

EDITORIAL : VAN DIE REDAKSIE

EXAMINING STUDENTS

Examinations in medical faculties, as in fact in all faculties, are the bane of the professors' as well as the students' lives. Are they really necessary, and if not, how can they be avoided? First of all a few basic concepts in connection with the aims and possible achievements of examinations must be questioned. As all teachers know, the very good student hardly ever presents a problem and his ability and work do not really require careful evaluation except perhaps in order to assess his eligibility for a particular prize, such as the medal for the most meritorious candidate of the year. It is the average student who has to be tested as to his knowledge and ability and one might even argue that the very bad student should be sufficiently well known to his teachers so that not too much time need be wasted on him.

What must examinations determine? There are various possible answers to this question. They can be used to select the most competent candidates in order to prevent the numbers at university from becoming unmanageable. With our serious lack of teaching facilities compared with the need for more doctors and the availability of good pre-university material, this object of examinations could well become a major consideration, but it is to be hoped that selection will take place at a stage when the weeding out will not adversely affect the student's future career.

Examinations may also be used in order to scare the students into putting their backs into the work. This may seem like a reasonable attitude, but it must be borne in mind that only too often it deteriorates into a contest between various departments to obtain as much of the students' attention and time for their particular subjects as is humanly possible. The result, as every lecturer has experienced, is a half-empty lecture hall because another subject is coming up for examination and the class have decided that they need extra time to prepare themselves for the paper.

The third, and obviously the best reason for examinations, is the need to test the knowledge of the candidate in order to make sure that he has sufficient knowledge not to be a danger to the public once he has qualified. This can be done in various ways. In most of our medical schools the oral and practical examinations play an important role, especially during the final year. This is not a bad system, for the student is exposed to a number of examiners, both internal and external, and the danger of subjectivity of one man marking a paper is to a large extent obviated. It has been argued that some students fare badly during an oral examination because they are unable to muster their knowledge under such circumstances, whereas others with perhaps less knowledge will seemingly do better. That such differences do in fact exist will be denied by nobody, but what is often lost sight of is that the poor fellow who becomes tongue-tied and unable to think might have the same problems when he is eventually qualified and faced with a real

emergency. It will be little consolation for the bereaved family to be told that the doctor had the correct diagnosis and treatment on the tip of his tongue but unfortunately just could not recall it until it was too late.

The essay form of written examination is still used in most schools but it has many drawbacks, not least of these being the fact that some students have near illegible handwritings. In any case, it is very difficult to give the assurance that all candidates will receive exactly the same objective assessment of their abilities. The one important advantage is that the student's approach to the logic of a given problem may be tested, which is often not even the case in an oral examination, because of personalities involved or sheer nervousness.

The multiple-choice type of paper is being used more and more frequently in medical schools throughout the world. Although they are not easy to prepare and extreme care must be exercised in order to ensure that the answers will be a true reflection of the candidate's knowledge and that ambivalent situations do not arise, the results are usually fairly good. An important aspect is the time that is saved in marking such a paper. It may take longer to set than an essay-type paper but all that time is gained when marking it. The objection is frequently expressed that the student is given no opportunity to show his powers of reasoning and although his answers may sometimes be correct, the element of guesswork cannot be assessed—he may be merely a practised or lucky guesser. A new type of test has been devised by the Centre for the Study of Medical Education and the Committee on Student Appraisal of the University of Illinois College of Medicine.¹ The student is presented with a short case history and is then expected to make a choice of further action. As he decides on each diagnostic procedure, the result automatically becomes available by rubbing out an opaque overlay on the examination sheet. We can imagine that with improving electronic techniques, closed-circuit television could be effectively used for this type of feedback questionnaire. Apart from affording him the opportunity to show his reasoning processes, the candidate is put in the position of realizing his mistakes and may make an attempt to rectify them—a situation which any doctor regularly experiences in practice.

The ideal situation, of course, is no examinations at all, but a day-to-day assessment of the student's progress by teachers who are in constant contact with him. The only formal examining that might have to be done is short oral sessions in order to ascertain his knowledge of certain absolute facts, such as doses of dangerous drugs, etc. Such close personal contact will obviate the possibility of the candidate's memory rather than his knowledge being tested. A student may know exactly what to do according to a textbook, but it is his ability to use this memorized knowledge in a sensible way in practice which makes him a good doctor, and this ability will be known to his tutors,

provided they see him often enough. In other words, what is needed is far more staff in our teaching hospitals. This is not a new concept. The famous educational institutions, schools as well as universities, have been using the system of personal tutorship for centuries. The only problem is

that in medicine there are so many different disciplines that a great number of tutors will be needed to produce a completely integrated medical student.

1. Charvat, J., McGuire, C. and Parsons, V. (1968): *Wld Hlth Org. Publ. Hlth Pap.*, No. 36, p. 36.

FAHRAEUS, WESTERGREN EN DIE BLOEDBESINKING

Die jong mediese student, Robin Fahraeus, was besig om sy kraamopleiding aan die Stockholm Kraamhospitaal te voltooi in 1915, toe hy getref word deur 'n verskynsel wat talle mense voor hom ook reeds opgemerk het: die besinking van bloedselle.

John Hunter, in 1786, skryf: 'In alle inflammatoriese dispoisies het die bloed 'n verhoogde neiging om in sy saamstellende dele te verdeel, die rooi globules synde minder diffuus versprei'. Die Hollandse geneesheer, Van der Kolk, herhaal in 1820 dat 'die bloed van 'n swanger vrou verdeel in rooi vlekies en vlokies, omring deur 'n absoluut helder plasma, 'n verskynsel wat nie in normale bloed gesien word nie'.

Dit was egter die Sweedse student Fahraeus wat nie slegs die verskynsel weer eens ontdek het nie, maar die bloedbesinking tot 'n waardevolle kliniese toets ingespan het. Dit is eenvoudig genoeg om onder die mees primitiewe toestande uitgevoer te word, en Fahraeus het in dié opsig 'n voorsprong bo sy voorgangers gehad. Hy kon naamlik bloed onstolbaar maak deur die byvoeging van sitraat, 'n ontdekking wat pas aan die begin van die eeu gemaak was. Hierdie onstolbare bloed is opgetrek in glasbuis en na 'n uur is die besinking in millimeters afgemeet.

Fahraeus se toets is onmiddellik as roetinetoets in gebruik geneem, aanvanklik vir die 'diagnose' van swangerskap maar spoedig ook om die aktiwiteit van tuberkulose te beoordeel. Sy nie-spesifieke inligting, te wete *aktiwiteit* van siekte, of die aanwezigheid van weefselskade, het gou geblyk sy belangrikste bate te wees.

Die meganisme van besinking is tot vandag egter nie volledig verklaar nie. Vir sy proefskrif: 'Oor die oorsake van die verminderde suspensie-stabiliteit van die bloed in swangerskap' het Fahraeus die vorige literatuur hersien en bevind dat Herman Nasse van Bonn reeds in 1836 verklaar het dat die saamklomping van rooiselle 'n sneller besinking veroorsaak net soos 'reëndruppels vinniger val as die klein druppeltjies in 'n miswolk'.

Hewson (1739 - 1774) het reeds gemerk dat in persone met 'n versnelde besinking die rooiselle uitsak voor stolling plaasvind en sodoende 'n wit stolsel laat ontstaan.

Nasse het die klomping van rooiselle toegeskryf aan elektriese ladings op die selle ('n baie versiende gedagte vir 1836), en hy het ook empiries bevind dat tafelsout of

natriumbikarbonaat by bloed gevoeg die besinking inhibeer. Op dié stadium was die ioniese aard van soute natuurlik onbekend, en het hy nie besef dat hy sy voorstel in werklikheid bewys het nie.

Nasse het ook ingesien dat die eienskappe van die plasma belangriker is as die eienskappe van die rooiselle in hierdie verskynsel. Nog interessanter, met die metode van Berzelius het Nasse kwantitatiewe bepalinge van die fibrienvormende materiaal in bloed gemaak, en vasgestel dat 'n versnelde besinking 'n verhoogde fibrienvoorloper bevat—'n proteien wat later deur Rudolf Virchow tot fibrinogeen gedoop is.

Fahraeus se entoesiasme oor sy toets, en die verhouding van fibrinogeen en globulien tot hierdie toets, het Alf Westergren (1891 - 1968) aangesteek. Hy het spoedig besef dat die betroubaarheid van die toets saamhang met 'n gestandaardiseerde tegniek. Hy kon aantoon dat die verhouding bloed tot natriumsitraat (3.8% oplossing) 4 tot 1, en die deursnit van die glasbuis 2.5 mm moet wees. Hy het ook bewys, ten spyte van die huidige populariteit van mikrometodes, dat mikro-sedimentasie vanweë stromingseffekte van geen waarde is vir kliniese gebruik nie. Ook het hy bewys dat hepariniseerde bloed, soos bloed van hemofilie-pasiënte wat geen antistolmiddel nodig het nie, vinniger besink omdat die inhibisie deur natriumsitraat nie uitgeoefen word nie.

Westergren se oorspronklike toets is herhaaldelik ondersoek en elke slag is dit bevind om die sensitiefste en herhaalbaarste toets te wees; bastermetodes het gekom en gegaan en is trouens nog steeds besig om met Alf Westergren se metode mee te ding. Selfs Wintrobe erken in latere uitgawes van sy teksboek dat Westergren se besinking klinies meer betroubaar is as sy modifikasie.

'n Interessante nuwe-ontwikkeling was juis Lundgren se pogings om mikro-sedimentasie te vervolmaak. Sy 45° skuins besinkingsbuis het hom op die idee van die hoeksentrifuis gebring, wat vandag so populêr is in sykamerlaboratoria. Laasgenoemde, in teenstelling met sy mikrobesinking, was 'n daverende sukses, en het bygedra tot die ontwikkeling van Svedberg se ultra-sentrifuis in die 1920's.

Vandag, na 60 jaar, is daar nog maar net één betroubare besinkingsmetode: dié van Alf Westergren, en wel presies volgens sy voorskrif.

1. Jorpes, E. (1969): *Acta med. scand.*, 185, 23.

48TH S.A. MEDICAL CONGRESS: LATE BOOKINGS

Late bookings for the 48th S.A. Medical Congress on board the 'Reina del Mar' can still be made by telephoning Cape Town, 3-4194.

48STE S.A. MEDIESE KONGRES: LAAT BESPREEKINGS

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