

Finlayson would like to have had the examiners examined and see if they were really worth 100 per cent.

I shall now proceed to criticise my critic and see what percentage of *stress* and *strain* this *elastician* will stand before we come to the breaking point. I have no wish to *snap* him *abruptly* so I shall apply the *stress* gently.

He lays down a very rigid definition of *elasticity*, to which I offer no objection, though it is not one to which professional physicists closely adhere, as it enables me to see what he intends to mean. Of course, your readers, like myself, expect that having settled the matter according to his own ideas, he at least would stick to the definition which he has adopted—I say adopted because after all the definition is not his own. Let us see how his definition works out. He tells us that solid bodies like steel and ivory are much more *elastic* than even such perfectly *elastic* bodies as the various gases, but he forgets to say that the range of elasticity of those highly elastic bodies is very limited; if you exceed that extremely narrow limit you fracture or rupture or break the body, or you may give it a permanent *set*, so that it does not return to its original form. If you attach a certain weight to a steel wire sufficient to stretch it one-twentieth of an inch, then double the weight will stretch it one-tenth of an inch, but if you go on doubling you quickly exceed the limit of its elasticity, and the wire either *snaps* or takes a permanent *set* and will not return to its original length on the removal of the weight—you have exceeded the very narrow limit of elasticity in this highly elastic body. If you take the blade of a sword made of finely tempered steel you will find it much more elastic than the iron or steel from which it was made, yet, according to Dr. Samways, I presume this should not be, because he says “elasticity is a property fixed in amount for any substance.” Again, if you take the sword and convert it into a large tube of the same length it again becomes rigid, and if you attempt to bend the tube the force required quickly breaks it. How is it that the great range of the sword’s elasticity has practically disappeared? The molecules on the convex side of the attempted curve would now have a much longer way to move than previously, and when sufficient stress is put on to move them and manifest their elasticity those on the outer curve jump apart beyond the limits of their elasticity and the tube breaks. The same thing happens with such a highly elastic body as glass. This is all very nice but it does not fit in very well with medical ideas of elasticity as found in the human body. According to Dr. Samways’ definition the ribs are much more elastic than the costal cartilages, the femur much more elastic than the ribs, and the more rigid the chest walls the more elastic do they become as it takes a greater force to produce any given deformation. An unyielding rope is more elastic than an extensible one; it is true that it snaps more readily, but what does Dr. Samways care for that when it requires more force to produce a given amount of stretch. “Rubber yields considerably to a small force and is therefore comparatively inelastic. It possesses the quality of elasticity to a striking degree but in a low measure.” This last sentence is a distinct contradiction of terms; it is a misuse of the English language to say that anything that possesses a quality in a low measure has it in a striking or high degree. It is not a question of small quantity and high tension like the high frequency current, because it is just in the tension that the rubber is deficient.

Having some slight regard for your space I shall not diverge into a sidepath to discuss the unconscious cerebration of Dr. Samways’ cat as she lay curled up and quietly asleep on the hearth dreaming of her far-off home, situated perhaps south-south-east by south from the hearth, and wondering when the potential energy of her limbs would become kinetic and enable her to speed her way through thick woods and devious paths unaided by a compass; nor shall I soliloquise on the dormant moral qualities of his untried gentleman or saint who, unlike an elastic body, does not require a double force to resist a double temptation. There may be some irreverent enough to suggest that this gentleman is an imbecile or a general paralytic. I know several men who would have no hesitation in writing a cheque for a sum much more than sufficient to pay off the National Debt; by such the temptation of a five-pound note is easily resisted. These may be, and no doubt are, very interesting psychological studies, but they have no more to do with elasticity than the moon has to do with green cheese.

When Dr. Samways says that I am “certainly in error”

he simply means that I do not agree with his definition of elasticity, and under the circumstances I am very pleased to be in error. “This property of a substance,” to which according to Dr. Samways you can neither add to nor take therefrom, “is measured quantitatively by the amount of force required to produce a given distortion in a given volume or unit of the substance.” This is uncommonly like my statement, but perhaps not quite so well expressed, that the more taut or stretched the lung (of course, within the limits of its elasticity) the greater will be its elasticity or tendency to recover its form after being stretched. If a force of two pounds stretch a piece of rubber one inch, four pounds will stretch it two inches, and it will resist further stretching by a force of four pounds, and when the weights are removed it will recover its former dimensions by a force gradually tapering down from four pounds to nothing.

Now listen to what this critic says: “Its elasticity and tendency to recover cannot be measured by stretching; it was inherent in it and fixed in quantity from the first.” Here he uses “elasticity” as an abstract quantity of the substance and he uses “tendency to recover” as absolutely synonymous, although I have just shown that it is a measurable force equal to the power to which it has been submitted. He might as well use potential and kinetic energy as synonymous terms, or mass and weight as one and the same thing. From experiments on tuning-forks it has been found that no matter how slightly or how closely the limbs are approached or how far they are separated it takes them the same time to recover their original position, and therefore it follows that the greater the force used the greater must be the tendency to recover. The vibrations of the tuning-fork from the greatest excursion down to silence all occupy the same time, so that with the diminution in the excursion the velocity is also diminished.

Here is another example of his way of reasoning: “In this way the negative pressure in the pleural sacs is created by muscular effort and not by elastic recoil of the lungs.” He forgets that if the lungs were non-elastic and non-resistant but free to follow the movements of the chest-walls there would be no negative pressure in the pleural cavities. This is what practically happens in emphysema where the lungs have lost their elasticity and gradually expand until at last even the recoil of the chest walls is lost. “It would be even greater, as Dr. Campbell contends, if the lungs did not expand.” In this case the inspiratory muscles would have to pull out unaided the thoracic walls against the atmospheric pressure, and this I believe they cannot do. “If the lungs be comparatively rigid the whole force of the inspiratory muscles can be expended on reducing the intrapleural pressure.” For how long? The fractional part of a second; under such circumstances the lungs could only be taut at the end of inspiration, and relaxed during the rest of the respiratory phase. “One would have imagined that the elastic tissue would have arranged to be at rest when the thorax was at rest, but it strangely chooses, from birth onwards, never to assume the unstretched condition.” Well, nature does not seem to have taught him much when he cannot see such obvious utility, and all I feel inclined to say is, thank God there was no amateur physicist present at the Creation.

If you allow this discussion to go on for about a couple of years I think we might settle the meaning of *elasticity*, if some new definition does not crop up in the meantime. Then I shall leave the rest of the English language to Dr. Campbell and Dr. Samways to settle, but I would take the liberty of suggesting to them that they might start with the distinctions between tweedledum and tweedledee which would serve as much practical utility as their contributions to elasticity.

I am, Sir, yours faithfully,

JAMES BARR.

Liverpool, Feb. 8th, 1908.

MINISTRY OF PUBLIC HEALTH.

To the Editor of THE LANCET.

SIR,—The article in the current number of THE LANCET on a Ministry of Public Health emphasises the crux of the proposition. It is quite a necessity that such a Minister should, in general terms, have greater powers for public health than at present exist, and equally so his influence be real with the Treasury. This is clearly recognised by myself and others in this country who take an active interest in the matter, such as Sir T. Clifford Allbutt. It is shown in articles dealing with the subject since 1902, in which it is

reasoned that such a Minister should have Cabinet rank and, if possible, have had an expert training.¹

Surgeon-General Fulton writes that this question, which I propose to bring before the Congress on Tuberculosis at Washington, is engaging the attention of the American Public Health Association, which has appointed a standing committee, representing the United States, Canada, and Mexico, to promote such departments. Its next meeting will be at Winnipeg in the summer. That the various bodies in this country interested in public health will follow this lead I feel certain, and there is no time like the present for their action.

I am, Sir, yours faithfully,

Brighton, Feb. 8th, 1908.

F. G. BUSHNELL.

THE QUESTION OF HOODS.

To the Editor of THE LANCET.

SIR,—I noticed in the report of the quarterly meeting of the Council of the Royal College of Surgeons of England that the Council refused to accede to the fifth request of the meeting of Fellows and Members—viz., "That a hood should be added to the gown already worn by Fellows and Members." I consider the excuses very lame.

Firstly, "as the hood was generally understood to be distinctive of a degree, and in this sense it formed part of the academic costume of a university, it was considered that it would not be appropriate for a college." The College of Preceptors grants hoods to its Fellows and Licentiates; King's College, London, grants a hood to its Associates (A.K.C.); the College of Organists grants a hood to its Fellows; and all theological colleges grant hoods to their Licentiates who are not graduates of a university (*vide* "Whitaker's Almanack").

Secondly, "as hoods did not appear to be in general use among colleges of similar standing to the Royal College of Surgeons of England." The Council forgets that it was the first to grant a cap and gown to its Fellows and Members and was followed by the Royal Colleges of Surgeons of Ireland and Edinburgh and the Society of Apothecaries. So as the Council of the Royal College of Surgeons of England was the leader in the gown, so it should be in the hood.

I would suggest that the hoods be: for Fellows, the same shape as a Cambridge M.A. but made of crimson satin lined black; for Members, the same shape but made of black stuff lined with crimson satin.

I am, Sir, yours faithfully,

Feb. 7th, 1908.

J. M. CARVELL.

To the Editor of THE LANCET.

SIR,—The present Council of the Royal College of Surgeons has thought fit to reject the resolution of the annual general meeting of Fellows and Members to grant a hood to its alumni. No credit can attach to it for the temporary delay of this obvious and advantageous adjustment, and especially as it only bases the objection to it on the want of precedence. Graduates of the Royal College of Surgeons have quite as much right to claim, and have often shown, their equality of attainments to those of many of the arts and professional degree holders, and with them equally to lay claim to possess the distinction of a hood.

Although the medical colleges in London have not yet taken up teaching, they, as of old tradition, belong to a university standard, and which has been almost always an antecedent in the history of the part formation of all universities. They belonged to a heightened status, and, provisionally, on a level with a university. From that position the Newcastle College of Medicine, the old College of Physicians before the decadence, the Liverpool University College, Owens College, Firth College, and other Midland colleges have all been on a sufficient equality and superiority to bestow the right, or *ad eundem* right, to grant hoods to their diploma or degree holders. So, although we do not so foolishly set such store as the lawyers do on perpetual precedence, still there undoubtedly is precedence for this reasonable accomplishment of possessing a hood by the Royal College of Surgeons, and in spite of whatever the Council chooses to say against me.

When supporting my resolution for a hood at the annual meeting, I spoke on what I thought was the origin of the

hood. I think masters or teachers were the first ones to wear them, as early as the middle ages, in colleges as well as in universities. Surely, then, the old surgeons were exactly in that same position. For they, even more than the physicians or the university men, were called upon as masters and teachers to fully instruct professionally their students and their apprentices. But these masters of their craft on being formed into a college aimed at, and took, by their constitution, a much higher position still. Likewise when the physicians formed themselves into the self-same higher collegiate position, they all wore hoods. Indeed, Charles II.'s mandate of 1674, and onwards, forced upon the members the university grade, and which thus constituted the collegiate position. So the pronouncement of the present Council of the Royal College of Surgeons cannot rest justly on its negative argument.

The surgeons, as separate from the ancient illegitimate practitioners, had always been at the head of the profession, above the grocers, above the apothecaries, above the barbour-surgeons, and above any of the universities in their own art and craft, though for convenience they have joined one or other of those bodies. Thus, from a business point of view, it is ill grace enough for the Council to indulge what seems a perpetual neglect discriminately against the body of the College; whilst benefits and privileges keep on accruing more and more to outside opponent bodies, and very much to the detriment of its members. That is why I have traversed its statements, and wish it to acquiesce in the general needs of the situation. For it must be apparent if it accepted fresh control, by both Fellows and Members together, there would be an end to any of the antiquated subservience amongst such an educated body of members where they remain unable to ratify their own resolutions. Reference has been made above to the collegiate status of the physicians which justified the equivalent usage with the university of the hood. The only other medical body in London to search for any corresponding trace of conformity would be the Society of Apothecaries. And, by Mr. C. R. B. Barrett, it is recorded, in 1698, that the Livery of the Apothecaries, when the King (William III.) made a public procession, were in their allotted place, and they wore both gowns and hoods.

Again, quite outside the amply sufficient medical references, there do happen to be confirmatory precedents for granting a hood. Of course, the Royal College and Academy of Music are merely scholastic or training institutions and having certificates, and on that account they purposely remained unmentioned in my speech. But, besides music guilds containing graduates, both the College of Preceptors and the Royal College of Organists have attempted, in London, to satisfy the university standards as colleges by giving a higher grade of diploma when such colleges have existed without a practical university. These bodies were consequently specially singled out by me and mentioned as precedents. And I have their regulations actually by me and where they certainly do grant hoods. So, except for the consummate ease of criticism and opposition which is unworthy of attack, I hold that the Council of the Royal College of Surgeons had no justification whatever to issue its inappropriate *démenti*. At the time of the meeting, as now, I wished to suggest an improvement of the present incomplete academic dress of the College. If there are to be academics at all they should have a hood attached, and not, as without the hood, liable to be mistaken by the public for the cloth garment of a verger or even that of the undergraduate status.—I am, Sir, yours faithfully,

Bognor, Feb. 8th, 1908.

H. ELLIOT-BLAKE.

REMOVAL OF AN OPEN SAFETY-PIN FROM THE OESOPHAGUS OF AN INFANT.

To the Editor of THE LANCET.

SIR,—Dr. D. R. Paterson's case and comments in your issue of Feb. 1st are interesting and instructive. Certainly the most rational plan in removing foreign bodies from the food- and air-passages is that which removes them through the mouth by a skilful grasp and help from the eye. This plan, however, except in the most simple cases, must, in the nature of ordinary practice, be confined to specialists. I was interested in Dr. Paterson's article in the *British Medical Journal* on oesophagoscopy, but did not practise it, there being no instruments available. I shall, however, take his advice and attempt the experiment at the first opportunity. I am

¹ See The Evolution of our Sanitary Institutions: a Plea for a Minister of Public Health, 1907, to be obtained from the Sanitary Publishing Co., 5, Fetter-lane, London, E.C.