patient was suffering from intra-abdominal malignancy, most likely carcinoma of the pancreas.

On 17.8.73 he developed deep vein thrombosis in the left lower limb for which he was treated with heparin and Warfarin. When this improved it was decided to proceed to a laparotomy.

On 30.8.73 the writer carried out a laparotomy under general anaesthesia. On opening the peritoneal cavity the abdominal contents, including the liver, were

found to be enveloped in a continuous (probably congenital) fibrous sheath. In addition, the small bowel was closely adherent so that the loops could only be separated from each other with difficulty thus making detailed examination of the whole of the small bowel virtually impossible. When the proximal one third of the small bowel was gradually unravelled it was seen to contain multiple diverticula of various sizes, all situated on the mesenteric border. Some of the bigger diverticula had a larger circumference than that of the small bowel itself. There was hardly any length of bowel which was free but one area, about 8 in. away from the duodeno-jejunal flexure, was particularly involved. This bit was resected and the abdomen was closed in layers.

Post-operatively, the patient was treated with intra-venous fluids, including aminosol, and neomycin. However, his condition gradually deteriorated. On 8.9.73 he developed pulmonary oedema and a faecal fistula (with discharge of fluid faeces from the wound). He succumbed the next day.



Figure 2

Lateral view of same.

The histology report was "diverticula of small intestine".

Comment.

The present case illustrates an unusual condition of malabsorption due to multiple diverticula of the small intestine. The condition corresponds to the syn-

drome which develops in association with a blind loop of the intestine.

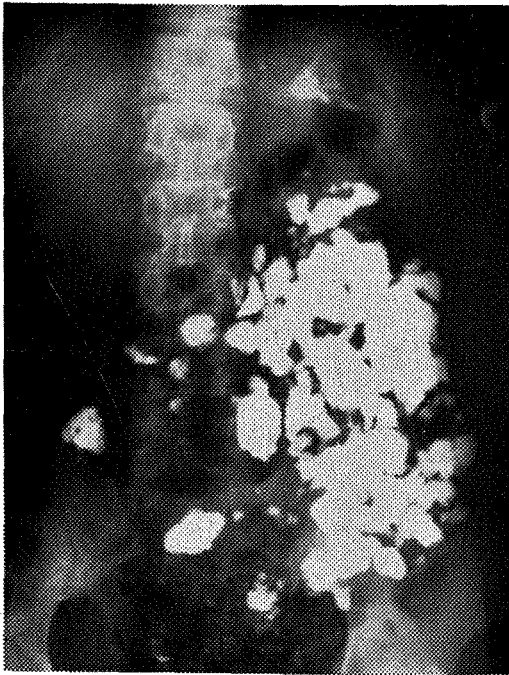


Figure 3
Flocculation of barium in small intestine suggestive of malabsorption.

Diverticula of the small intestine, other than Meckel's diverticulum, may be single and these are usually congenital in origin, or multiple and usually develop in later life. The solitary congenital ones are usually found on the anti-mesenteric border of the gut whereas the more common acquired diverticula are found in proximity to the mesenteric attachment. The duodeno-jejunal junction is the most common site for a diverticulum to be found at. They are more common in the upper part of the small intestine than in the ileum.

The incidence of diverticulosis of the small intestine has been variously reported to range from 0.57% (Edwards, 1936) by post-mortem studies to 1.25% (Cooke *et al.* 1963) by X-ray studies.

In 60% of cases the diverticula are discovered accidentally by radiological examination or laparotomy, and there are no symptoms which can be attributed to them, but in the remaining cases they

may give rise to genuine, and sometimes disabling, abdominal and other symptoms, as in the present case.

In a proportion of cases there are mild dyspeptic symptoms and wind discomfort, borborygmi and a bloated sensation which tends to come on some hours after food. Vomiting can be a troublesome feature of multiple diverticula. Intermittent attacks of diarrhoea may occur or the patient may present with continuing diarrhoea, steatorrhoea and macrocytic anaemia associated with the "malabsorption syndrome" (Badenoch *et al.*, 1955, Irwin, 1965). Both the anaemia and the steatorrhoea are due to the abnormal bacterial activity in the small intestine due to the constant seeding of the intestine with bacteria from the stagnant diverticula. The bacteria compete with the body for the available vitamin B₁₂ and so lead to a macrocytic anaemia. The steatorrhoea is probably due to malabsorption of dietary fat either due to the lack of unsplit bile-salts (due to interference with bile-salt metabolism by the proliferating bacteria) (Hoffman, 1965) or to a direct toxic action of free bile-acids on the mucosal cells (Dawson *et al.*, 1960).

Advanced cases of malnutrition due to a blind loop effect are not often seen. The present case, however, did present in this way and had a fatal outcome.

Diagnosis of the diverticula of the small intestine depends mainly on barium studies. The features to look for are:

- (1) presence of diverticula (single or multiple);
- (2) flocculation of barium (suggestive of malabsorption);
- (3) presence of fluid levels in the diverticula.

Post-laparotomy review of the X-rays in the present case in fact revealed all these features (see Fig. 1,2,3).

Treatment is directed towards:

- (a) *Correction of Malnutrition:*
 - (1) High calorie, low fat diet;
 - (2) vitamin B₁₂, iron, folic acid, vitamin supplements.
- (b) *Symptomatic treatment* of diarrhoea and steatorrhoea. A low fat-free diet and codeine phosphate help.

(c) *Treatment of the primary cause:*

- (1) sterilisation of the intestine by antibiotics, e.g. neomycin reduces bacterial counts and abolishes steatorrhea.
- (2) Resection of small bowel may be necessary where multiple diverticula are present.

A short comment on the fatal outcome of this case is pertinent. Undoubtedly the marked debility and malnutrition of this patient was the most important factor. The faecal fistula which developed towards the end was almost certainly due to poor wound healing. If a pre-operative diagnosis of this benign condition had been made it is possible that a less pessimistic view might have been taken and a more vigorous attempt made to boost up the patient's general condition by intravenous alimentation before operation. The

present case is therefore presented in the hope that it may focus attention on the possibility of this presentation for future reference.

Acknowledgements:

My thanks are due to Mr. R. Attard, under whose care the patient was admitted, for permission to publish the case. Dr. G. Sant reported on and reviewed the X-rays.

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THE VALUE OF X-RAY CHEST SCREENING

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Summary

Two cases of serious thoracic disease were discovered on routine Chest X-Ray screening in 150 schoolboys. Both were symptom free and both required thoracic surgery.

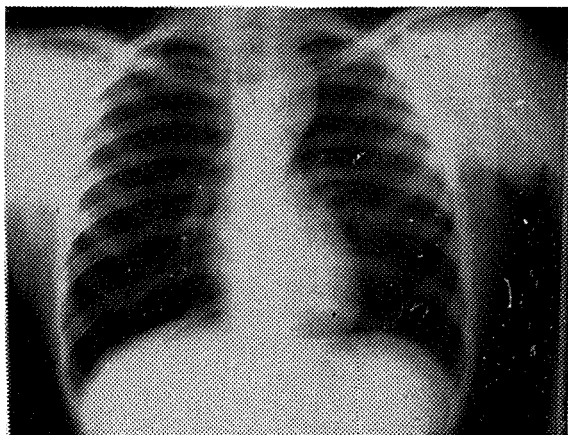
The purpose of this paper is to emphasize and illustrate a well known fact — the value of screening in the community. The example used is Chest X-Ray Screening.

In May 1972, a member of the cater-

ing staff at St. Edward's College, Cottonera, was found to be suffering from tuberculosis. Because of this, public health measures were taken and all the students and staff were screened for evidence of the infection. 285 students attended the school at the time. All students above 10 were Chest X-rayed. Students under 10 were Heaf tested and those who were Heaf positive were further investigated. A total of 150 students were Chest X-rayed. No cases of tuberculosis were found, nor were there any suggestive signs. However, two cases of serious thoracic disease were detected, one student being found to be suffering from ganglioneuroma, the other from coarctation of the aorta.

Case 1 M.G. aged 12

This boy was found to have an upper mediastinal shadow. The Chest X-Ray together with a Barium swallow and screening were reported upon as follows: "There is an oval paramediastinal shadow on the left side of the upper mediastinum. This is situated posteriorly near the spine. It has no connection with the oesophagus and does not pulsate. neurofibroma." (Photograph 1).



X-ray Chest — showing abnormal superior mediastinal shadow.

The patient was symptom free and no abnormal physical signs were detected. His past and family history were irrelevant. The following investigations were carried out and all were normal:— Hb, W.B.C. & film; E.S.R.; Urinalysis; Heaf Test; Casoni Test.

The patient was referred to the Chest Unit at the Brompton Hospital, London, where he was seen jointly by Dr. Michael Joseph and Mr. S.C. Lennox. Tomograms were taken and these confirmed a posteriorly-sited tumour. There was no calcification, no bone deformity nor any bony abnormality adjacent to it. This evidence was in keeping with the diagnosis of a ganglioneuroma.

Dr. Joseph's and Mr. Lennox's views were that this tumour, which was very likely to be benign, should be removed. According to them, removal had the double advantage that the exact nature would be confirmed and detailed follow-

up and its attendant anxieties and uncertainties would be avoided.

The tumour was removed on the 15th November 1972. At left lateral thoracotomy through the upper border of the fifth rib, a large tumour measuring approximately 10 cms X 6 cms X 2 cms was found, lying on the aorta and subclavian artery. It was attached to the chest wall, probably by an intercostal nerve. The tumour was encapsulated and there was no evidence of infiltration. The parietal pleura was opened and the tumour removed by dissection from the chest wall and aorta. Following operation, the patient made an entirely uneventful recovery.

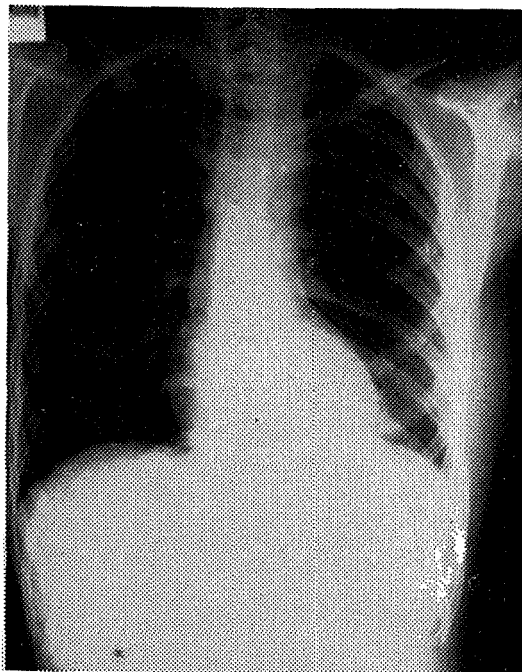
Histology Report:

The specimen was an ovoid tumour with a smooth capsule. The cut surface was homogenous, white and glistening. Microscopically, it was connective tissue with ganglion cells distributed throughout. The appearances were benign: a ganglioneuroma.

Case 2 J.M. aged 14

This boy on routine Chest X-Ray was found to have rib notching. (Photograph 2). He was completely symptom free. Physical examination showed a number of abnormal physical signs diagnostic of coarctation of the aorta.

- a) Prominent carotid and suprasternal pulsations;
- b) Visible, easily palpable pulsations over ribs posteriorly;
- c) BP 150/100 both arms, supine and erect;
- d) Femoral arteries not palpable;
- e) BP in lower limbs not recordable;
- f) Apex beat — foreful, heaving in type and localised, indicating left ventricular hypertrophy;
- g) Grade 3/6 systolic murmur heard along the left sternal edge radiating towards aortic and mitral areas. This murmur was heard posteriorly as well. A systolic ejection click was audible over the aortic area.



X-Ray Chest showing rib notching.

The E.C.G. confirmed left ventricular hypertrophy. X-Ray chest showed: a) notching of ribs; b) left ventricular hypertrophy.

The general condition of the lad was good. Weight — 6 stones. Height — 5 ft. He was well built for his age, rather tall. There were no signs of cardiac insufficiency. This boy was completely symptom free without any history of epistaxis, headaches or claudication. He was one of the best athletes and footballers at his college, and a week or so before the X-Ray screening, he took part in several events in the school's annual athletic meeting.

The patient was referred to St. Mary's Hospital, London, where he was further assessed by Dr. E. Besterman, and Mr. L. Bromley.

At operation, on the 7th December, 1972, Mr. L. Bromley found a coarctation in the aortic isthmus with long segment narrowing. Excision with grafting was required because of the long segment narrowing; the coarcted segment was excised and the gap bridged by a Dacron graft 14 mm. in diameter and 40 mm. in length.

The operation was far from straight forward. Post-operatively, there was still an insufficient flow into the left subclavian artery and it was decided to re-open the chest. Exploration showed a congenital narrowing of the left common carotid, left subclavian artery segment, but no second coarctation. This segment was enlarged by a further patch angioplasty.

The chest was opened again for the third time six hours post-operatively because of the development of a haemothorax — this was evacuated at operation. No definite bleeding point could be isolated, the graft itself being dry and it was thought that the bleeding was most likely to have come from the chest wall.

Following return to the Recovery Room, there appeared to be significant improvement in the peripheral pulses in the left arm. For a few days post-operatively, he required treatment for hypertension. Moreover, he developed the post-pericardiotomy syndrome with pericarditis and fever, but by the 21st December he was well enough to return to Malta.

He remained well since then, he is now normotensive, with good circulation to both lower limbs and left upper limb.

I would like to give credit and thanks to Drs. A. Lanfranco and F. Zammit for their service in the screening required and detection of the abnormalities. My thanks are also due to Dr. T.J. Agius-Ferrante and to Dr. V. Captur for their help in the assessment of these cases.

ALBINISM — A CASE REPORT

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Albinism means the absence of cutaneous pigments. This is a rare hereditary disorder of the skin found in all races. The basic defect is an inherent deficiency of the enzyme tyrosinase usually found in melanocytes. Albinism can be total or partial. The frequency of total albinism varies in different countries, being common in small communities, where there is a greater likelihood of intermarriage. In certain parts of the U.S.A. the incidence is about 1 in 20,000 whilst in France it is 1 in 100,000. The occurrence of total albinism in Malta, in spite of the smallness of the country, is probably even rarer. A case of total albinism in a Maltese child is here reported.

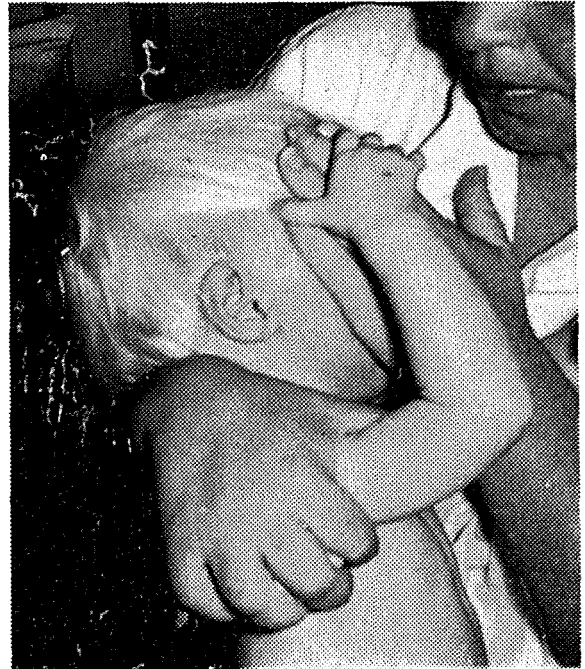
Case Report

Baby M.C. is the first child of healthy unrelated parents. She was born on the 16th May 1972 after a full term normal pregnancy. Delivery was normal. Her birth weight was 3 kg.

At birth, features of total albinism were present. She is now 18 months old, and her health has been quite satisfactory except for gastroenteritis at the age of 15 months, for which she required hospitalisation. Her mental development has been quite normal for her age, but her weight and height are in the 10th percentile range.

Photograph 1 shows some of the features of this child's pigment abnormality. Her skin is extremely white which can be seen by contrast with the normally pigmented skin of the nurse holding her. Her hair is fine, silky and whitish. Her eyebrows and eyelashes are also white.

She has gross photophobia, and nystagmus. In sunlight or bright artificial light, her eyes are kept tightly closed. Indoors,



Photograph 1.

provided the light is not too bright, her eyes are open, showing bright red pupils. Because of this photophobia, and the harmful effect of sunlight on the unprotected unpigmented skin, the child is never taken out in the sunlight and is kept indoors most of the time. Her parents are Maltese, in their middle twenties, quite healthy, both having dark skin.

There is a family history of total albinism. The child's father has two cousins who are albinos. They are both females (Photographs 2 and 3) born and living in Australia of Maltese unrelated parents. These children are seen in a family group photograph. The father and mother and three siblings have normal coloured hair and skin. These photographs were

taken 12 years ago. Since that time these two girls have got married and now have two normal children each. These children are first cousins of the child's father, the respective fathers being brothers. The child's paternal grandfather had four brothers and seven sisters. Except one, they are all married and between them they had thirty children and up to now thirty-five grandchildren. Apart from the three members mentioned in this case report, the others all have normal pigmentation of hair and skin. There are no partial albinos.



Photograph 2.

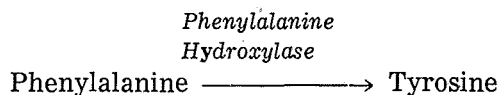
Discussion

Pathology — Albinism is the total or partial absence of melanin in the affected parts of the body. The pigment-forming cells of the skin, the melanocytes are situated in the basal layer of the skin (Deutsch & Mexon — 1957). Melanocytes are also present in the eyes, (uveal tract and retinal pigment epithelium), C.N.S. (leptomeninges) and other sites such as mucosae, orbits and mesentery. Melanocytes are embryologically derived from the neural crest.

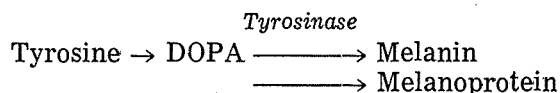
Melanocytes synthesise the copper-containing enzyme tyrosinase, a very important enzyme which catalyses the oxidation of tyrosine to melanin.

Tyrosine is derived by hydroxylation of the essential amino acid phenylalanine.

The metabolism of phenylalanine can be represented as follows:—



The important enzyme tyrosinase, synthesised by the melanocytes then oxidises tyrosine through D O P A ↓ to melanin.



What happens in Albinism? The Albinos has the normal number of pigment-forming cells (melanocytes). But, there is an inherent defect in the enzyme tyrosinase, the oxidation of tyrosine through D O P A to melanin does not take place, and so the cells do not form melanin. This metabolic abnormality may affect all the melanocytes of the body or only those of the eye or the eye and skin.

Clinical Types—Albinism exists in 2 forms (Turpin 1941).

a) *Total Albinism*:— Oculocutaneous, characterised by unpigmented skin, hair, eyebrows, eyelashes and eyes, as in the case presented. There is a hypopigmented fundus oculi, translucent irises with diminished visual acuity, light intolerance and nystagmus. There is a tendency to malignancy in exposed areas of the skin (De Smeth 1956). This has been reported in tropical areas. Precancerous areas have been reported. These are irregular blotches of freckle-like pigmentation which may develop in areas exposed to light. Total Albinism is inherited via an autosomal recessive gene (Whitkop C.J. — 1970).

b) *Partial Albinism*:— Is more common. Here the hair is yellow or light brown. Errors of refraction, photophobia and nystagmus are common. The iris is light blue or pink. The partial form is often transmitted by a dominant gene, but in ocular albinisms where ocular finding only are present the inheritance is sex-linked recessive. Most albinos are of small stature and fertility and expectation of life are reduced. Mental retardation is sometimes associated.



Photograph 3.

Management of these Children — The most important problem in the management of these children is the protection of the unpigmented skin and eyes against the harmful effects of sunlight. The skin is unable to tan and so it is subject to sunburn. Direct sunlight has to be avoided at all costs especially so in summer, otherwise these children easily get severe burns. In the hot summer months even when they stay in the shade, these children are prone to burns from ultraviolet sunrays. So light screens like a 5% solution of para-amino benzoic acid in spirit should be used. This is an effective and cosmetically acceptable preparation. Besides, long-sleeved garments and head wear are advised to decrease as much as possible the skin areas exposed. Tinted glasses are advisable from an early age to protect the unpigmented iris and retina from the damaging effect of the sun.

Prognosis—In temperate climates the prognosis for the albino is good. The main disabilities are the visual defects and the susceptibility to sunburns. Constant supervision by physician and ophthalmologist are necessary. As happened in the case reported these children can marry and have normally pigmented children.

As a final comment one can add that albinism is one of a group of diseases known as hereditary hypomelanoses. It is due to defective biosynthesis of tyrosinase. There are other forms of hypomelanoses where the cause is different.

Hypomelanoses can be due to (i) abnormalities in the morphology (or absence of) the melanocyte as in—

Vitiligo

Piebaldism and white forelock

Waardenburg's syndrome, where there is premature greying of the hair associated with eye changes and congenital nerve deafness.

or to (2) Defective biosynthesis of tyrosine-melanin as in phenylketonuria. Here there is a metabolic block in the conversion of phenylalanine to tyrosine, due to absence of the enzyme phenylalanine-hydroxylase.

Defects associated with albinism have also been reported, such as the Chediak-Higashi syndrome where oculocutaneous albinism is accompanied by defective leucocytes which are unable to phagocytose. These children get intractable infections in childhood.

Deaf mutism (Margolis 1962) and pseudohaemophilia (Larson 1972) have also been reported.

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MEDICAL NEWS

Professor J.V. Zammit Maempel has left St. Luke's on retirement. He leaves behind him the memory of a careful and painstaking diagnostician and the Medicine department will certainly miss the influence of his personality.

Retirement has also lost the hospital the services of Dr. Emmanuel Cachia, a meticulous paediatrician.

Dr. Arthur Valenzia LL.D. has been appointed to the Chairmanship of the Hospital Management Committee.

On the 22nd. and on the 26th. June respectively, Professor Robert Shields, professor of surgery at the University of Liverpool (and an external examiner in surgery to our university) delivered two lectures, one on "Prognosis and treatment of malignant disease of the breast" and the other on "Portal hypertension and bleeding oesophageal varices" at the newly opened Assembly Hall of the university. These lectures were the first to be given under the British Medical Association and Royal University of Malta Trust Fund. It was thought that Professor Shields launched the new venture very successfully.

Dr. Roger West spoke at a meeting of the B.M.A. Branch on "Occupational Health". Dr. West, a retired colonel of the R.A.M.C., is senior medical adviser to Wills Tobacco Company. In 1971 he took part in an expedition to explore certain parts of the Blue Nile, and he also lectured on this at the British Council Headquarters, under the auspices of the Malta Geographical Society.

Professor Walter Ganado on the 19th. November gave an address, under the auspices of the Department of Anatomy, on "Mechanism of Pain". Professor Ganado had done interesting work on this subject long before acupuncture had become a fashionable topic.

His Honour the Chief Justice, Professor John J. Cremona, this year delivered the St. Luke's Day lecture, at a B.M.A. Branch meeting on the 18th. October. His Honour delivered, in a very pleasing manner, an address which must have necessitated a considerable amount of search in our Law archives to an audience which obviously ap-

preciated it.

The P.P. Debono Memorial lecture was given to "The Association of Physicians and Surgeons of Malta" by Dr. Paul Cassar on the 18th. November. A large audience listened to a detailed biography, sketched against the times in which Debono lived, which included two world wars and will remain forever an important phase of the country's history.

The same Association held a symposium on "Medicolegal aspects of medical practice", under the chairmanship of Mr. Justice Dr. R. Farrugia. The main speakers were Dr. Raphael Attard, Dr. J.L. Grech and Dr. J. Pullicino. The audience included many men of laws and these made important and welcome contributions to discussions which ensued.

We congratulate Mr. Victor P. Amato on the high honour done him by the British Orthopaedic Association who, at their September meeting, elected him a Fellow of their Society.

We also congratulate Dr. Abraham Galea who has been promoted to the Fellowship of the Royal College of Physicians of Edinburgh, and Dr. Joseph Coleiro, the ophthalmology specialist on his getting the Fellowship of the Royal College of Surgeons of Edinburgh.

Our best wishes go to the following who graduated M.D. recently: Mario Abela, Marie-Louise Attard, Joseph E. Balzan, Joseph Bonello, Anthony Bugeja, Richard M. Cachia, Frank P. Calleja, Robert Carachi, Joseph DeGiovanni, Louis V. Deguara, Donald C. Fe'ice, Norman Formosa, Paul Galea, Carmel Grixti, Mary F. Mallia, Mary Mei'ak, Anthony Micallef Doublesin, Joseph Pace, Kathleen Pearl from Britain, Patrick Pullicino, Martin Said, John Samut Tagliaferro, L. J. Sant Cassia, Denis A. Soler, Victor Sultana, Paul Scriha, John B. Symes, Christopher Vella Bonnici, Dominic Vella Briffa, Lawrence Yeung from Hong Kong, Anton Zammit, Anthony A. Zammit, the son of Dr. Fortunat Zammit, and Frederick Zammit Maempel the son of professor J. V. Zammit Maempel.

We chronicle with regret the death of Dr. Daniel Cecy, a death by which the Maltese medical profession has lost its doyen. Dr. Cecy, a very well-loved physician, was

specially characterised by his love of France; he was probably the only Maltese doctor who did his internships in Paris hospitals.

Dr. J.G. Baldacchino died on the 6th. July this year. Doctor Baldacchino had relinquished the practice of his profession, preferring to devote his life to archaeological studies, which were first his hobby and then became his main occupation. He reached the top of this particular tree in Malta when he became Director of the National Museum, his most notable work having been the exploration of Ghar Dalam.

Colonel Ethelwald Vella has been awarded the R.A.M.C. Parkes Memorial Prize for 1973, for his paper on Cholera and vaccine prophylaxis. This prize, set up in 1878 in memory of Doctor Edmund Alexander Parkes, an assistant surgeon of the 84th. regiment, is awarded to "the officer who has done most by professional work of outstanding merit to promote the study of naval or military hygiene". Colonel Vella has also recently published a stimulating paper on William Crawford Gorgas.

Professor J. Leslie Pace gave the oration on the October graduation day. With teaching and research in anatomy in relation to medicine as his theme, Professor Pace gave an account of the progress which the department under his charge has been making.

Professor A.H.R. Rowe, head of the Department of Conservative Dental Surgery at Guy's Hospital, visited Malta as a British Council specialist between the 21st. and the 31st. October. On the 24th. and on the 25th, he lectured on "Negligence in dental practice" and on "The Periapical tissues following endodontic treatment".

The Second International Congress on Dentistry for the Handicapped, sponsored by the Academy of Dentistry for the Handicapped, will take place in London, England, April 22-24, 1974. The meeting will be devoted to several phases of dentistry for the handicapped among which will be oral facial deformities, management and treatment of patients, prevention, dental student curriculum education and genetics. Special tours and local arrangements are being made from the London area. Individuals interested in program participation and for

further details of the meeting please write: Manuel M. Album, D.D.S., General Chairman, Medical Arts Building, Hillside Avenue at York Road, Jenkintown, Pa. 19046 U.S.A.

PUBLICATIONS LIST

The following are recent publications by graduates of our Medical School:

- CASSAR, P. 1973. Il perito psichiatra nella legge criminale Maltese. Cenno storico. Scritti in onore di Cesare Gerin. Tomo 1. 101-110.
- CAUCHI, M.N. (with BENSTER, B.) 1970. Haemoglobin A₂ levels in pregnancy. J. Clin Path. 23, 538.
- CAUCHI, M.N. (with VASSALLO, L.). Diaphorase deficiency methaemoglobinemia mimicking cardiac disease in pregnancy. J. Obst. Gynaec. 77, 178.
- CAUCHI, M.N. (with WILLIAMS, L.) 1971. Haemoglobin F. (Malta) in the Australian immigrant population. In "Scientific Contributions, Second Meeting of the Asian-Pacific Division of the International Soc. Haematology", Melbourne, p. 10.
- CAUCHI, M.N. (with DE BOER, W.G.R.M.) 1971. Antigenic changes in dysplasia and neoplasia following X-irradiation of rodent gastro-intestinal tract. Pathology, 3, 291.
- CAUCHI, M.N. 1972 (with MANT, M.N. and MEDLEY, G.). Thrombotic thrombocytopenic purpura: Report of a case with possible immune etiology. Blood, 40, 416.
- CAUCHI, M.N. (with NAIRN, R.C.) 1972. Antibody formation to embryonic intestine in syngeneic rats. Immunologic. Comm. i, 309.
- CAUCHI, M.N. 1973 (with TANNENBERG, A.E.G., MULLER, H.K. and NAIRN, R.C.). Incidence of autoantibodies in Cancer Patients. Clin. Exp. Immunol. 15, 881.
- CAUCHI, M.N. 1973 (with POON, S.P.); Blastogenic response of lymphoid cells to tumor cells or tumor membrane extracts *in vitro*. Cancer Res. Nov. (in the press).

- CAUCHI, M.N. 1973 (with POON, S.K.). Factors affecting the estimation of spontaneous release of ⁵¹Cr from labelled tumor cells. *Transplantation*, 15, No. 3, Nov. (in the press).
- CAUCHI, M.N. 1973 (with NAIRN, R.C.) Hepatocyte specificity for foetoprotein production. *Pathology*, 5, 39.
- ELLUL MICALLEF, R. (with BORTHWICK R.C., & McHARDY, G.J.R.) 1972. The time course of response to corticosteroids in chronic bronchial asthma. *Clin. Sci.* 43, 15 (in abstract).
- ELLUL MICALLEF, R. (with BAINBRIDGE, D., BORTHWICK, R.C., FAREBROTHER, M.J. and McHARDY, G.J.R.) 1973. Small airway disease in asthma. *Thorax* 28, 266 (in abstract).
- ELLUL MICALLEF, R. (with BORTHWICK, R.C. and McHARDY, G.J.R.) 1973. Glucose-6 - Phosphate Dehydrogenase deficiency in bronchial asthma — the time course of response and the effect on pulmonary gas exchange. *Tubercle* 3, 31 (in abstract).
- GRECH, J.L. (with VICATOU MARIA) 1973. Glucose-6 — Phosphate Dehydrogenase Deficiency in Maltese Newborn infants, *Brit. J. Haem.* 25, 261-269.
- GRECH, J.L. (1973). Medico-legal infant deaths in Malta 1956-1971, with special reference to "cot deaths". *Scritti in onore di Cesare Gerin. Tomo 1*, 207-220.
- GRECH, P. 1972. The Radiologist in the modern teaching hospital, *Chestpiece*, 28-30.
- GRECH, P. 1973. "The value of hypotonic duodenography", *X-ray Focus*, 12, 26-31.
- GRECH, P. (with OWEN, J.R. and ELSON, R.A.) 1973. "Generalised Hypermobility of Joints-Arthrochalis multiplex congenita". *Archives of Diseases in Childhood*. 48, 487-489.
- GRECH, P. (with PLATTS, M.M., McMANNERS, T. and COCHRAN, M.) 1973. Skeletal changes in patients treated by regular haemodialysis in the Sheffield area. *British Journal of Radiology*; 46, 585-953
- GRECH, P. (with READ, N.W.) 1973. Effect of cigarette smoking on competence of the pylorus — Preliminary study. *British Medical Journal*; 3, 313-316.
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- GRECH, P. 1973. Significance of Pyloric reflex. *Excerpta Medica. XIII International Congress of Radiology, Madrid*, October, p. 171.
- VASSALLO, L. 1973. Diphtheria in the Maltese Island, 15 pages. Malta University Press.
- VASSALLO, L. 1973. Epidemiological aspects of typhoid fever in the Maltese Island, 29 pages. Malta University Press.
- VASSALLO, L. 1973. Studies on Maltese Consanguinity, 5 pages. Malta University Press.

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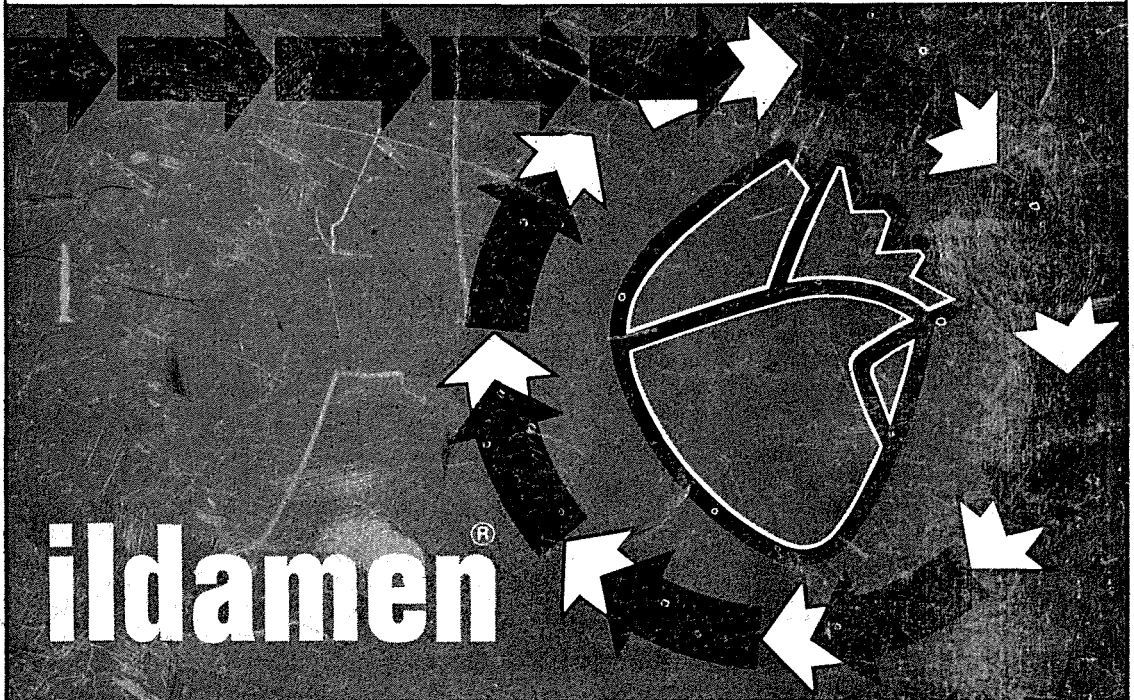
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