

**A pamphlet on pharmaceutical education : more especially on the relation to each other of pharmaceutical education and the pharmaceutical examinations with an introduction and appended letters from leaders in pharmacy / [John Attfield].**

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Wm Atfield

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## PHARMACEUTICAL EDUCATION

A PAMPHLET ON THE RELATION TO EACH OTHER OF  
EDUCATION AND EXAMINATION,  
ESPECIALLY WITH REGARD TO PHARMACY.



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A PAMPHLET  
ON  
PHARMACEUTICAL EDUCATION

MORE ESPECIALLY ON THE RELATION TO EACH OTHER  
OF PHARMACEUTICAL EDUCATION  
AND THE PHARMACEUTICAL EXAMINATIONS

WITH

AN INTRODUCTION

AND

APPENDED LETTERS

FROM LEADERS IN PHARMACY

[ John Attfield ]

PRINTED FOR THE PRIVATE PERUSAL OF A FEW PHARMACEUTICAL FRIENDS.

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# PHARMACEUTICAL EDUCATION.

## INTRODUCTION.

By the words "Pharmaceutical Education" the author means what the founders of the Pharmaceutical Society of Great Britain meant, and what the supporters of that Society and all who have contributed to the public welfare of pharmacy still mean. He means *technical* pharmaceutical education such as is learned by youths who have the good fortune to be trained in pharmacies where an adequate amount of dispensing is practised, and *general* pharmaceutical education such as is learned in those public schools or classes which have been established by the Society at Bloomsbury, or fostered by the Society at Bristol, Edinburgh, Liverpool, Manchester, and elsewhere. The system of general pharmaceutical education having been originated by the Pharmaceutical Society, maintained by the Society for thirty-eight years, and having served more or less as the model for the schools and classes of the provincial pharmaceutical associations, may be termed the Pharmaceutical Society's system of education.

As regards technical pharmaceutical education nothing more will be mentioned here. Attention may, however, be drawn to the fact that the expectation of the founders of the Pharmaceutical Society, that with the spread of general pharmaceutical education every pharmacy would, sooner or later, become an efficient school of technical pharmaceutical education, is not yet realised.

Nor will the question of the precise nature and extent of the general pharmaceutical education which would properly qualify for the grades of "chemist and druggist" and "pharmaceutical chemist" now be discussed. The action of the legislature and of the Pharmaceutical Society, and the tacit acquiescence of all pharmacists, have decided that some knowledge of the sciences forming the foundation of pharmacy shall be acquired by its followers. The kind and amount will,

doubtless, always be such as to enable pharmacy to keep pace with other callings and with the progress of education in society generally.

By "the Pharmaceutical Examinations" the author means the "Major" and "Minor" examinations, conducted in accordance with the provisions of the Pharmacy Acts by Boards of Examiners in London and Edinburgh. The very important "Preliminary Examination" is not now under consideration.

The subject of this pamphlet is mainly the relation to each other of general pharmaceutical education, as just defined, and the pharmaceutical examinations just mentioned.

The writer's object is to gain from all leaders in pharmacy acceptance of the principle, already held by many, that the *pharmaceutical examinations should be fitted or adapted to pharmaceutical education*; a principle, the practice of which should be commenced forthwith, and be carried out and completed sooner or later as circumstances may permit.

His motive is a desire for the welfare of pharmacy and pharmacists, so far as that is consistent with the welfare of the public, associated with a not unnatural anxiety to see the various schools and classes of pharmacy founded or fostered by the Pharmaceutical Society placed on a more satisfactory basis for healthy growth.

The principle of fitting examination to education is, no doubt, the opposite of that which time and unforeseen conditions have thrust upon pharmacy, since the passing of the Pharmacy Act 1868. Yet it is much the same as that which obtained prior to 1868, though perhaps not then fully recognised or carried out. Before that date systematic pharmaceutical education and examination were both in the hands of the representatives of pharmacy. Hence they were necessarily and almost naturally adapted to each other without any special effort at dovetailing. Any shortcomings inherent in all systems of examination were compensated by the known thoroughness of the education of the great majority of the candidates. Since 1868, however, the sound system of education founded and fostered by the Society in London and the provinces has gradually been more or less neglected by students in favour of a system of instruction professedly fitted to examination, and, therefore, a system such as is discountenanced by all good authorities on education. The proposal supported in this pamphlet is to fit or adapt pharmaceutical examination to a public and, therefore, properly supervised and properly conducted, sound, and thorough system of

pharmaceutical education—metropolitan and provincial. The proposal is, in other words, to revert to the relation of education to examination which obtained prior to 1868, with this important difference, namely, that instead of being undefined and only tacitly understood, it shall be accurately defined and officially recognised, possibly in the future officially enforced, though that course is not now advocated. Before 1868 sound education and examination were more or less fitted to each other. Since 1868 they have got out of gear and *so-called* education has only too extensively been fitted to examination. Henceforward let examination be fitted to sound education, and sooner or later, let them occupy that position alone towards each other.

Some such action would solve most of the difficulties surrounding the question of pharmaceutical education, simplify examination both for examiners and examinees, and give to education and examination a generally commended instead of a generally deprecated relationship.

The aim of leaders in British pharmacy is, and always has been, to ensure that its youths possess sound and lasting technical and general pharmaceutical knowledge. In 1868 the legislature, the public, and pharmacists themselves, agreed that the possession of such knowledge should be compulsory. The means then adopted for securing that end was compulsory examination. But universal experience has shown that the passing of an examination does not necessarily ensure sound and lasting knowledge on the part of the examinee. Therefore, apparently, examination, in pharmacy no less than in other callings, should be so strengthened as to be made the guarantee it was intended to be. The only practicable means of doing this would seem to be to extend the power which the examiners possess of demanding a certificate of three years of training in technical pharmaceutical knowledge, to a power of recognising certificates showing some trustworthy training in general pharmaceutical knowledge. Trustworthy general training would be that afforded by the teachings and educational questionings of the staff of a public school of pharmacy, such as that of the Pharmaceutical Society, or of leading provincial Pharmaceutical Associations, or of other public schools of Pharmacy. The properly supervised *public* character of the curriculum would be essential, as affording the only guarantee that the knowledge possessed on the day of examination had been acquired in a manner likely to prove useful and lasting. That a young man has attended educational classes, even of a trustworthy public

character, affords, in itself alone, insufficient evidence that he has sound and lasting knowledge of the subjects taught; for he may not have profited by his opportunities. That he has on a certain day successfully stood some hours of questioning by a Board of Examiners is, in itself alone, according to the experience of all good authorities, insufficient evidence that he has sound and lasting knowledge; for he may have acquired the knowledge too rapidly to last, and he may have omitted to acquire those principles which can by proper training be perceived and apprehended but cannot easily be formulated into question and answer—for it is one thing to know the words in which a writer or speaker describes a principle, and quite another to really know and understand, and show that one knows and understands, that principle. Indeed, he may not have been trained, in the proper sense of the word, at all. But the passing of a trustworthy public curriculum, and a trustworthy examination, taken together, do afford fairly sufficient evidence that he possesses sound and lasting knowledge.

The argument of the foregoing paragraph is, at all events, that sought to be sustained and elaborated in the following pamphlet. This includes many pages. A large portion, however (pp. 11 to 32), is occupied by evidence of the insufficiency of unaided examination as a test of competency, and may be omitted by readers already assured of that fact. To contribute to the remedying of that insufficiency is the author's desire. He has written but little on the great value of examinations. All recognise that value, and none more highly than himself; hence his advocacy of their value would be superfluous. Up to page 40 he treats of examination almost solely as an aid to selection, the use to which it is put by Boards of Examiners. Afterwards he also treats of it as aiding education, the old and invaluable purpose for which it is in constant use by teachers.

Respecting the cause of the insufficiency or imperfection of unaided selective examinations as tests of competency, not only is it due, as just stated, to the fact that much of what a candidate ought to know does not readily lend itself to formulation into question and answer, but, say the authorities cited, the more precise and reducible you (inevitably for examination purposes) render knowledge—even that which *can* be thus formulated—the less living and real, the less applicable to the work of one's life, does it become. Thirdly, in no reasonable amount of time, and at no reasonable cost, can examination of candidates, of ordinary age

and education, distinguish, as satisfactorily as Examiners could wish, between an ephemerally charged memory and a well stored and trained mind. Fourthly, judgments founded on unaided selective examinations of necessarily short duration, are only inferences drawn from evidence the limits of which are narrower than is desirable. Fifthly, a large proportion of students, who can well work out an experimental process or fairly well understand a principle, cannot, especially at short notice, lucidly describe what they know. Some cannot well respond to a written, others to a *viva voce* examination; a few to neither. Yet a teacher's or an employer's experience, if extending over some days or weeks, may show that such men are competent to fill the position to which examination is the portal. Unfortunately, of two examinees having weak descriptive powers, the one who has been undergoing good training is even less likely to pass an examination than the one whose memory has temporarily been stuffed with answers to "questions likely to be asked."

The remedy for this insufficiency has already been foreshadowed. Each of the imperfections would, practically, be removed if Examiners could have documentary evidence that the candidate had diligently and deliberately studied for an appropriate period at properly supervised public schools of pharmacy, where he had well acquitted himself at educational examinations coextensive with the education itself. The supervision of such schools would either rest with the Council of the Pharmaceutical Society, or, perhaps, be relegated by the Council to a mixed Committee, or possibly to a large, permanent, influential Board of Education possessing a small working committee. The same body, with the concurrence of the Boards of Examiners, might set the limits or generally define the area both of education and examination, and, as far as possible, provide for their due adaptation the one to the other.

The cost in time and money of a proper curriculum of general pharmaceutical education has received and will receive from pharmacists due consideration, for the expenditure involved in acquiring knowledge of an avocation must bear appropriate relation to prospective income. But whatever the nature and extent of the curriculum, it should be *thorough*. It is for thoroughness, not for breadth or width, that the author is just now contending. The legislature, with the concurrence of the followers of the calling, have in pharmacy placed a barrier between the public and dangerous incompetence. Surely it is to the interest of

*all parties* that this barrier should be as sound and strong as possible? At all events, no inferior substitute will suffice. Nothing veneered will answer. Still less any cheap stuff liable to rapid decay, though covered with documents certifying that underneath is the true *lignum vitæ*. The name of the bar is education, and it must be a limb from the tree of real knowledge. If prominently placed, the public recognise the value of such safeguards, and if well fashioned seldom cavil at the cost. But the cost must not be unreasonable or inconsistent with the object contemplated. The pharmacists of other countries may be surprised that in Great Britain we begin the business of our lives with three years of technical and only five months of scientific training. But the present is not a period of prosperity with us, and imperial recognition of an educational career in pharmacy is only twelve years old. Commencing in "bad times," with such an inexpensive public curriculum for the pupil who aspires to be a "Chemist and Druggist," and who *must* pass the "Minor" examination, we may more reasonably hope with the growth of years to reach much higher standards. (Already the "Major" examination provides inducements to men who voluntarily desire to qualify for the higher title of "Pharmaceutical Chemist.")

Recognition of *permissive* curricula by examiners involves disadvantages not attached to recognition of *compulsory* curricula. To step at once however, from a condition of freedom, even if a questionable kind, to one of compulsion, is not in England always practicable even though admittedly desirable. A tentative stage is generally looked for, and this is sometimes usefully provided in the form of a permissive measure. If the Boards of Examiners would not mind some temporary trouble in recognising permissive public curricula of general pharmaceutical education, such action would perhaps best produce the desired results; though the recognition of enforced curricula would, doubtless, be more easily accomplished, and be less liable to be questioned on the score of inequality or unfairness.

Some introductory paragraphs had been added here in which the writer, remembering his professorial position, sought to excuse himself for taking up the subject at all. But councillors, examiners and colleagues have kindly assured him that no excuse is necessary. Examiners especially—representing Boards, the members of which have used the instrument for testing education placed in their hands by the Crown with ability beyond praise, and dignity beyond criticism—have stated to him that they do not by any means consider that the system

they administer needs no strengthening. Indeed they have been good enough to say that they would gladly receive from one who, by the accident of his position, daily and hourly has unrivalled opportunities of judging, some evidence of the manner in which existing measures relating to education and examination appear to affect students, and are regarded by students. Certainly although a pharmaceutical educator in advocating the cause of pharmaceutical education is possibly chargeable with interested motives to at least the extent that deprives his advocacy of much strength, no one should be better qualified to write about pharmaceutical education generally, more especially when the practical requirements of pharmacists are well known to him through some years of personal experience in the actual details of pharmacy and by many years of personal enquiry in the large towns and country districts of most parts of the kingdom. Besides, the writer examines as well as teaches ; and as it is said that only the teacher who also examines gets the most trustworthy evidence of the effects of his teaching, and that only the examiner who also teaches makes the most trustworthy inferences from the answers at examinations, it follows that he who now writes, being a teacher and an examiner too, has some claims to be heard in any matter relating to education. The writer will add no more respecting qualifications or disqualifications for the task now attempted except that he would never have undertaken it had any better advocate of the principle enunciated been likely to be forthcoming.

This letter and the accompanying pamphlet being intended only for the private perusal of friends, the author has written throughout with the freedom and emphasis he would employ in ordinary correspondence. He thus is also able unreservedly to treat certain matters on which he would himself hesitate to speak publicly. On looking through the pages he fancies he detects here and there the style of a teacher talking with his students. This is, of course, unintentional. He does not forget that he is addressing his equals, and in most cases his superiors, in any power of judging how best to secure the pharmaceutical needs of the public and the welfare of pharmacists.

JOHN ATTFIELD.

ASHLANDS, WATFORD, *January 25th*, 1880.

they administer needs no strengthening. Indeed they have been good enough to say that they would gladly receive from one who, by the position of his position, duty and honesty has unimpaired opportunities of judging of the evidence of the manner in which existing measures relating to education and examination appear to affect students, and are regarded by students. Certainly although a pharmaceutical educator in educating the cause of pharmaceutical education is possibly chargeable with interested motives to at least the extent that derives his advocacy of much strength, no one should be better qualified to write about pharmaceutical education generally, more especially when the practical requirements of pharmacists are well known to him through some years of personal experience in the actual details of pharmacy and by many years of personal enquiry in the large towns and country districts of most parts of the kingdom. Besides, the writer organises as well as teaches; and as it is said that only the teacher who also examines gets the most trustworthy evidence of the effects of his teaching, and that only the examiner who also teaches makes the most trustworthy inferences from the answers at examinations, it follows that he who now writes, being a teacher and an examiner too, has some claims to be heard in any matter relating to education. The writer will add no more respecting qualifications or disqualifications for the task now attempted except that he would never have undertaken it had any better advocate of the principle enunciated been likely to be forthcoming.

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JOHN ASTRUP.

ASTROP, WATSON, January 25th, 1857.

# PHARMACEUTICAL EDUCATION :

WITH

## A PLEA FOR THE RECOGNITION OF PUBLIC CURRICULA BY THE BOARDS OF EXAMINERS OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

THE only system of general Pharmaceutical Education which the Pharmaceutical Society of Great Britain has hitherto acknowledged, or well could acknowledge, is that which the Society, through its Council, has always fostered in the provinces and practically carried out at Bloomsbury, a system which the two Boards of Examiners, as Boards, do not recognise in any way; indeed, it is not yet decided that the Boards have power officially to recognise any system of education. Under this system a student is assumed to have learnt the technical subjects of "Prescriptions" and "Practical Dispensing" in a shop, while at the Society's school, or at a similar public provincial set of classes or school, he is to learn chemistry and some elementary physics, botany, and materia medica, as well as those principles of dispensing or pharmacy which can be described or illustrated at lectures. That this system, if not perfect, is well fitted to the end in view—namely, to supply the public with efficient pharmacists, has never been questioned by any authority in education; nay, it has always been commended by all medical, pharmaceutical, and other authorities, both foreign and British. And as to the requirements of the calling of pharmacy, the system has always been regarded as sufficient even for the training of accomplished pharmacists, while its elasticity has enabled it to some extent to be accommodated to meet what should be the wants and qualifications of assistants. But its value is questioned by most pupils in pharmacy themselves. And so seriously questioned and practically so extensively disregarded, not to say repudiated, by the majority of them, that many provincial educational classes, started to meet the requirements of the Pharmacy

Act of 1868, have ceased to exist (see the *Pharmaceutical Journal* for October 17th, 1874, *et seq.*) ; others are carrying on a languishing existence ; while the Society's own school in London has less than half the number of pupils which the directing body, namely, the Council, or the teaching and financially-interested body, namely, the professors, reasonably expect to be present in its lecture-room, laboratories, museums, and library. The contention of the large class of young men just alluded to may be stated in the following propositions :—

1. Candidates for the “ Minor ” and “ Major ” must study the subjects or portions of subjects required by the Examining Boards under the Act.

2. It is not necessary that the candidates, as candidates, should study subjects or any portions of subjects not required by the Boards of Examiners.

3. Teachers of such candidates must teach the subjects or portions of subjects required by the Boards of Examiners.

4. Teachers of such candidates must not teach the candidates, *as candidates*, subjects or any portions of subjects not required by the Boards of Examiners.

5. The subjects in which knowledge is required by the Boards of Examiners at the “ Minor ” are *six*, as stated in the official “ Regulations,” namely—(1) Prescriptions ; (2) Practical Dispensing ; (3) Pharmacy ; (4) Materia Medica ; (5) Botany ; and (6) Chemistry, including that portion of Practical Chemistry which may be termed the application of tests for stated chemicals in common use, and also including that portion of Physics which relates to barometers, thermometers, and specific gravities.

6. The subjects in which knowledge is required by the Boards of Examiners at the “ Major ” are *four*, namely—(1) Materia Medica ; (2) Botany ; (3) Chemistry, including that portion of Practical Chemistry termed qualitative analysis of important chemicals and volumetric quantitative analysis, and (4) Elementary Physics of light, heat, electricity, and magnetism.

7. The Pharmaceutical Society's system of education does not, remark these young men, include any instruction whatever in Subject 1 of the “ Minor,” namely, “ Prescriptions.”

8. The Pharmaceutical Society's system of education does not

include any instruction whatever in Subject 2 of the "Minor," namely, actual "Practical Dispensing" by the pupil.

9. The Pharmaceutical Society's system of education only includes, they notice, that partial instruction in Subject 3 of the "Minor," Pharmacy, which can be afforded at lectures. It does not include actual practice in the recognition of preparations; it does not include exercises in giving proportions of ingredients in preparations; and it does not include actual practice by the pupil in the making of emulsions, pills, &c.

10. The Pharmaceutical Society's system of education gives much more of Subject 4, Botany, than is required in the "Minor."

11. The Pharmaceutical Society's system of education gives very much more of Practical Chemistry than is required in the "Minor" or "Major." Under this system of education, they say, they are invited to devote a great deal of their time to practical chemistry, while, under the system of examination, they find at the "Minor" scarcely any to be actually necessary, and at the "Major" comparatively little.

12. The Pharmaceutical Society's system of education affords, they think, both too much and not enough Physics for the "Major."

Shortly, the contention of the majority of these young men in Pharmacy is, that the Society's system of education includes no instruction in some subjects, perhaps too little in others, in most too much, and about the right quantity in one only—Materia Medica. And they, often complain that pupils are not even classified according to their requirements as candidates into "Minors" and "Majors;" complain, that is, that two distinct courses of instruction are not given.

And if, as some sort of reply to these propositions, a young man is reminded that the technical subjects are usually learned in a shop, that a lasting knowledge, even of the principles of chemistry, is best acquired by much laboratory work, and that the Council of the Pharmaceutical Society would scarcely be likely to establish or support a theory of education or system of education which is either insufficient for the requirements of the public or pharmacy on the one hand, or too elaborate for those requirements on the other, he does not combat the statement for a moment. Indeed, often he says that *he would only be too glad to fall in with any system of education having so high a sanction*. What he does contend is that the Society's system of education and the system of examination do not dovetail with one another. He does not, as a rule, presume to say which set of dovetails is in fault, or whether both are. He only knows that he

has to pass the examinations as they stand, and he begs to be excused if he seeks a system of instruction which does dovetail with them. Whether the system he seeks and gets is in itself right or wrong is not an immediate concern of his.

The average enquirer respecting the Society's own school, for example, is quite willing to admit the advantages of that deliberate and methodical, and patient and persevering acquirement of knowledge afforded by the Society's system of education. But he generally remarks that, as he will get no direct credit for all that training at the examinations, and as the Society's system of education does not give in other directions enough of what he wants, he declines to enter its classes. And of those who do enter, many, though starting with the assurance that they do not wish to be merely "prepared for examination," sooner or later succumb to their environment, especially that of the periodical examination days. They begin to want help where they ought to help themselves; where, as Bishop Temple says, "the test of real mastery is that the knowledge shall be produced without any help at all." "What we puzzle out for ourselves remains by us longest; that which is explained by a tutor, before we feel the difficulty, soon goes." (Latham, p. 366\*.)

"When" (p. 401) "the pupil is to get credit or profit from the display of knowledge, the tutor may give him more help than is good for him: he may do all the head-work for him, and only expect him to recollect what he is told, and an unwholesome influence is exerted by examinations being used for a purpose which does not belong to them considered as educational appliances. The knowledge that is got by much *telling* and *showing* on the part of the tutor is much less permanent than that which is due to good work done by the pupil himself; but while it lasts it is hardly to be distinguished from this, and it brings its possessor profit in examinations."

And such pupils sooner or later may, and sometimes do, whisper a complaint if they do not get the direct help, and direct explanations, and telling, and showing they desire. A few words with an earnest teacher doubtless soon reassures them, but there is always the liability of words of discontent being uttered to other ears than those of the teacher, a

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\* On the Action of Examinations considered as a Means of Selection. By Henry Latham, M.A., Fellow and Tutor of Trinity Hall, Cambridge. Cambridge: Deighton, Bell, & Co. London: George Bell & Sons. 1877. Price, 10s. 6d. Unfortunately, this seems to be the only book on the subject. Its reception by the press, however, indicates that it is highly esteemed by scholars.

state of things which, to sensitive, honourable men, is scarcely endurable. For there should be the most perfect sympathy between the teacher and the pupil ; but how can sympathy obtain when the student, having caught "the examination fever," finds that much of the teacher's labours—labours which the teacher knows are the most important of all, namely, those which relate to the development of the higher powers of a pharmacist's mind—will "count" for nothing at the examinations. As President Eliot, of Harvard University, says of such English students: "They are working not to satisfy their teacher or to master his teachings, but to satisfy examiners;" and many practically "refuse to follow their teachers far beyond the limits of the examinations." This, too, to sensitive and honourable teachers, is scarcely endurable. Some do follow the lead of the teacher, but at the great risk of being "plucked." Since the foregoing sentences were in type, a rejected candidate said to the writer, "I have been unfortunate again, but one at least of the examiners made what is very likely a right estimate of me, for he told me I knew both too little and too much. Anyhow, I am now driven to do what many students under the Society's system have been obliged to do, namely, go to a 'crammer,' who, of course, will tell me neither too little nor too much, but exactly what the examiners want me to know." And this state of things, also, to sensitive and honourable teachers under the Society's system of education, is scarcely endurable.

With regard to the term "crammer" employed by this student—

"When the words 'cram' or 'crammer' are used by a pupil or an undergraduate, he means something very definite; he is the individual who wears the shoe, and such I have generally found can be trusted both when they tell you where it pinches, and where they find it best to cut a hole to make it easy. So when a youth says he has left a tutor's and gone to a 'crammer's' in London to prepare for 'his army examination,' he is sensible of a real difference; he does not mean any personal disrespect, but he looks on the latter person more as he would on a music master or a French master, as a person who has nothing to do with educating him as a moral or reasonable being, but whose business is to endow him with some one accomplishment; which, in this case, is that of being able to answer so many printed questions on a particular day." (Latham, *op. supra cit.* p. 10.)

And the assurance which any such student, pupil, or undergraduate receives that he will be able correctly to answer so many questions, printed or *vivâ voce*, on a particular day, gives him confidence on that day. He is then less likely to become a victim to a state of confusion of thought or general confusion of mind which is as common with

candidates at examinations as it is with young witnesses, not to say young advocates also, in other courts of enquiry, and which is usually termed nervousness. Under this condition the mind is in a state of turmoil, and if the counteracting influence just mentioned is not present the candidate is as likely to answer questions wrongly as rightly, and to do so unconsciously. Could the unfortunate candidate who knew both too little and too much have received the assurance from his teachers that he would be asked nothing whatever but what he had learnt during his curriculum, an assurance that he would receive or rather insensibly imbibe were the system of examination fitted to the Society's system of education, he also would have presented himself with that confidence which produces clearness instead of confusion in the mind, and doubtless would have "passed"—passed after being properly educated, whereas now he probably will not pass until he has been "prepared," as the process is euphemistically termed.

To sum up respecting concord between education and examination. All seem agreed that the Society's system of education, especially with sound preliminary home reading on the part of the student, more or less perfectly suits the practical requirements of English pharmacy. The point is, that it and the system of examination are not at present in harmony with each other. On the other hand, as will be seen presently, all authorities seem agreed that a system of instruction under which the student, even with or without some kind of preliminary reading, crowds "preparation for examination" into a couple of months or so, is one which is superficial and ephemeral, and, therefore, inconsistent with the requirements of English pharmacy. The point is, that it and the system of examination *are*, at present, in harmony with each other.

The conclusions to be drawn from foregoing facts are, apparently, first, that the Pharmaceutical Society's system of education does not meet the requirements of "Minor" or "Major" candidates, *quâ* candidates; secondly, that these candidates, as candidates, cannot, therefore, be expected to follow that system; and, thirdly, either (*a*) that the system must be so altered as to dovetail with the system of examinations; or (*b*) that the system of examinations must be so altered or, rather, supplemented, as to dovetail with the system of education; or (*c*) that both systems must be so altered or supplemented as to fit in with each other; or (*d*) that, as the logical alternative, one or the other system (it is superfluous to say which) as at present related to candidates, as candidates, must cease to flourish satisfactorily.

(The chances of life and welfare of the Society's own School of Pharmacy are, of course, bound up with the chances of life and welfare of the Society's system of education, except in so far as that, as at present constituted, the School affords thorough and lasting education irrespective of the detailed requirements of the system of examination. Hence, though not supplying the *mere* requirements of candidates, as candidates, the School affords sound education on the lines so carefully and, all admit, wisely laid down for it by successive Councils of the Society. But the demand by pupils for such education is small, hence, while the present relation of education to examination obtains, only small numbers can be expected to attend its classes.)

Under these circumstances, all those old friends and supporters of the Pharmaceutical Society now addressed will probably thoughtfully enquire, What is to be the attitude of the Society towards general pharmaceutical education?—meaning that public, thorough system of pharmaceutical education which the Society, through its Council, has hitherto recognised, fostered, and directly supported, both in the provinces and at Bloomsbury, and for upholding which the Society has always been commended by all good authorities on education. The system which has turned out large numbers of good men whose names are known wherever pharmacy is known. The system with which the officers of foreign pharmaceutical societies have become familiar by the public labours of the good men just mentioned, and by visits to the pharmaceutical headquarters in England during the past thirty or forty years. The system which probably these and other outside authorities abroad and in Great Britain still fortunately, though erroneously, consider to be the only systematised general teaching in British pharmacy. And what action, if any, is to be taken to prevent general pharmaceutical education, thus defined, being followed only by the comparatively few students who may happen to hear enough about it to be attracted to it, either at the parent school or the provincial schools or classes, for its own sake or who happen to hear of or be attracted by the prestige of the Bloomsbury School, with its prizes and the scholarships, or who find an adjacent school or class under the system to be convenient because they can attend one branch at one time, another at some other time, and a third at, possibly, still another time?

Shall the Society's system of education—the only public pharma-

ceutical system in the country—cease to flourish, or at best, be continued in its present spiritless condition? The writer assumes that the answer to this question by every reader of this pamphlet will be, No. Education, as practically defined by the Society, is, they will say, largely the *raison d'être* of the Society. A desire for such education largely aided in gaining for the Society its Charter of Incorporation. Such education, appropriately tested by examination, largely aided in gaining for the Society its Pharmacy Act, 1852. The position gained for it by such education largely led to its being entrusted with imperial powers under its second Pharmacy Act, 1868, the Council of the Society then succeeding “in obtaining recognition of the principle they had always enunciated that *education of the vendor was the only safe foundation for a Poison Bill*” (Calendar of the Ph. Soc., 1879, p. 148), meaning by education, apparently, the Society's own theory and practice of education, for the Society's system of education was the only system then existing. Even the system of examination was originally drawn up in relation to the Society's system of education, for, as just stated, there was no other system of education on which the examinations could be based. That relationship, through the sheer force of circumstances which nobody could foresee, has almost ceased to exist, and in its place has arisen a relationship, close as cogged wheels, of examination with a system of instruction apparently of the kind deprecated by every good authority on education in the country. The administrators of such a questionable system of instruction must not be held responsible, for they but supply a demand—a demand for “passing” not for “knowing.” The pupils so rapidly “prepared” under such a system of instruction must not be blamed, for they know no better, or are driven by necessity to its adoption. Even the newspapers and journals, which in their advertising pages give such humiliating proof of the success of such “preparation for examination,” must be held blameless. Neither administrators, receivers, nor publishers of such a system are deprecated, only the system itself. But will the Society be content that the future outcome of the educational labours of its Council for nearly forty years,\* the future educational outcome of the efforts spent in obtaining its Charter of Incorporation and the Pharmacy Acts, the future educational outcome of the thousands

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\* For a resumé of these labours from 1841 to 1868, *vide Pharmaceutical Journal* for August 24th, 1872, p. 149, *et seq.*

of pounds sunk in the Society's machinery of education, the future educational outcome of all the cost in money and brain-power of two admirable Boards of Examiners—will the Society be content that the future outcome of this stupendous amount of effort and money shall be merely the official registration of the possibly, nay probably, transitory powers of young men rapidly “prepared for the examinations?” The writer assumes that questions like these will arise in the minds of nearly every reader, and that they will be answered with an unqualified negative. And should any one not yet be quite prepared to come to such conclusions, he will probably hesitate no longer when he has gone through the facts and arguments which will presently be adduced. Few public Societies have done so much for education in their respective spheres as the Pharmaceutical. Perhaps there is no Society which has so perseveringly and consistently founded its public life on education, or so well and wisely founded on education its claims to imperial and general recognition. And there is no evidence to show that its members are not still actuated by the same desire. Nay, without doubt, were once their attention drawn to the matter, they would take good care that their own good public system of training young pharmacists, the soundness of which, as far as it goes, has never been questioned, should not be displaced by systems of teaching, which, to say the least, belong to a class which professedly have for their object “preparation for examination,” and therefore belong to a class the soundness of which is questioned by all authorities on education.

If, then, a public system of education is to be maintained in Pharmacy, shall it be adapted to the existing examination system? Or shall the examination system be adapted—legally, gradually and without any violent or sweeping changes, and even without any necessary alterations either in the examinations themselves or in the Boards of Examiners—shall the examinations be adapted to a public system of education, such, for instance, as that of the Society's well founded, well commended, metropolitan and provincial system of education?

Let us first look at the advantages and disadvantages of adapting such a public system of education to the system of examination. The advantage would be, that the system of education would be brought into harmony with a system of examination, the merit of which is impartiality;

impartiality, however, associated, so say authorities, with some insufficiency in the vital matter of testing competency—and herein would rest the disadvantage. All good authorities seem agreed that examinations are not sufficient tests of competency, even when conducted by efficient Boards of Examiners, with not hours only, but whole days, given for the examination of a candidate. And this is no reflection on Examiners themselves. The President of Harvard University, in a paper on "English and American Universities Compared," in the *North American Review*, No. 261, p. 217, says, "The English examinations are admirably conducted as regards fairness, thoroughness, and reasonable steadiness; and they were a necessary consequence of the system of private tuition, since a public test was necessary to bring the hundreds of private teachers to a common standard; but their very excellence is a serious difficulty in the way of developing professorial public teaching of the highest sort, such as the German universities abundantly supply, and as the best American universities aspire to give." And if high praise may be accorded to English examiners generally, the highest must be accorded to our own pharmaceutical examiners, both in London and Edinburgh. Not only is this admitted on all hands as regards either Board, but the two Boards, by sending deputations to each other, provide for similarity of treatment of candidates as far as possible. It is not examiners who are in question at all, it is the instrument or system put into their hands by the Legislature that is in question. "Let us have documentary evidence of sound training, in addition to the power of demanding answers to questions," say most good examiners. One can only hope that such admirable independent Boards of Examiners as our own may long continue to serve pharmacy; but also that, sooner or later, surely but gradually, they also may have the power of demanding evidence of training, and thus have placed at their disposal a greatly improved system of testing the competency of candidates. The Legislature doubtless took the wisest course at the time. The inexpediency of attempting to fit true education to examination has been demonstrated since that time. The Government is alive to this fact, and, as will be seen presently, has recently adopted the principle of fitting examination to education—education of a properly guaranteed public character.

That examinations carried on irrespective of the course of education received by the candidate are not sufficient tests of competency may be shown by citing authorities and arguments. And, inasmuch as the public

press of England reflects the opinions, not only of many, but of the majority, both of authorities in education and of Englishmen generally, a leader in the *Times* of so recent a date as August 25th, 1879, may be quoted first. To those who wish to master "The Action of Examinations," in relation, not only to the welfare of pharmacy, but to the general social and political welfare of the community, the book on the subject by Latham, already mentioned, may be recommended. The *Times* says:—

"Several circumstances have combined of late to direct public attention to the subject of examinations. We have had the curious and instructive history of Mr. Goffin's certificate. Cambridge, as we saw a short time ago, is forced seriously to consider the system of entrance scholarships; and to-day a correspondent invites attention to the mischievous system, as he considers it, of entrance scholarships established in public schools. It is impossible to deny that there is a great deal of force in Mr. West's arguments on this subject. Even if examinations were a good in themselves, it would still be possible to have too much of a good thing, and very many competent judges are already beginning to dread an educational surfeit in this respect. But, to our thinking, examinations, so far from being a good in themselves, can hardly be placed higher than the category of necessary evils. They are a burden to the examiner and to the teacher, exactly in proportion as each is efficient and conscientious, and they are very far from being an unalloyed benefit even to the examinee. But they are not the less in many cases necessary; they are at least a rough test of merit, capacity, and attainment, and, therefore, where these have to be tested for any specific purpose, it is hardly possible to dispense with examination altogether. But to admit this much is very far from saying that examinations should be made, what they are fast becoming, the be-all and the end-all of educational processes. From the tender age of ten or eleven to that of manhood and upwards nearly every boy of promising parts in this country lives with the constant fear of examination before his eyes. If he is more than usually successful at the end of the process, he is likely to enjoy for the next few years, or, indeed, as long as he chooses, the distinguished privilege of examining his juniors in their turn. Thus the examination fever spreads far and wide. It spares neither age nor sex; for women, with singular perversity, have claimed as a privilege what boys and men alike regard with aversion. It has long ago pervaded education, and its contagion is now beginning to infect the whole range of modern letters. Literature, ancient and modern, is regarded as so much material for examination to be reproduced in the form best calculated to win marks in a competition. History is cut up into 'periods' and 'epochs,' and then reduced into summaries, so that whoso runs may read or teach, examine or be examined. The old Universities, which once could boast of a learned press and still occasionally publish works not unworthy of English scholarship, devote their chief literary energies to the publication of manuals required in the various examinations they have undertaken to conduct. The work is excellently done, no doubt, though it is hardly of a kind which befits the dignity of an Academical press. But the examination

spirit is rampant, and the Universities are forced to yield to it. The pity of it is that they take to the task so kindly and seem so entirely contented with it.

"The evil of all this is unquestionably great and growing. We need not dwell on the disastrous effects, well known to schoolmasters and college tutors, of the premature forcing for the purpose of competitive examination to which so many boys of tender years are now submitted in public schools. We are convinced that Mr. West does not speak too strongly on this subject, and we may fairly leave it in his hands. It is rather to the general effects of the modern tendency to make examination the sole test and crown of all processes of education that we wish to draw attention. This tendency entirely distorts every rational view of what education is and should be. It makes of the pupil a mere racer, and one who contends for heavy pecuniary stakes. It makes of the teacher a trainer whose whole prosperity depends, not on his power of imparting sound knowledge and drawing out the natural capacities of the mind, but on his skill in preparing his pupils for a particular competition. It makes of the examiner a judge, not of mental capacity and sound information generally, but of those qualities alone which are readily estimated in marks. In addition to all this, the system tends inevitably to force teaching and examining alike into a narrow and mechanical groove. Even if a particular teacher has a special taste and regard for some subject out of the ordinary range of the examination for which he is preparing his pupils, he dare not lead them in the direction in which he would probably do them most good, for fear they should fail to get credit for their work in the coming ordeal, on which their whole success in life may depend. He is forced to scan with anxious scrutiny the line that the examination has previously taken, in the confidence, very rarely misplaced, that it will take the same line again. For the examiner knows that he, too, must not go beyond certain well-understood limits. If he does, he will be regarded as crotchety, unfair, and pedantic. Every experienced teacher knows to his cost how the attempt to lead his pupils towards some collateral line of study not directly recognised in an examination is frustrated at once by their refusal to take any interest in subjects that will not 'pay.' Every examiner knows that the insertion in his papers of a question lying somewhat out of the recognised range and groove is simply so much waste of time and labour. Hence, under the influence of examinations, the treatment of every subject, great and small, is divided, by an impassable barrier, into the dark and boundless range of the neglected and the unknown, which the teacher must leave unnoticed and the examiner dares not explore, and the narrow field, brilliantly illuminated and minutely surveyed, which the pupil is taught to regard as alone worthy of notice. Even thus we have not exhausted the evil effects of thus substituting examination for education. The whole system gives the successful competitors an exaggerated sense of the importance of the victories they have won. It unduly stimulates their earlier efforts, while it paralyzes their later and more mature energies. A high wrangler or a first-class man thinks that the battle of life is won. He has learnt all that he can learn, has done all that he needs to do. He despises knowledge which lies outside the examination range as musty, pedantic, and unprofitable. He thinks meanly of men who have not been examined so often or so successfully as himself. He owes all that he is, and has, and knows, to having been

examined ; he believes in the process, and he aims at nothing higher than being in his turn an examiner himself. Then, indeed, his fate is sealed ; he might have been a student, a scholar, or a philosopher if he had not been taught to look at all knowledge through the distorting medium of examinations ; he might even have succeeded in life, in spite of early obstacles and mischievous training, if he had not been led to believe that success was already won at its outset. But he becomes a mere subordinate wheel in a vast and exacting machine ; his existence is passed in a weary and monotonous round of setting papers and looking them over, of assigning marks and adding up their total, of comparing results with his colleagues and striving to gauge human nature by impossible measurements and fallacious standards, until at last he comes to believe that there is no better fate in store for human beings than to become just what he is himself.

“The picture we have drawn is highly coloured, perhaps, but it will the better serve to illustrate the inevitable consequences of making examination supreme, instead of keeping it in proper subordination to the higher purposes of education. It used to be said that in some districts of England a man could be supported by charity from his cradle to his grave. We have changed all that, and in the place of indiscriminate charity we have established the supremacy of examinations at every turn in life. Is the result so entirely satisfactory that we can regard it as final and irrevocable ? Is it not possible that, as so often happens, we have confounded ends with means and made a successful examination the paramount purpose, instead of merely the indispensable test, of educational training ? What, in fact, is the actual result ? Education is doubtless improved in its lower ranges, and the public service of the country has been purged of mere favour and nepotism. These are valuable and indisputable gains ; but they would be purchased dearly by the sacrifice of high aims in academical culture and the absorption of some of the best capacity of the country in a kind of work which extinguishes original study and paralyzes all intellectual independence. If we persist in absorbing some of the best capacity of Oxford and Cambridge in the perpetual conduct of trivial and elementary examinations, can there be any reasonable chance of those Universities producing results proportionate to their fame and endowments in the real work of learning.”

The foregoing picture is drawn “*to illustrate the inevitable consequences of making examination supreme,*” a supremacy which, in a manner quite unforeseen, and for which no one is to blame, obtains in pharmacy in Great Britain, and which is, apparently, seriously checking true education, and thus, it would seem, thwarting the educational policy pursued by the Pharmaceutical Society for nearly forty years. It is also drawn *to illustrate the importance of “keeping examination in proper subordination to the higher purposes of education,”* a principle which, somewhat strongly expressed by the *Times* (though the useful word “subordination” does not seem to be employed in any offensive sense), may be advocated for pharmacy. In pharmacy the supremacy of examination scarcely even

produces improvement of public education in its lower ranges, for instead of the supremacy encouraging the growth of public teaching, as the supremacy of examination at the London University encourages the public teaching at King's College and University College, it seems to discourage public teaching, and to nourish teaching apparently of a kind deprecated by all good authorities in education.

The *Pharmaceutical Journal* (August 20th, 1879), in commenting on the *Times*' article, agrees with it almost entirely. Though, by the way, the *Journal*, erroneously assuming that the only substitute for compulsory examination is compulsory education, regards the latter as furnishing equally fallacious evidence of sound training. This view is unnecessary. Nobody in pharmacy proposes to substitute the one thing for the other, but to substitute the position of one for the position of the other, or at all events, to move in a permissive, if not a compulsory, manner in that direction. Nobody proposes to substitute examination by anything, or to interfere with the examinations under the Act in the slightest degree. The proposal presently to be submitted involves the sustaining, supporting, and strengthening of the examinations, so as to make them, so far as possible, sufficient tests of competency. What is desired is that the examinations should be set to test sound and lasting education. It will be seen that when any examination is made supreme, and the teaching is arranged with the view of leading up to the examination, true education is apt to languish, and unsound ephemeral instruction to thrive in its place.

A writer in the *Chemist and Druggist* (September 15th, 1879) admits most of the allegations of the *Times*, but attributes the state of matters to "inefficient examiners," and, as a remedy, hints that there is no necessity for an examiner ever asking the same question twice over. The author of this hint forgets that, as only portions of subjects are required, the number of questions is limited, and, apparently, does not perceive that the tutor who undertakes to "pass" his men, might at once advise them to miss matters in which questions had been asked before. Examination of young men with the object of ascertaining competency, is the easiest process in the world from the amateur's point of view. A well-known pharmacist, who had been in business a third of a century, said at the Conference on Pharmaceutical Education at Brighton (see *Pharmaceutical Journal* for September 7, 1872) that he would undertake to tell how a man had been instructed the very first

time he saw him hold a pair of scales. An excellent plan, doubtless, if the man had not previously been "prepared" for the examination. But, as Professor Michael Foster then said, "If a cram-man had to prepare a pupil for that gentleman, he would say to the pupil, 'Be very careful how you hold the scales.'" The merchant who chose his clerks by noticing from his window whether the applicants in coming up the path to the door kicked aside a broom, or stepped over it, or carefully picked it up and placed it against the wall, would have been less successful in his diagnosis than he is represented to have been had a "coach" round the corner previously, for a consideration, made known the test to the applicant. Much may be done by the invention of new questions outside the old areas and new tests of various kinds by the examiner; but the candidate who has been deliberately and properly trained within the limits of the old areas is thus placed at a terrible disadvantage, for he has to risk being "plucked," or is driven either to specially "prepare" himself, or be "prepared;" and the conscientious and careful examiner is thus unconsciously checking the growth of a sound public system of education, and probably promoting the growth of a questionable system of "preparation for examination."

The *Times* has been thus somewhat lengthily quoted because it is the leading organ of public opinion in this country, but there is scarcely a newspaper, journal, or magazine which has not regretted the system of adapting education or instruction to meet the requirements of a compulsory examination. What the whole country, by its ordinary organs of expression, has deprecated, the members of the Pharmaceutical Society will scarcely support. Once more, it is not examiners who are in fault. The writer in the *Chemist and Druggist* is wrong, not to say unjust, in laying the fault at the door of "inefficient examiners;" the fault is in the system, not in its administrators, or, to be more accurate, the fault lies not in examination *per se* so much as in its relation to education. Examination has attempted to lead where apparently it ought only to have followed. But before discussing the question of remedy, some more evidence of the views of the public, and of eminent individuals, on the evils of adapting education to examination, may be tendered. To quote two more popular newspapers. The *Daily Telegraph* of September 12th, 1879, says:—

"Such is the hunger for examination and the fever for scholarships, that an intelligent and affectionate parent who believes in the theory of allowing a mind to lie

fallow until it is fit to receive the seed is often frightened into yielding to the tyranny of cram lest he should prejudice the career in life of his own child. Evil and pernicious as was the old happy-go-lucky style of tests by purse-strings and influence, it will soon be a point for consideration whether the remedy, carried to excess, is not worse than the disease. The doleful words of scholarship and examination meet the father's ear before the boy has left his mother's apron-string. He must be examined for the public schools, examined for the navy—that ideal career of the English lad—stuffed full of useless knowledge in order that he may earn a pittance at a Government desk; bolstered up with irrelevant facts for the army; in fact, the examiners, who are not to blame, have stopped up the path to every profession, and no one can pass without submitting to paper work sometimes tending to show the cleverness of the examiner, rather than the proficiency of the candidate.

“The most serious and important question for a father to take into consideration is the age at which his children should begin to acquire these cartloads of facts which are supposed to be tests of education, and without which examiners refuse a passage into any career of life. . . . As matters stand at present, the bargain is not between the father of the boy and the immediate employer of labour, but between the parent and the professional coach. When a child is free from the discipline of his nurse or his sister's schoolmistress, he is taken off to some educational hothouse where he can be forced for one or other of the liberal professions. He is not allowed to grow out in the air or in the garden. The ‘coach,’ who is accustomed to this dismal work, can easily tell how the young idea can be taught to shoot. There is some new device for every profession, whether it be a public school scholarship, a cadetship in the Army, an appointment in the Navy, or a supplementary clerkship in the Civil Service. The schoolmaster has mastered the artifices of the examiners, and feeds his pupils with the tricks and turns of old examination-papers. The lads are examined before they know the subjects which will be selected; they are taught what kind of questions to answer and what to neglect; and, in a small space of time, these educated machines are wound up for work.

“There is surely a more direct and efficient test than this, and one better calculated to get the best men all round for the manly, active, and responsible professions.”

One remedy is to oblige the men to go through a well-controlled, well-supervised public system of education, and then afterwards to examine them in the area of that education. From an account published in the *Daily News* of October 24th, 1879, it would seem that the English Government now recognises this remedy as best, for the Admiralty has arranged that torpedo-lieutenants shall go through an eighteen month course of instruction at the Royal Naval College, in the chemical and other general educational principles on which the calling of these lieutenants is based, and a course of technical education on board the *Vernon* torpedo schoolship, and then be examined in the area of this educa-

tion. The remedy is, in short, to adapt or fit examination to public education. It would not always be easy to create the public system of education. In pharmacy, however, this is to a great extent already done, both at Bloomsbury and in connection with certain provincial pharmaceutical associations, so that in pharmacy the remedy would be, gradually and tentatively, to make the examinations *en rapport* with the system of education just mentioned, or to any other equally good public system of education. The aim of all true education, that is, general education as distinguished from technical education—and that pharmaceutical education at a public school is general, while the education of the shop is technical, will be shown presently—is to make men use their brains; quite a different process to that of storing their memories by way of “preparation for examination.”

The *Echo* of October 9th, 1879, says :—

“We fear the evils of ‘cramming’ for public examinations, to which Lord George Hamilton drew attention yesterday at Bolton, are easier to condemn than remedy. They are inseparable from a system the merit of which consists in its strict impartiality. Nothing, indeed, seems fairer, or more certain to bring the best youths to the front than placing competitors at a table, and handing them printed questions on the subjects they have studied, to answer then and there. Everyone is on a level, and he who has read most closely and has the most retentive memory, will head the list of the successful candidates. It by no means follows, however, that he is the ablest pupil, or that he has even the most complete mastery of the subjects in which he has passed. Another pupil may surpass him in accuracy of information and soundness of knowledge, as well as in natural aptitude; yet, from lack of opportunities, and especially from lack of a special kind of tuition, he may be thrown out. ‘Cramming’ has been reduced to a fine art, as though the sole purpose of education were to learn in order to forget. There are men who make it a profession, and whose energies are bent, not on making their pupils masters of this or that branch of study, but on keeping them well read up in the direction of what they know, by a species of instinct, will be the examination questions. Knowledge and education are subordinated to passing, and when a youth has passed he is very often glad to forget all that he has learned. It is impossible to remedy the evils of the system unless something is done to take the candidates out of the groove of mere questions, and afford them free play to their brains. . . . The system of examination is good within its sphere, but it must prove mischievous when nothing more is required than answers to questions, carefully constructed though they may be.”

The candidates, in pharmacy at all events, would be taken out of the groove of mere questions, and free play afforded to their brains, if at their examinations full, instead of partial direct credit could be given

to them for having studied the technical part of their pharmaceutical education at properly conducted dispensing establishments; and if instead of no direct credit, as at present, full credit could be given to them for having studied the general part of their pharmaceutical education at a properly supervised public school of pharmacy. Examination would probably then be doing the maximum of good within its sphere.

The *Edinburgh Review* for April, 1874, in an article on "Competitive Examinations," in relation to the Indian Civil Service, condemns the system of adapting education to examination:—

"The system is sufficiently condemned by these facts. We have no wish to disparage the exertions of gentlemen who deserve all credit for the intelligence with which they have perceived how the forms of these examinations would give a practical monopoly of success to a particular sort of educational article, and the address and energy with which they have set about producing it. But the fact being thus, that in order to obtain an appointment in the Indian Civil Service you must put yourself in the hands of one of two or three particular tutors living in London—and practically no young man of ordinary talent has a chance of success unless he does so—obviously amounts to this, that however much the truth may be disguised under a specious appearance of open competition, the service under the new conditions has become just as much a monopoly as before. In former days you had to get a nomination from a director; now you have to spend a couple of years with one or other of the 'crammers' whose names are familiar to the public through the advertisement columns of the papers. The facts being so, the present mockery of an open competition stands condemned by a mere statement of them. That the solemn machinery of a Civil Service Commission, with all its attendant expense, should be set in motion merely to record the comparative merits of the pupils turned out by two or three private establishments, for this is what the examination really amounts to would be simply ludicrous if it were not for the serious interests involved.

"Such being the facts, and anyone who cares to be at the trouble may easily verify them, what, it will be asked, are the reasons for this extraordinary result, and what should be the remedy? We believe that both these questions admit of a simple answer. This competitive examination has thus become a virtual monopoly, and the 'crammers' have been able to drive all other competitors out of the field, because the preparation for it involves a kind of education utterly different from anything actually pursued at any public institution, and consequently is quite out of gear with the general educational machinery of the country. . . . To have a fair chance of success a man must leave his university or college, in whatever part of the kingdom it may be, and betake himself to the 'crammers' who have made it their special function to run candidates for this particular examination. Not that these gentlemen have any special dispensation for imparting knowledge, or that the art of 'cramming,' as the process is styled, is peculiar to their establishments. At Cambridge, where the college lectures are of but little account, and the university lectures of still less, the

whole training of candidates for (at any rate mathematical) honours is practically in the hands of private tutors or 'coaches,' who are quite equal in their own line to any 'crammers' that could be brought against them."

The remedy would seem to be to fit or adapt or limit examination to properly guaranteed public systems of education.

The advertisements alluded to by the reviewer are probably such as the following :—

**EXAMINATIONS.**—Success certain; pass-fee when successful.—Rapid **COACHING**, under guarantee, for Army, Woolwich, Cooper's Hill, Universities, Indian Civil, &c., by a University tutor (gold medallist).—Zeno, 4, Crescent Place, Regent's Park.—*Times*, May, 1878.

It is only fair to the credit of our older Universities to remark that, from the following paragraphs of a letter to the *Times* of February 25th, 1879, the undue development of "preparation for examination" is modern :—

#### "UNIVERSITY EXAMINATIONS.

"TO THE EDITOR OF THE TIMES.

"Sir,—The views expressed in your article of this morning with regard to University education will, I am sure, be largely corroborated by the experience of non-resident graduates of both Oxford and Cambridge.

"It is on revisiting the University after an absence of some time that one is struck by the complete manner in which nearly all intellectual efforts are spent in the absorbing work of examining or being examined. It seems to be considered that mental cultivation must be bounded by and merged in the course prescribed for the honour schools. Instead of learning what is worth learning for its own sake, the student, if docile to the spirit of the place, must absolutely devote himself to 'getting up' what will 'pay' in the examinations. If there is a line of study, a course of lectures by an eminent professor, or a strong intellectual taste in an individual learner not reducible to something that will pay in the schools, so much the worse for such things, which must be avoided as vain and profitless.

"The belief in the all-sufficiency and supreme importance of examinations (especially when conducted on paper), that masters the minds of so many of those concerned in University education, is something fatuous. . . . No one would deny that examinations, to some extent, are necessary and in many ways valuable; but they are not an end, but a means, and, moreover, not the only means, to an end.

"There have for some time been at the Universities, especially at Oxford, symptoms of discontent and diffidence as to the excellence of their system, and I venture to think the appearance of your article is very happily timed.

"I have the honour to be, Sir, your obedient servant,

"February 19th."

"M.A.

The *Pharmaceutical Journal*, the organ of the Pharmaceutical Society itself, has deprecated the adaptation of education to examination, characterising as a "sham" "the system of studying a subject in order

to meet the examiners' questions rather than for its own sake, known popularly as 'cramming;'" and goes on (April 5th, 1873) to quote the account in *All the Year Round*, of a typical contest between an Examiner and Dr. Varnish, M.A., in which the former is, of course, defeated. There could not be a better definition of this ugly word "cram." The questions may have been printed, or *viva voce* questions less openly accessible, but the man who "prepares pupils for exams." has got hold of the questions, wraps their answers up in a "course," and the portative memory of the candidate carries them to the examination room and shoots them out there, he often caring little whether or not they are left behind him when he leaves the unloved apartment.

"Preparation for examination" was formerly a useful figure of speech. The period of education of men who ultimately were examined *in the area* of that education was a period of "preparation for examination." But then education was the master and examination the servant; examination was an educational instrument. But now examination is the master, and education the servant. Such education is, in fact, no longer e-du-ca-tion, but, apparently, the mere giving of instruction, or the putting into a man's brain information that he is to reproduce on a certain day. "Examination," when not associated with sound education, being on all sides regarded as imperfect, mere "preparation for that examination" must, one would suppose, also be imperfect. Yet, when the rising generation use the words, "preparation for examination," they mean exactly what they say, and do not in any sense use the words as a figure of speech. "Cramming" is short for "studying to meet the examiner's questions;" "cramming" is, apparently, short for "preparation for examination," in the modern meaning of those words.

Public bodies such as University College and King's College do still, in a sense, "prepare for examinations," but the *public* character of these institutions is the guarantee that pupils are not merely studying to meet the examiners' questions. Besides, the examining bodies in these cases are themselves largely composed of teachers, and thus the examinations though, unfortunately, open to all comers, are, practically, fitted to comprehensive and thorough public educational systems. These examinations are more truly adapted to education than they appear to be. Examinations which are not only not adapted to public systems of education, but out of gear altogether with sound public systems of education, are thus characterised by Latham at page 399 of his book. "When

the [Pass] Examination is held up as a challenge to all comers, success in it is a very uncertain kind of criterion. If the programme contains scraps of eight or ten different subjects, in each of which the candidate must satisfy the examiners, then the system is unwholesome in itself. . . . . The real value of all Pass Examinations depends on the teaching with which it is associated. . . . . What the passing of such an examination principally shows, besides memory, is a certain degree of moral power, and if we know nothing of the circumstances under which the youth has learned, we can judge but very imperfectly of this moral power." As at University College and King's College, in England, so at the public colleges in France the teaching is carried on in reference to Examinations, but here again the public character of teaching saves it from degenerating into any sort of "studying to meet the examiner's questions." In Germany examinations are more completely adapted to the education. All care is taken, by proper control and supervision, to make the education all that it should be; and then examination of a very thorough character, but still absolutely restricted to the area of that education, and carried on by examiners having a perfect acquaintance with the exact limits of that area, is used as a test of the extent to which that education has been absorbed by the candidate. Under this plan the Examiner has a comparatively easy task in place of a task almost impossible of performance. The nature and extent of the public curriculum, the care with which that curriculum is supervised and controlled, and the simple machinery for making the students work while being educated are in themselves almost a guarantee to the Examiner that his candidate is properly educated. Questions which need not be very different to those put to previous candidates, for no public teacher will take advantage of them, will soon tell him whether or not the candidate has taken full advantage of his opportunities.

The *Chemist and Druggist*, on March 14th, 1874, admitted that examination, carried on irrespective of prior education, was an insufficient test. Contrasting English and foreign pharmacists, the writer says:—

"The main point of difference is the absence among us of any prescribed curriculum of study previous to examination. Such a condition is regarded with horror by French and German alike. . . . . This question of the curriculum is undoubtedly the chief source of our supposed inferiority. On this point it would be the height of ignorance to pass a hasty opinion. The judgment and experience of French and German pharmaciens are worthy of the highest respect. That we are

tending towards a curriculum ourselves is perfectly evident, and we are fully of opinion that some day its establishment will be desirable. No examinations that can be devised can ever be perfect tests of competence, and to deserve and gain public confidence and esteem is a course dictated both by honourable and prudent motives."

Has not the time *now* come, not, perhaps, for the legal enforcement of a public curriculum, but for its legal recognition by the Boards of Examiners? Try a permissive curriculum first for the "Major," if not the "Minor," and begin the experiment now, or as soon as the necessary arrangements can be completed, say within a year. No official examination, *per se*, can be a perfect test of competence, therefore supplement it by evidence of good publicly guaranteed training. The public from placing too much reliance on the unaided and uncontrolled supremacy of examinations, is fast going round to the extreme of disbelieving in them altogether. Let us in pharmacy gain public confidence and esteem by showing that both extremes may be avoided, and that properly adapted to a publicly conducted and supervised system of education, examination is an invaluable and indispensable instrument for the public good as well as for our own welfare. Leaders in pharmacy, political, educational, literary, and commercial, as well provincial as metropolitan, leaders in the sphere of examination, too, have for some time been whispering and even talking of the importance of evidence of good training as well as the power to answer questions. Has not the time now come for the Boards of Examiners to officially recognise good training, and to give credit to candidates who have been well trained—well trained at public schools in subjects of general pharmaceutical education, as well as in the shop in technical pharmaceutical education?

Even *The Chemists and Druggists' Advocate* foresaw, on February 20th, 1874, that the compulsory examination, without corresponding public collegiate education, would weaken the Society's own public, but voluntary, system of education.

"We can never approach the subject of pharmaceutical education without a regretful consciousness that the education for which the Society was established, for which Jacob Bell laboured and sacrificed, and to which its founders looked with fond desire; the education for which the Queen was memorialized, the legislature was petitioned, a royal charter granted, and Acts of Parliament were passed, is as a system melting away. . . . We believe that the Queen, and Parliament, and Jacob Bell, and the founders of the Society, meant by education—*teaching*. So the Society itself understood it, and practised it for a quarter of a century."

And then the *Advocate* foreshadows the time when examination is once more made to follow, instead of lead, education :—

“Shall we not now hope to see pharmaceutical education elevated above memorical cramming and mechanical training? We behold a mighty array of professors and examiners; they come imbued with knowledge; they advance with the mien of uncompromising justice; the professors mount their chairs, and the examiners take their seats; and as we contemplate them in their dignity, with pride and satisfaction we rejoice to think that stern uncompromising examination will stamp ‘cramming’ out of existence, and that the vigilance of the Pharmaceutical Society will guard the public against incompetent practitioners in pharmacy.”

The *Chemical News* (February 14th, 1873), commenting on the statement that “Examination *per se* never was, and probably never can be, a thorough test of competency,” regards it as “a dictum which ought to be inscribed in letters of gold over the door of every college in the land.”

Another illustration of the fact that examination unassociated with systems of education of known thoroughness, evokes what all good authorities consider an undesirable form of “preparation for examination” is given in the *Fortnightly Review* of June 1st, 1875 :—

“Not very long ago the Oxford Class-list in the Final Classical Examinations was as much a monopoly as the appointments to the Indian Civil Service. It became an accepted axiom in the undergraduate world that none but the pupils of a certain well-known ‘coach’ had much chance of getting a first; and when the examiners tried to circumvent him by changing the character of the papers, they found themselves no match for the ‘crammer,’ who had swung round from Mill to Herbert Spencer, and from Herbert Spencer to Hegel.”

Eminent men of science have, with scarcely an exception, spoken against fitting education to examination. The *Daily News* of August 25th, 1876, in commenting on the movement, since successful, of the Owens College, Manchester, to win for itself a University charter, thus condenses the evidence on this head :—

“Upon this point the testimony of Professor Huxley cannot well be gainsaid. ‘I think it,’ he writes, ‘not only of importance, but absolutely essential to fair dealing with students, that the examination into their proficiency should be conducted with due reference to the instruction they have received.’ Much, however, as the student may suffer from the unfairness of the examinations—and if every examiner had the wisdom of Solon unfairness could not be avoided—it is nothing compared with the injury done to the teacher. If a professor is fit for his work, he cannot be employed to worse purpose than cramming young men for examinations. Of the twenty-five distinguished men who were consulted by Owens College, Sir John Lubbock stands

alone in affirming it to be 'desirable that the examining body should be distinct from and independent of, that which prepares the pupils.' Even those who disapprove of the elevation of Owens College into a University agree that the divorce of examination from teaching is a distinct evil. Mr. Hutton, for example, 'earnestly opposed the extension of the University examination to candidates who had never been under collegiate teaching and discipline.' Mr. Roby, who gives a decided opinion against the scheme of Owens College, says that 'strict examinations always hamper a teacher.' On the other hand, the weight of independent evidence is overwhelmingly strong. Professor Andrews, of Belfast, writes that any attempt to follow the example of the University of London, either by affiliating colleges over the country, or by substituting examinations for collegiate training, can, in his opinion, only lead to the degradation of all high mental culture, whether scientific or literary, in this country. Professor Frankland says, 'In science, at all events, I am convinced, from a good deal of practical experience on both sides, that the testing of students by outside examiners is almost an unmixed evil. It is unfair to earnest and genuine students, and offers a high premium to superficiality and mere effort of memory.'"

Even the distinction here drawn by the *Daily News* between the testimony of Sir John Lubbock and that of the other twenty-four authorities is more apparent than real. It may be, and is, in pharmacy, desirable that the body of examiners under the system of pharmaceutical examinations, either of London or Edinburgh, should be distinct from the body of educators under the Society's system of education as practised either at the Bloomsbury school or at the classes or schools in connection with the provincial pharmaceutical associations, though both bodies should be governed or actuated, at least as far as both are now governed or actuated, by one Council; but no good authority argues that therefore the area of examination should be allowed to over-run or under-run, or have no reference to the area of education. Nearly all authorities are now agreed that a system of examination should be fitted, or "made subordinate," as some writers not very happily style the relation, to some system of education, both systems being sound and of a *public* character, and being made to dovetail with each other by the action, when practicable, of a supreme governing body or council.

In the statement of their case which the Owens College laid before the public in a pamphlet, issued on the 3rd March, 1876, signed by Principal Greenwood and Professors Roscoe, Ward, and Morgan, the following sentences occur (Section 14):—

"Any system of examination which controls and determines the range and method of teaching instead of essentially confining itself to testing its quality and efficiency, is in danger of detrimentally affecting the progress and development of academical

studies. When such a system admits of no co-operation on the part of the teaching body, or even conference with it, the danger in the same direction must necessarily be greater."

This co-operation or conference is in section 15 described as—

"that *rapport* between teaching and examining which is necessary to a thoroughly efficient system of instruction."

On page 9 of the pamphlet No. III., issued by the same authorities, on the 19th of May, 1876, it is stated that the combination, which is the essence of their proposal, is "an examination test," "*together with a certificate of collegiate training.*" (The italics are their own.) Again, on page 11, "that *rapport* between the teaching and the examinations which is of the essence of our proposal." The subjects included in the Pharmaceutical Society's system of education are essentially academical studies, or studies relating to general pharmaceutical education as distinguished from the technical subjects of "Prescriptions" and "Practical Dispensing." This will be further shown presently. The academical or general pharmaceutical subjects should be learnt at a pharmaceutical school or college, at all events they do not belong to the technics of the shop, whereas the shop should usually be the place for the acquirement of a knowledge of the technical subjects. The remarks of the Owens College authorities are strictly applicable to pharmaceutical education and examination.

Matthew Arnold was one of the eminent authorities consulted by the Owens College, and he says:—

"I hope we may live long enough to see London organize its Examining Board into a real University: and the five Universities which England would then possess would be not one too many for her. I was much struck with what is said, at page 14 of the Owens College Statement, about the inconvenience of the want of *rapport* between your teaching and the degree examinations of the London University, which your students attend: I can well believe it."

One would desire to see the Pharmaceutical Society, its Council and the Examining Board, actuated by the same University spirit; one would desire to see "that *rapport* between the teaching and the examinations which is of the essence of *our* proposal," meaning by "the teaching" sound public teaching, such as the system of education which the Bloomsbury school or the schools or classes of the provincial associations afford or might be made to afford.

Sir Benjamin Brodie, in the same pamphlet, thus speaks of educational institutions having the power of granting degrees, institutions with

which, in their leading principle, the Pharmaceutical Society has very close alliance :—

“A University differs from other educational institutions in the possession of the power of granting degrees. These degrees, when granted by a University worthy of the name, are not mere certificates of proficiency (of which an examination is by no means a conclusive test) but are evidence that the student has passed through a definite curriculum of study, has gathered his knowledge not merely from books, but from the lips of living professors and actual experiments and demonstrations.”—*Owens College Pamphlet, No. II.*

The Rev. Principal Caird, of the Glasgow University, also writes, in the Owens College Pamphlet, No. II. :—

“There is a most valuable element of culture which can only be got from College life and the continuous intercourse of professor and students; and when the examining is entirely foreign to the teaching body, the latter is cramped both in the range and quality of its teaching, and the former, though its degrees may mark a certain uniform measure of attainment, is compelled to ignore tests of real culture which only a teaching University can apply.”

Even Dr. Carpenter, Registrar of the London University, says of Owens College, now, or soon to be, the Victoria University :—

“Nor am I at all opposed to the principle that the degrees of such a University should be conferred on those only who have passed through a regular course of Academic study; for the degrees of the University of London would still be open, as at present, to such as have not been able to avail themselves of the advantages of Academic training—advantages which no one estimates more highly than I do.”

One can see no difficulty, as regards organization, in leaving the examinations (by the Boards under the Pharmacy Acts) open, exactly as at present, to candidates who choose to get their knowledge where or how they please, while at the same time giving commensurate credit to candidates who might offer a certificate of duly recognised, properly guaranteed public collegiate or public academic training. Doubtless much benefit to the public and to pharmacy would ensue if *all* candidates were required to pass through a public curriculum, for examinations open to all comers are liable to such abuses as are alluded to in the following extracts from the *Journal of Science*, but it is questionable whether such a restriction would be expedient or practicable just yet.

The *Journal of Science*, for November, 1879, says, at page 724 :—

“Facts have, indeed, lately come to light which might render all further argument needless if ‘cram,’ like many other absurdities, had not ninety-fold the ‘nine lives’ which the popular proverb assigns to cats. The *Chemical News*, in its Student’s

Number for the Session 1879-80, informs us that 'not so very long ago a certain student, who had never handled a dissecting-knife, carried off the B.A. prize, as well as honours in Animal Physiology, by dint of an excellent memory, and is now a Government clerk, whilst a contemporary of his, who in the same year carried off prizes and honours in chemistry, without having ever cleaned a test-tube in his life, is now one of our leading musical composers and critics. What man of ordinary common sense can fail to see the absurdities which, in these two cases, lie piled up layer upon layer? Or what unprejudiced mind can require further evidence for the necessity of a great and total change?"

And, page 726:—

"How many of the world's greatest naturalists would escape being ignominiously 'plucked' if pitted, under such regulations, against candidates possessing an excellent verbal memory and accustomed to the 'cramming' process? We have met with eminent men of science who admit that they would utterly fail if examined in their own published researches against men of this stamp."

Dr. Allen Thompson, of the Glasgow University, most distinctly deprecates the supremacy of examinations as tending to foster "special preparation or cramming," and distinctly advocates, on the other hand, examinations in which due place is given to the course of education which the candidate has gone through at the university or other public school or college. (Page 7 of Owens College Pamphlet, No. II.)

"As to the nature or constitution of the proposed University, I may at once say that all my experience and thought on the subject lead me to give a decided preference to that which is most nearly represented by the Universities of Germany and Scotland, in which graduation and teaching are combined. I do not doubt the beneficial influence which such an institution as the London University, devoted exclusively to the superintendence of examinations, may, in the exceptional circumstances which have led to its establishment and maintenance, exercise upon the progress of education, by the careful dispensation of its honorary degrees; but I think it may be questioned whether that influence might not have been far greater had the University been more intimately combined with a system of local teaching. For myself I must say that I have not such entire confidence in mere examinations as full tests of general ability, or of proficiency in some of the most important branches of knowledge as to lead me to trust to them alone. I am aware of the great difficulty of carrying out such examinations with entire efficiency and impartiality. I dread their effects in interfering with the freedom and elevation of teaching by their pernicious and too prevalent tendency to special preparation or 'cramming;' and therefore, in judging of the qualifications for degrees, I would strongly advocate a system by which, along with the result of examinations, due place should be given to the evidence obtained from teachers of the candidates' actual work."

Professor Huxley has often been quoted respecting the imperfection of examinations that are not *en rapport* with a public curriculum.

Candidates for such examinations "work to pass, not to know; and outraged science takes her revenge. They do pass, and they don't know." (See his address on *Universities: Actual and Ideal*.)

There is scarcely a statesman of eminence but has raised his voice against the adaptation of education to examination. (See the *Pharmaceutical Journal* for March 15th, 1873.)

Few speak more strongly than Bishop Temple, whose experience at Rugby gives great weight to his opinions on all matters relating to education and examination. He has warned students against learning with a view to being examined. He has warned examiners that the driving of students into getting knowledge solely in a way in which it can be produced neatly, clearly, and precisely, in answer to neat, clear, and precise questions, is to drive them into a groove in which they will not afterwards move in actual life. He has urged the extreme importance of making the examination follow the school, and has pointed out the dangers of making the school follow the examinations. At the Public Distribution of Prizes and Certificates awarded to the Candidates at the Christmas Examination of the College of Preceptors, which took place on Wednesday, the 28th January, 1874, the Bishop said:—

"There is a perpetual danger that examinations shall crush the study as it were into a mould; that the learner should learn, not with a view to knowledge, but with a view to being examined; that instead of the knowledge growing in the mind in the healthy and natural way, developing, as it were, from within, that the learner should be always looking forward to the black day when perhaps he may fail in his examination; that he shall always be asking himself, What sort of questions shall I be asked? and that he shall be endeavouring, if possible, to fit everything that he learns to what he anticipates will be in the paper that is put before him. In the same way there is a danger that the teacher, instead of studying the subject, shall study the examination papers; that these papers for one year shall be the guide for the teaching of the next, and that the teacher shall have constantly present to his mind the probability or improbability of particular questions being asked. In all these cases it is quite certain that examinations damage teaching. . . . All through the process of acquiring knowledge it is essential that the mind should be fresh and vigorous, and maintain its own spontaneity; and in proportion as it loses that spontaneity, and gets to work by rule and according to routine, in that proportion will it be found that the knowledge acquired is not suited for the purposes of after-life. Hence, therefore, the danger that these examinations may have the effect of making knowledge more precise and more reducible, but less living; with less of the man's mind in it, and consequently with much less elasticity, and much less adaptability to the purposes for which it will afterwards be wanted. There is one rule which it has always appeared to me should be followed in these matters, viz., to make the examination follow the school, rather

than making the school follow the examination. We should, as far as possible, endeavour that the school should share in as free a course and as unfettered a choice as possible. Instead of putting before them a rigid course of examination, and saying, 'Mould your teaching to that,' we should rather say, 'Let us know how you teach, and we will endeavour to accommodate our examinations to that.' And it is because I believe the College of Preceptors has endeavoured to follow this principle that its work has been so good. Nevertheless, what I have said may not be altogether out of place, because even if this principle be adopted, it is as well that it should be consciously expressed and held out as the end at which the College is aiming. It is as well, in a matter of this sort, that we should all know what we are doing, and see clearly the reasons for it. . . . But at the same time it is necessary that I should warn you that as the advantage of these examinations increase, so also do their dangers. The danger of which I spoke just now is an existing and real one, and one which, as long as teaching goes on, we have perpetually to be watching against; for depend upon it, nothing is so dangerous to real knowledge, as to have it dried up as it were at the heart by the want of the true scientific aim and purpose both in teachers and learners. There is nothing which in the end will tell against the real efficiency of any teaching so much as to find that both teachers and learners are unconsciously—for I do not believe that any teachers" (in connection with the College of Preceptors) "would so far forget their duty as to do it consciously—drifting towards what has been so often and so properly condemned, the system of 'cramming' for examinations. This danger is very real. The learner must still hold for his aim, not the passing of the examination, but the mastery of the knowledge; and if he observe that his teacher is teaching him something which, as far as he can see, will be of no use to him in the examination, he must still trust that the teacher is doing the wisest thing that can be done, giving him knowledge for its own sake; and he will inevitably find that in the end he will have gained far more than he may appear to have lost for the time. It is quite possible that in such a case the learner may not do quite so well at one particular examination, but he may be sure that if the teacher knows his business at all, he is doing the right thing, and he ought to give his mind to it, and so follow the course marked out; learn to learn for learning's sake, and for the sake of really knowing that which he wishes to know; not merely for the sake of exhibiting his knowledge to his fellows, and perhaps winning a prize. It is excellent to do well in an examination, and it is excellent to win prizes; but it will not be an excellent thing, but a positive hurt, to any one who has made the passing of the examination, and the winning a prize, the real purpose with which he has studied. Therefore I beg you all, teachers and learners, to never let that temptation lay hold of your souls; for if you do, you will surely find that the true and real thing at which you are all aiming, will escape you altogether."

These words of Bishop Temple were warmly commended to pharmaceutical readers in a leader in the *Pharmaceutical Journal* of February 7th, 1874, and the whole address was reprinted (p. 632). They also called forth the following letter (*Pharmaceutical Journal*, February 28th, 1874) respecting one mode in which, in a calling some-

what allied to pharmacy, examination was even then fitted or adapted or placed *en rapport* with education :—

“Sir,—As a constant reader of your Journal, and as one who has always taken a deep interest in pharmaceutical progress, permit me to express my gratification that attention is again being drawn to pharmaceutical education. For a long time past I have seen, with regret, advertisements in various journals which indicate that the wide-spread evil of ‘cram’ seems to flourish to an unprecedented extent in English pharmacy. It was, therefore, with much satisfaction that I noticed in your recent leading article, in which you refer to Dr. Temple’s remarks on examinations, also in your correspondence columns, distinct advocacy of the principles of examination following the school (by school I suppose is meant the shop and the college), in opposition to the baneful practice which apparently obtains of schools following the examination. In parenthesis, let me say that I have much too high an opinion of the Council and professors of the Pharmaceutical Society’s school to suppose for one moment that either would descend to encourage ‘cram,’ which means superficial and useless information; if they did, the benches of their school would be crowded, and not, as I lament to see, thinly attended.

“In veterinary education the system of examinations following the schools is carried out with great success. As some of your readers may like to know how this object is accomplished, I will give them a brief description of our mode of working.

“The Board of Examiners at the Royal College of Veterinary Surgeons consists of one or more eminent anatomists, physiologists, chemists, and botanists, together with several leading practical veterinary surgeons. The professors at the teaching schools are also *ex officio* members of the court; they are present at the examinations, but do not question the candidates for diploma.

“Such is the wholesome dread of ‘cramming,’ and the importance attached to methodical study by those intrusted at the present day with veterinary education, that no person can present himself for examination for diploma whose regular attendance on the prescribed lectures, demonstrations, and practical instructions has not been certified in writing, first by each professor to the principal of his school, and subsequently by the principal to the Council of the Royal College. I may add that the Royal College only recognizes those schools that are incorporated with it by charter, or by the Queen’s sign manual. My readers will now see that in the veterinary world the principle of the examinations following the teaching, and not the reverse, is carried out, and that it thereby recognizes the fact that those whose lives have been spent in teaching are better judges of what are the requirements of genuine education than those who have not had the same kind of experience.

In the interests of sound education, in the interests of pharmacists, and in the interests of the public at large, it is imperative that those who have the power to confer licences to practice pharmacy should not grant a privilege of such literally vital importance to anyone ‘crammed’ with just sufficient knowledge (? knowledge) to pass the required examination.

“In order that the evil of ‘cramming’ may be crushed, and genuine pharmaceutical knowledge fostered, it seems to me that the Examining Board at

Bloomsbury Square should, if possible, be constituted like that of the veterinary profession—namely, of men practically engaged in pharmacy and of scientific teachers of eminence; also that they should both unite in endeavouring to establish that course of education and that kind of examination which would pass none but those who had been thoroughly educated in the principles and practice of their art.

“In conclusion, allow me to express the hope that the time is not far distant when the Pharmaceutical Society will justify the power vested in it by the Government, as well as the confidence placed in it by the public, by insisting on every candidate for its diploma giving evidence, not only of his having been in a shop for three years, but also of his having diligently pursued systematic courses of practical and theoretical instruction at a School of Pharmacy recognized by the Society’s Council.

“RICHARD V. TUSON,

“*Professor of Chemistry, Materia Medica, and  
Toxicology, in the Royal Veterinary College.*”

Respecting this writer’s suggestions, pharmacy is already so well served as regards examiners, that the recommendation probably does not need consideration; and as to the mere presence at the examinations of the professors of the teaching schools, although the bye-laws provide for something of the kind (section x., clause 7), other modes could be devised, if necessary, of satisfactorily restricting the area of examination to that of the system of education, for the latter would of course be a public system, and therefore easily defined.

At the distribution of prizes, won at the College of Preceptors at Christmas, 1879, Lord George Hamilton, who presided, said that—

“Examinations encourage the idea in the minds of teachers that their duty has been completely performed if they have succeeded in enabling their pupils to pass a certain examination. By a competitive examination a person is shown momentarily to possess certain information, but whether he will retain that information afterwards or not is a question which neither the system of competitive examinations nor that of payment by results can decide.”

On the latter point even *Punch* can be serious:—

“EDUCATION AND AERATION.—So it seems that a ‘DISAPPOINTED MOTHER’S’ two sons were educated at the Private School as soda-water bottles are aerated in a soda-water manufactory. The minds of the former were charged with learning by a process like that of pumping carbonic acid gas into the latter. The gas is retained in the bottles whilst it continues corked down, but escapes on the removal of pressure; so, if the then boyish minds are left open, the learning, when set free from forcible compression, seems to go off in youthful effervescence. How glorious is the result of that system of cram by which our youth at an early age are enabled to pass the examinations which at maturer years they prove incapable of undergoing without being crammed all over again!”—*Punch*, January 10, 1880.

The only available guarantee that the information would be retained

would be evidence that it had been properly acquired, that is, acquired from teachers of known ability and high character, at a school—public, if possible—of unimpeachable reputation, and acquired with due patience and perseverance and deliberate labour extending over a period of appropriate duration. The examiner to have a trustworthy certificate that all this had been done and then to examine the candidate.

Professor Max Müller, one of the highest authorities on all matters pertaining to education, has most distinctly deprecated the practice of adapting teaching to examination. In his recent address to the members of the Midland Institute, which was reported in all the leading newspapers, he characterized learning with a view to examination in unmistakable words, given as follows in the *Birmingham Daily Post* of October 21st, 1879 :—

“As those whom he was addressing were interesting themselves at the Midland Institute in the successful working of examinations, they would, perhaps, allow him, in conclusion, to add a few remarks on the safeguards necessary for the efficient working of examinations. Examinations were a means to ascertain how pupils had been taught, but they ought never to be allowed to become the thing for which pupils were taught. Teaching with a view to examinations lowered the teacher in the eyes of his pupils, and learning with a view to examination was apt to produce narrowness and dishonesty. Whatever attractions learning possessed in itself, and whatever efforts were formerly made by boys at school from a sense of duty, all that was lost if they once imagined that the highest object of learning was to gain marks, not to learn. In order to maintain the proper relation between teacher and pupil, the pupils should learn to look to their teachers as the only examiners and fairest judges, and therefore in every examination the report of the teacher ought to carry the greatest weight. That was the principle followed abroad in all examinations of candidates at public schools; and even in examinations on leaving school, given for the right of entering the universities, the candidates knew that their success depended far more on the work which they had been doing during years at school than on the work done on the few days of their examination. There were outside examiners appointed by the Government to check the work done at school, but the cases in which they had to modify or reverse the award of the schoolmaster were extremely rare, and they were felt to reflect seriously on the competency or impartiality of the school authorities. To leave the examination entirely to strangers fostered a cleverness in teachers and taught often akin to dishonesty. An examiner might find out what a candidate knew not, but he could hardly ever find out all he knew. (Applause.) Even if he found out how much the pupil knew, he could never find out how he knew it. On that point the opinion of the masters who had watched their pupils for years was indisputable. He did not think that teachers would give a false report of their scholars, because, in the first place, there were far more honest men in the world than dishonest, and, also, because the eyes of others would be upon them.”

But it will be said that these citations mostly relate to general education and examination, whereas in pharmacy we are concerned with technical education and examination. Only a portion, however, of our pharmaceutical as of the medical examinations is technical, and this is just the part which, hitherto, has not been included in the Pharmaceutical Society's system of education, metropolitan or provincial. On this head Latham, at page 335 of his book, says :—

“Professional students cannot forget any considerable proportion of what they have had to learn, because they have to use it every day of their lives. This observation, however, only applies to those portions of their examinations which bear directly on practice. In most professional examinations we find certain subjects included which are valuable because they force the student to take a broader view of the province of his labour than he could catch from the confined path which, at starting, he has commonly to follow, or because they equip him with the requisites for exploring new tracts or for dealing with the philosophy of his subject. Such studies are Roman law jurisprudence, and international law, in the legal career ; botany, mechanics, and some parts of chemistry, in the medical profession” [and, he might have added, “in the calling of pharmacy.”] “These studies are not kept bright by use in practice, and the student cannot see that they will help him on ; they will not bring him briefs, or patients [or customers], or enable him to do his routine work with more ease ; and so it not unfrequently happens that he learns them with as much indifference and forgets them with as much alacrity as if he were a non-professional student who had to qualify himself in certain ‘liberal’ studies for a pass examination.

“These parts, then, of the professional examinations belong to general education, and our remarks on the danger of artificial ‘examination knowledge’ taking the place of real knowledge, and of that which is flimsy and fading passing itself off as solid and indelible will therefore apply to them.”

Again (p. 67): “Where the study results immediately in professional skill, or in some other capability of which the young man sees the advantage, it may pretty well be left to take care of itself.”

The subjects of “Prescriptions” and “Practical Dispensing” of the Minor Examination, doubtless may be said to belong to the class of subjects which are kept bright by use in practice. A dispenser ignorant of them may as well himself leave the business, for it certainly will soon leave him. But while most members of the class need not engage much of the attention of other Boards of Examiners, because they *must* be used in daily life, and therefore may be left to take care of themselves, these pharmaceutical subjects, involving matters of life, health, and death, must not be left, like most other practical subjects, to be dealt with by the public alone. The public rightly look to the Examiners under the Pharmacy Acts for a certificate that at least the responsible head of a pharmacy already

possesses competent knowledge of these subjects. And, by the way, in order the better to ensure competency in these subjects, and possibly too in view of the fact that candidates may be specially "prepared," even in these practical matters, the Pharmaceutical Boards of Examiners, both in the "Minor" Examination for registration under the Pharmacy Act, 1868, as "Chemists and Druggists;" and in the "Major" Examination for registration as "Pharmaceutical Chemists" under the Pharmacy Act, 1852, do require that "*each candidate must produce a certified declaration that for three years he has been registered and employed as an Apprentice or Student, or has otherwise for three years been practically engaged in the translation and dispensing of prescriptions. The printed form on which this declaration is to be made may be obtained from the Registrar in London, or the Honorary Secretary in Edinburgh.*" If the number of prescriptions dispensed *per week* could be stated, the deliberateness or otherwise of the education would be indicated, and if the name of the dispensing teacher could be afforded, other useful results might ensue. The fact, however, that a three-year certificate of any kind is deemed necessary, shows that examination alone, even in practical subjects by practical examiners, is insufficient to ensure competency in candidates.

How much more, therefore, must unaided examination be an insufficient test of competency when applied to the other three or four subjects which are of a more educational character, namely, Materia Medica, Botany, Chemistry, and what may be termed Elementary Physics. These subjects are less tangible than the others; and in Chemistry, Botany, and Physics, it is the less tangible portion of them—that which cannot easily be moulded into question and answer—that is of the most use to the pharmacist, for his calling is not that of Chemistry, or Botany, or Physics, but a calling founded on Chemistry, Botany, and Physics. If he need know nothing of these subjects, they should not be included in the Regulations of the Boards of Examiners. If he is to know something about them, it is even more important that the Boards of Examiners should know how, when, where, and of whom he has learned them, than how, when, where, and of whom he has learned to dispense. For knowledge of dispensing must be permanent or the man will immediately fail in business; hence knowledge of dispensing which might perhaps be, and used to be, though it is extremely undesirable that it still should be, omitted from the Examinations, might be excluded from any public system of education in schools or classes. But knowledge of the subjects on which

pharmacy as a calling is founded—knowledge of laws, and principles, and interweaving truths ; knowledge which gives an instinct or intuition which cannot well be gauged or formulated or described, much less examined upon ; knowledge which enables a man to *be* something as distinguished from the power of *doing* something ; knowledge which relates to a pharmacist's mind rather than a pharmacist's fingers, —this knowledge besides being more difficult of assay at the official Examinations is knowledge which, as Latham would say, belongs to the kind which not being in daily use is not kept bright, hence is the very kind about which the utmost care should be taken that it is properly acquired. This is the kind of knowledge which the only public representative of pharmacy in England, namely the Pharmaceutical Society of Great Britain, has, at its annual meetings and by its Council, for forty years, urged as the knowledge best fitted to improve the pharmacist in his relations to the public, to the medical profession, and to his own calling, as well as best fitted to improve himself. This is not technical knowledge but general knowledge technically applied.

Examination systems gauge such knowledge not more but less easily than they gauge technical knowledge. Hence if it is necessary, as it is, that the Pharmaceutical Examiners should have external aid in the shape of a three-year dispensing certificate of study before they arrive at a decision respecting a man's competency in the technical subjects of the examination, *a fortiori* is it necessary that they should have similar external aid in the shape of a five-month, ten-month, or some other certificate of having deliberately and thoroughly gone over agreed areas of chemistry, botany, and physics, before they arrive at a decision respecting the man's competency in these general subjects of the Examinations. *Materia Medica* is partly technical, partly general. Chemistry is almost wholly a subject of general pharmaceutical education, though admittedly best acquired, indeed only acquired in any lasting degree, even for pharmaceutical purposes, by much practical work in a laboratory—work synthetical and analytical, qualitative and quantitative. Doubtless it also is a technical subject to the extent to which a pharmacist may or should make it technically useful. The persistent policy of the Pharmaceutical Society, and tacitly, therefore, the policy of the whole body of pharmacists in Great Britain, during the whole life of the Society has centred in the promotion of this technical and general pharmaceutical education, but especially the latter. For everybody recognises the

necessity for the possession of technical pharmaceutical knowledge, but few see the necessity for the possession of general pharmaceutical knowledge. The policy of the Society has been the creation of the necessity for this general knowledge by establishing compulsory examination. To the extent however to which the knowledge requisite for passing a compulsory examination is rapidly lost because too rapidly and artificially acquired, to that extent is the policy of the Society, and therefore presumably the policy, or what should be the policy, of pharmacists generally, still thwarted. Moreover, as that policy is founded on the welfare of the public, the public suffers *pro tanto*.

The subjects, then, hitherto included in the Society's system of pharmaceutical education belong, in the realm of knowledge, to the domain of general education, though used to support and strengthen technical education, and the citations relating to general education therefore relate to them. Secondly, these subjects are of the highest importance, lying, as they do, at the foundation of the modern practice of pharmacy, and it has been demonstrated, it is submitted, that educationally they need more careful tending and oversight and more support from the examinations than is needed even by the more technical part of pharmaceutical education.

Adapt the Society's system of education to the system of examination, maintaining, as Max Müller would say, examination as the supreme thing for which pupils are to be taught, and that will be done which every good authority in education deprecates and none supports. Indeed, any official system of education of candidates for examination *quâ* candidates would then soon be unnecessary, for private tuition would rapidly supply every want in such a direction, and the official system would revert to its present condition. Indeed, the condition would probably be worse than at any period since the foundation of the system, for the desire for thorough and lasting knowledge which, to the exclusion of all other, was implanted and fostered in the minds of the young men of pharmacy from 1842 to 1868, before examination was compulsory, would, with the present compulsory examinations and with teaching subordinated thereto, be not unlikely to fade out of sight altogether.

As for pharmaceutical research, even under the prevailing condition of pharmaceutical education in England, there are indications that interest in, and good work at research will diminish. But if the only kind of pharmaceutical knowledge received by the rising generation of phar-

macists were that imparted by tutors, while "preparing young men for examination," scientific pharmaceutical research, never yet too enthusiastically prosecuted in Great Britain, would, it is to be feared, soon be "conspicuous by its absence." The evening Meetings of the Pharmaceutical Society, and the Annual Meetings of the British Pharmaceutical Conference, would probably not have sufficient material for their successful maintenance; while our pharmaceutical periodicals would, apparently, have to be content with being little besides mere pharmaceutical newspapers.

The writer repeats that, in searching for authoritative opinions on the relation which should subsist between education and examination, he has not found one opinion supporting the relation which time and unforeseen circumstances have now brought about between English pharmaceutical teaching and the system of examination which was given by the British Legislature to pharmacy under the Pharmacy Acts, and he has not found anything like such a relation in the pharmacy of any other country. A rapid glance over articles on foreign pharmacy, printed in the *Pharmaceutical Journal* of the following dates, will show that in Europe and America only such public systems of pharmaceutical education as that of the Pharmaceutical Society, though more extended, are followed. In Canada (*P.J.*, July 9, 1870) twelve months at Chemistry, Materia Medica and Pharmacy, and three months at Botany, must be spent at some university, college, or incorporated school of pharmacy or of medicine. In Germany (*P.J.*, January 28, 1871) a period of two or three years must be passed in a public college. In Prussia, in 1871 (*P.J.*, April 15, 1871) we find that the young pharmacist, after passing a Preliminary Examination, is apprenticed for four years; then he passes an Assistant's Examination "more searching than the London major;" then he follows the usual university courses, and afterwards he passes a final examination; in North Germany, at the same date (*P.J.*, November 4, 1871) he would spend about a year and a half at the university, and in Austria (*P.J.*, May 4, 1872) two years. In Portugal (*P.J.*, July 29, 1871) the student of pharmacy must spend several years in studying professional subjects at the university; also in Chili (*P.J.*, August 19, 1871). In Russia (*P.J.*, October 1, 1847) an assistant in pharmacy cannot be examined in the subjects of general pharmaceutical education until he has studied them for three years in a public school. In Spain (*P.J.*, July 1, 1847) four years must

be spent at a public school in learning Chemistry, Botany, *Materia Medica*, and allied subjects. In Poland, after 1839 (*P.J.*, May 1, 1845) the compulsory pharmaceutical curriculum included a course of scientific studies of two years' duration, either in the school of pharmacy at Warsaw—that is, a public school, for a private so-called “School of Pharmacy,” where young men are “prepared for examination,” is probably unknown out of England—or he might so study at an imperial university. In France (*P.J.*, December 1, 1864) the curricula must be followed in the public schools of pharmacy—three years for a *pharmacien* of the first class, one year for a *pharmacien* of the second class. Even in America a pharmacist desiring to graduate must study for a considerable length of time in the public schools of pharmacy attached to incorporated colleges (*P.J.*, October 5, 1878). In all these countries examination is fitted or “subordinated” to definite public courses of education, and in no country except Great Britain, and here only through unforeseen circumstances, is teaching allowed to be fitted or “subordinated” to examination. Even Ireland is moving in the direction of the recognition of public courses of education only (*P.J.*, January 11, 1879).

And if other evidence against the plan of fitting education to examination, beyond that afforded by the foregoing citations and arguments be desired—evidence that examinations unassociated with systems of education of known thoroughness tend to foster superficial and ephemeral rather than deep and lasting knowledge—it will be found in the advertising pages of daily papers and periodicals. It is not too much to aver that if a shrewd man of business were to start a so-called school, or college, or classes, of pharmacy, to-morrow in some convenient centre of England, teaching only the exact portions of subjects required by the Boards of Examiners, at, say, the “Minor;” taking for his guide to those portions, not the published “Regulations,” but the actual questions asked of former candidates; keeping his men hard at work for fourteen hours a day for some six weeks or two months immediately preceding the time of examination; instructing them nominally by so-called lectures, but really by question and answer with almost catechistical detail; neither he nor his satellites having any sort of moral power, being sheer nobodies except that, perhaps, they have themselves passed the examinations for which they are “preparing” their men; it is not too much to aver that such a man, having commensurate shrewdness and capital, would at the end of some two or three years be able to boast that more men passed the

"Minor" by his agency than by all other agencies put together. Amongst his men might doubtless be some who had only gone to him "for a final grind," or, as their older friends would euphemistically put it, "to have the knowledge they have already acquired from books thrown into a form in which it will be available at the examination." But to the extent to which a "final grind" is necessary and yet not publicly acknowledged and recognised, to that extent is the public machinery inefficient. The "final grind" is either a good thing or a bad thing. If it is a good thing it should be attached to such a public system of education as the Society's system of education, in order that hard readers and home workers should have the opportunity of taking advantage of it openly and honourably, in the society of men being trained openly and honourably, instead of in the society of men one of whom is recorded to have said, "Bother qualification, if somebody only gets me through." If the "final grind" is a bad thing the necessity for its existence should be removed by adapting examination to the conditions under which true education is obtained.

The writer, some years ago, attended, by invitation freely accorded without conditions, a few "lectures," "demonstrations," "examinations," &c. in the rooms of a well-known and successful "coach." "He teaches just what they teach at St. B.'s," said one pupil, "Except," said another "that he tells you exactly what the Examiners wish you to know, whereas at St. B.'s, or G.'s, or St. T.'s, they teach you a lot of stuff that will never be of any use to you. The fact is he is a better teacher than any at either of those places; that is where the secret lies." Said the other, "Well, I think the secret is that he makes you work, while at the public schools they let you do as you like." (By the way, there was some truth in the latter remarks in those days, though all is changed now. Men worked or not as they pleased. The greatest good of the greatest number was considered to be secured by leaving the foolish and the lazy, fortunately a minority, to go their way, and the wise and the diligent to go theirs. There were some advantages in the plan, but it was found to reflect strongly on that principle of education by means of a public curriculum recognised by the official Examiners, and to which their examinations were fitted, a principle which obtained then as now in medicine, and which, *properly* carried out, is the one thing needed in pharmacy. The evils then attached to the plan have already largely been, and are now further being remedied in medicine, and never need exist in pharmacy.

Medical students are now not only required to be present at lectures in the body, but in the mind too ; for if they are to get their school schedules signed, which they must do before they can present themselves before the respective Examining Boards, they must not only have attended a given percentage of lectures, laboratory work, anatomical work, &c., but must have acquitted themselves satisfactorily at the periodical *educational examinations*, conducted by the professor or his deputy.) Well, the writer visited the classes mentioned, and found that the sole secret of the gentleman's success in "passing" his pupils consisted in his teaching covering no less and very little more ground than was covered by previous questions put at the Examination for which the pupils were preparing. All knowledge that had not previously been made the subject of examination-questions was excluded, no matter how valuable it might be for training purposes. All knowledge that could not easily be formulated into question and answer was excluded. Not a single attempt was made to induce the pupils to think for themselves. Not a single attempt was made to bring out the powers of the mind other than that of memory. Not a single attempt at true training could be detected. Not once was wonder, "the parent of all true knowledge," excited in the mind of the hearer. Not once was a hint dropped that might form the seed of future original researches, enabling a man to pay some part of the debt that Bacon said every man owed to his calling. No time was given for the assimilation of knowledge, no exercises set with that object. All this would have been the teaching of "a lot of stuff that will never be of any use to you." The nature of the "stuff" never having been apprehended, the pupil of course did not perceive that its teaching or educating required a higher order of mind than sufficed for "preparing young men for examination." What was taught at the rooms was taught quickly and with overmuch reiteration, lest, apparently, the memory should lose, before the day of examination, what it had so rapidly and laboriously acquired. If a man gave evidence of flagging he was—well, urged on with particularly strong remonstrances. There was nothing done which could not have been done, and, generally, better done, by any teacher at any of the public schools, had he condescended to do it. The teaching was, in short, teaching by the teacher's summaries. The summaries were good so far as they went ; and had they been the student's own, drawn from his own learning, his own full reading, his own work, his own well-digested knowledge, his own training, they would have indicated in him power

instead of weakness, deep knowledge instead of superficial knowledge, lasting knowledge instead of ephemeral knowledge.

Of late years, as already stated, the evil of special "preparation for examination" in the medical profession has been greatly reduced by machinery for enforcing work at the public schools, and the slur thus cast upon permissive or compulsory curricula, that they did not prevent "cram," removed to a similar extent. Education at the public schools is now conjoined with due attendance at lectures, demonstrations, and practical work, and with due reception and assimilation of the subject matter by the student, as shown at frequent educational class-examinations by the teacher or his duly qualified assistant.

Finally, all the teaching which is strictly subordinated to examination, necessarily becomes that teaching by summaries which is deprecated by all authorities on education. The summaries may take the form of lectures, of tutorial instruction, of manuscripts or of books. In all forms these purchased summaries are at best, weak reeds, affording mere temporary support, and having decidedly demoralising tendencies when their temporary power is passed off as something inherent in the student himself, which is what is done when he passes examinations by their aid alone. To depend on summaries is to do that which is harmful to the mind and the morals. To cultivate and depend on *the power of making summaries* is to do that which produces strength of mind and self-reliance. And a pharmaceutical student need not do this with the whole or even the greater part of the subjects of chemistry, physics, botany, &c. It is not desirable to attempt to make of every young pharmacist a Faraday, a Linnæus, or a Dumas, though we may hope that pharmacy will never be behind other callings in furnishing science with great men. The principles of chemistry, botany, or physics can be properly taught by courses of lectures of length appropriate to the requirements of pharmacists, by tutorial instruction of appropriate extent, and by text-books of due dimensions. And if, as already indicated, a student attending such lectures will make his *own* summary of those lectures, or attending the class of a tutor, will make his *own* summary of the instruction, or reading a manual, will make his *own* summary of that manual, he will have acquired powers of great value. But when the lectures are themselves summaries, when the instruction is itself a summary made by the tutor, when the book is already a summary, and especially when the summaries are taken into the student's memory in the shortest possible time, then although

the pupil's memory may become charged with a quantity of neatly producible matter, probably carrying him through an examination, it is superficial and will prove to be on the whole ephemeral.

And, unfortunately, temporary knowledge thus gained cannot, say authorities, be detected by unaided examination, especially when those examinations cannot practically be conducted in any other than a somewhat rapid manner. The method said to be the best for its detection, in the absence of documentary evidence of sound training, is to ask questions which depend on the candidate's power of making deductions or of thinking for himself. But if the deductions are simple the man will *at the time* duly draw them, though shortly afterwards with the disappearance of the facts will disappear the deductions. If, on the other hand, the deductions are difficult to draw, even a man properly trained in a public school of pharmacy may be unable to perceive them, perhaps because his early education has been faulty or because he has not arrived at the age at which a man acquires the power of making difficult deductions. The faculty of thinking for oneself commonly comes to a man, when it comes at all, at a period of life which usually is subsequent to that at which he is a student. From the writer's very considerable experience of pharmaceutical students, and his knowledge of the practical requirements of pharmacy, he would question the expediency, in the event under consideration, of rejecting pharmaceutical candidates who could not make difficult deductions or think out for themselves problems in chemistry, physics or botany. The teachers of the candidate, while seeing that he learnt the fundamental facts and principles on which the practice of pharmacy is based, may have endeavoured to get him to think for himself in chemical matters, and reason for himself in physical matters, and judge for himself in botanical matters. For the end and aim of general, as distinguished from technical, pharmaceutical education, should probably be the same as of all general education, that is to bring out or lead forth, e-du-cate in fact, the powers of the man's mind. And those teachers may have been fairly successful. But for all that the man may not be able to stand an examination as to the extent of his power of thinking for himself. In no length of time practicable in an examination room, could an examiner well find out all the power of a candidate in such a direction, while from any want of power erroneous inferences might be drawn respecting the candidate's fitness as a pharmacist. The writer frequently examines his own students, but the inferences he draws from their

answers to his questions are founded on his knowledge that the young men have been experimentally and deliberately and thoroughly working at the subject. The inferences are not drawn from the mere answers to the questions. Did he not know that the men had actually been working at the subjects, those answers might have been learnt from a previously collected list of his questions, and that they had been thus superficially and ephemerally acquired could not be otherwise ascertained. For experience has taught him that the character of the education and the average age of young pharmacists precludes him from using the method of cross-examination dependent on the examinees' power of thinking for themselves, or using their brains, as it is termed, which older men or more completely educated men might possess.

Besides, there must be, and is, a limit to the number of questions of the kind which, when first put, test a man's power of thinking for himself, that is, test reality of knowledge,—as of any kind that can be put at examinations, which like the "Minor" and "Major" only cover limited areas of subjects. And it is of the essence of any such question that, unless misleading, it admits of a categorical answer. Hence, such answers may be sooner or later placed in a candidate's memory by a collector of such questions. Therefore, the putting of such questions to candidates as testing the men's power of using their brains is valuable in a diminishing ratio, and the value ceases when in a given number of months such a number of the questions as covers the limited area which any pharmaceutical pupil should traverse has been asked by the examiner, and duly recorded in summaries for the use of future candidates. Then, as already indicated, the power exhibited by a young man at the examinations of answering such questions becomes something entirely different, and of infinitely inferior value, to that power of using his brains with which he is credited because he does answer those questions. At the same time, as will be shown directly, the candidate who really has been taught to use his brains—far enough to make him a better pharmacist, though not far enough to enable him to stand an examination in that power, for the latter would require years—does not get commensurate credit for his work.

The gaining of a Pass Certificate in pharmacy by the "summary" knowledge under consideration, would, however, at once be checked if the examiners had the means of knowing that the candidate had studied with due deliberation at a public school the teachers of which would never stoop to enquire of a man who had been "up" what questions had

been put to him, and where teaching by summaries had no existence, those examiners proceeding to examine him solely within the area of the public system of education under which he had studied.

Students under the Pharmaceutical Society's system of education, having unreservedly placed themselves under the only system which has official sanction, and therefore presumably under the best system, certainly under a system from which "summary" teaching is excluded, would, if students be deserving of any credit at all for following a good lead, be deserving of that credit. Yet such students are, now, positively under serious disadvantages when they present themselves before the Boards of Examiners, as compared with pupils "prepared" under the "summary" system. For, firstly, the Society's students have occupied a given time in going into the subjects of general pharmaceutical education only, to the exclusion of "Prescriptions" and "Practical Dispensing," and, therefore, in the latter or technical subjects are weak to the extent that they are out of practice, getting weaker if originally weak, while "prepared" candidates have had a recent polish in those subjects. Secondly, and this is more important, the Society's students have occupied the given time in going into their general educational subjects with a thoroughness which has produced good mental training,—produced that which admittedly cannot be gauged by examination, because training cannot be formulated into question and answer, and produced that, therefore, for which they cannot at any official examination of practicable extent and duration, have commensurate credit,—while "prepared" candidates have been devoting the same given time, or perhaps even a shorter time, to the acquirement, by summaries, of neatly producible, though probably easily forgotten answers to that very large number of facts which can be formulated into question and answer, and for which those candidates get fully, if not more than fully, commensurate credit. These facts, though of immense importance to the technical student of Chemistry, Botany, or Physics, who occupies years in acquiring them, are only of secondary importance to the pharmaceutical student, whose primary object should be the acquirement of that instinct or intuition which perceives principles, analogies, and intervening truths; a kind of knowledge or power which enables him the better to know and conduct his business in these days when all classes of persons are being better educated than formerly—knowledge and power which come of good training. Yet for that which the Society's student has devoted his time in obtaining, and which is of

primary importance, he gets inferior credit; while for that which the "prepared" pupil has devoted similar or less time in obtaining, and which is of secondary importance, the latter gets superior credit. Thirdly, the Society's student cannot, yet, go before the Board with that confidence which conduces so much to success, and which the candidate possesses who has been duly "prepared." The results are obvious. "Plucked" men who have been privately "prepared" always go back to the tutor; "plucked" men who have been attending a public school, do not always go back to the school; they often go to the private tutor too. Hence the "plucking" tells against, not in favour of, the Society's system of education.\* The Society's public system of teaching is languishing all along the line, in London and in the provinces; the system of "preparation for examination" is flourishing all along the line. Not that the lines run parallel, for they occupy different areas altogether, and there cannot be any sort of competition between them.

The facts (*a*) that Examinations not fitted or adapted to public courses of education admittedly are liable to foster an objectionable form of teaching which dovetails with such Examinations, (*b*) that all such Examinations hitherto instituted have fostered such teaching, (*c*) that the Pharmaceutical Examinations are not at present fitted or adapted to any public system of education, and (*d*) that pharmaceutical students do reject a public well commended system of sound education, because it does not dovetail with those Examinations, and accept some other system of teaching, because it does dovetail with those Examinations, render highly probable the inference that the other system of teaching which they do accept is or may be the objectionable form of teaching. And when to this strong inference is added the evidence respecting such teaching, afforded by some advertisements and circulars relating to it, to say nothing of other evidence, the inference is, to say the least, raised sufficiently near to the region of certainty to warrant action being taken to prevent the apparently objectionable form of teaching unduly spreading, and to ensure the success of a well-tried unobjectionable public system of education.

From what has been stated it would seem that a public system of general pharmaceutical education should be maintained, the system of instruction which does or may displace it being strongly deprecated by all good authorities.

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\* "A 'PLUCKY' THING TO DO.—Get up for an Exam. without cramming."—*Punch*, February 7th, 1880.

From what has been stated it would seem that the pure and simple adaptation of the existing public system of general pharmaceutical education to the system of examination, so as to exactly meet the desires and requirements of candidates as candidates, must not be entertained, the adaptation of education to examination also being deprecated strongly by all good authorities.

From what has been stated it would seem that the best mode of ensuring the success of a trustworthy public system of pharmaceutical education would be to adapt the system of examination to some such a public system of education as that already acknowledged and fostered by the Pharmaceutical Society. A public system of education which shall be arranged to meet the practical needs and requirements of a not too-remunerative calling. A public system tentatively and gradually introduced, and, perhaps, permissive. Nay, a public permissive system applied at first, it may be, only to the "Major." A public system which, sooner or later, shall be self-supporting, yet not expensive. A public system which, whatever may be ultimately the number of schools or classes or centres at which carried on, shall be under the inspection and supervision of the Council of the Pharmaceutical Society of Great Britain, or their nominees, aided probably by the officers of the Provincial Pharmaceutical Associations. A public system of education to which the system of examination shall be adapted, not by any alteration whatever in that system of examination, nor by any alteration whatever in the Boards of Examiners, but by limiting the questions and exercises to the area covered by the system of education.

There should be nothing startling, and, apparently, there is nothing impracticable in these proposals. The decisions of Examiners are, they themselves say, always largely matters of inference. It is quite impossible to devote sufficient time, for days would be necessary, to ascertain all that a candidate knows and all that he does not know. It is quite impossible for an Examiner in any given subject to examine any one candidate in more than a small portion of that subject. From what the candidate knows, and from what his powers apparently are in that portion, is inferred what his knowledge and powers are in other portions. And to the extent that he falls short in that portion is inferred the extent to which he would fall short in other portions. Would not the value of

these inferences be *greatly* enhanced if the Examiner had documentary evidence that the candidate had gone through a known and officially-recognised trustworthy public system of education, the sound character of which was well known to the Examiner? Had attended a given number of lectures of known value? Had satisfactorily acquitted himself in the lecturer's educational examinations following the lectures? Had worked in a laboratory of known repute for a given length of time, performing a given list of synthetical and analytical experiments with given detail? And had actually gone through any other work set out in a certificate or *schedule*—a document similar to those obtained in blank by medical students from an official of the medical examining bodies, duly signed, under proper regulations, by the professors in the public schools of medicine, and presented to and accepted by the Examining Boards before the candidate can go forward to the examination? The writer has scarcely met with any Examiner who would not gladly welcome, if he has not already at command, such evidence of training, such aid to inferences respecting the candidate's real powers.

The practice of directly or indirectly fitting examination to education (which is the principle involved, of course) has not only the distinct approval and recommendation of all authorities on education, but is practically carried out in other callings than pharmacy in this country, and in other callings, including pharmacy, in other countries. It is a principle which in practice has had its abuses, no doubt, but the demonstration of their existence has served for their removal, and in pharmacy they need not exist. Absolute perfection in the matter of accurately gauging a man's knowledge in a reasonable time, and at a reasonable expense for public purposes, is doubtless unattainable, but all authorities are agreed that the method under which an official examination is placed *en rapport* with a sound public system of education is infinitely to be preferred to the method under which the official examination is made supreme; for under the latter method the system of teaching is clearly liable to become of a questionable character.

The only really new features in the proposals are: firstly, the suggestion that the adaptation of examination to education be permissive and tentative; and secondly, that this permissive and tentative scheme be at present only applied to the "Major," and even these suggestions are only thrown out as matters of expediency. In Scotland the adaptation of pharmaceutical education to pharmaceutical examination

is, seemingly, more apparent than real, hence any more pronounced adaption of examination to education may not be so necessary there ; though, on the other hand, if no exception can be taken to the quality of the teaching north of the Tweed, there can be little reason why examination should not be restricted to the area of that teaching, and thus the advantages of fitting examination to education be secured throughout Great Britain (see p. 27). The new feature in this presentation of the proposals is a lengthy citation of authorities, though not a tithe of the number of authorities that might have been cited from the literature of the past seven years, in distinct deprecation of the adaptation of education to examination, and, directly or indirectly, in favour of the adaptation of examination to education. In that period probably not two good authorities could be found in favour of adapting education to examination. And once more let it be said that education adapted to examination is liable to cease to be true education, either by collapse or by degradation, while the public education to which examination is properly fitted will be sure to maintain its character, and, in addition, always be open to development. The whole course of the most recent legislation respecting general education in this country is in the direction, not of the testing and controlling of education by examination, but in the establishment of well arranged, well supervised schools under public guidance, examination following, not leading, education. What is thus done by Board School public authorities for general education in England (and by similar authorities for both pharmaceutical and other courses of education in other countries) one would like to see done here for pharmaceutical education, the present plan of attempting to lead pharmaceutical education solely by examination being gradually abandoned. A general governing body exists already, public schools of pharmacy exist already, or might be developed from existing materials, an examining board already exists. Reorganisation would be a matter of little difficulty, if commenced now, and if carried out gradually. There can be little doubt that the legislature will, sooner or later, expect something of this sort of the Pharmaceutical Society.

If the principle now advocated be entertained, measures might be taken with the view of maintaining, and ultimately firmly establishing, the existing schools of pharmacy connected with the provincial pharmaceutical associations and the Bloomsbury school. These, and possibly other public schools, might sooner or later have officially recognised

curricula for both "Minor" and "Major" candidates. Or the two classes of candidates might be educated at different schools: that is to say, while the majority of the schools were open to Minor candidates only, one or more might be open to Major candidates only. One or more, because if a definite but not too expensive "Major" curriculum were recognised by the Board, and, being permissive, were well supported and well recommended by the leaders in pharmacy, there can be little doubt that the number of Major candidates would in due time be greatly increased. Doubtless the strongest recommendation to go through a "Major" curriculum of appropriate length and character would be to hold out to its pupils the prospect of gaining some distinctive and valued title on passing the examination. The qualified followers of medicine and of surgery have such a prospect, why not the followers of pharmacy? "The diploma of the Major Examination ought to be regarded very much in the same light as the Fellowship of the College of Physicians or the College of Surgeons is in their respective bodies, and the value of the degree it confers ought to be as jealously guarded."—H. B. Brady, *Pharmaceutical Journal*, August 17th, 1872.

But the measures should probably, first of all, be permissive. To attempt at once to reject any tuition other than public tuition, even though done solely in the interests of the public, would involve obvious difficulties, but to prevent the spread of what seems to be an evil apparently involves no difficulty. The future of private teachers would perhaps be less bright, perhaps different. Many years ago, of the teachers of a "School of Medicine" which ceased to exist, some joined the existing public schools of medicine, some devoted themselves to their private professional practice, possibly some retired with a fortune, while a few still found quite enough demand for private tuition to induce them to supply that form of teaching. The writer quite well knows that in pharmacy as in other callings there are teachers and teachers. And, while he would not like to see injury done to the prospects in life of even tutors of questionable calibre, he would like to see good tutors absorbed in due time into public schools so organised that the temptation to "prepare for examination," merely, could not arise. He writes against systems, not against men. Good tutors should, surely, agree in any effort to bring about such a differentiation. For if what all good authorities state about the insufficiency of unaided examination as a test of competency is true, it follows that not those good tutors, who best fit young pharmacists for

life, will best succeed, but, sooner or later, those who, in the most direct and unmitigated manner, "prepare" the young men "for examination."

Again, that any public curriculum officially recognised by the Boards of Examiners should, at present, be permissive, is perhaps desirable in the interests of the few men, and they must now be very few, who teach themselves the subjects of general pharmaceutical education by a long and careful course of home study extending over several years, it may be, of apprenticeship. Occasionally evidence is forthcoming that such men do not form five per cent. of the candidates at a given examination. The writer has met with about half-a-dozen such men during the past two or three years, and some of these have regretted that they did not rather seek external aid. Moreover, the men who, having an inborn desire for study, read much by themselves, are the very men who would be most benefited by a sound public course of education, and be most likely to become useful public members of their calling afterwards. As for the majority of young men, it is notorious that for want of time or other reasons they postpone study until they can devote the whole of a certain number of weeks or months to the not always loved tasks. The majority do already leave the business for a time to go through a curriculum of some kind or other. It would seem that a sound public *compulsory* curriculum would be highly advantageous to all classes of students. Expediency nevertheless suggests, as already stated, that experiment should first be made with a *permissive* public curriculum, and that if cautious and tentative action be desirable, an officially recognised permissive public curriculum might first be arranged for the Major Examination only.

Public curricula for both "Minor" and "Major," even compulsory curricula, would be popular with students. During the past ten years the writer has asked some hundreds of students not only how they themselves, but how any apprentices or assistants whom they might know, would probably regard compulsory attendance for five or ten months respectively at such a public school as the Society's at Bloomsbury, or a similar public school in connection with the Provincial Associations, provided they could be assured that the Pass Examinations would, in the "school subjects," include nothing but what had been taught in the school, though possibly everything which had been there taught. Without an exception the young men have declared their opinion that all students would rejoice at, and most gladly fall in with such a scheme.

For, they have said, it would remove their one leading complaint respecting the existing plan, namely, that they can never be certain that they have learned all that (for the examinations) they ought to learn, or that they are not learning a great deal that (for the examinations) is unnecessarily learned. "Let us know what we have to do at a school," they say, "and we will do it; and what is more, we will only too thankfully do it, on the understanding that if done honestly and thoroughly we shall be fairly sure of passing the examinations. In the absence of such a scheme, our best chance of 'passing' is to go to men who *can* tell us what is wanted, or to gain amongst ourselves, and by inquiries of friends who have passed, an idea of what the questions are, the answers to which are wanted of us." No good student would care to be examined in the different subjects at different times, any hint to that effect always coming from weak men; but most students would like to present themselves for the *technical* subjects of "Prescriptions" and "Practical Dispensing" before entering the school, and when they are fresh from the counter, and for the other *general* subjects at the close of their school career. From the abstract point of view it would be desirable, no doubt, that the study of the subjects of general pharmaceutical education should *precede* that of the technical, the acquirement of its principles preceding the practice of the art; but this matter belongs, we fear, to the future.

One of the many advantages attending a public curriculum officially recognised by the Board of Examiners would be that the element of discipline in our public schools would be greatly strengthened to the advantage of the pupil, no less than to the improvement of the power of the teacher. In the forcing classes that the writer visited, the threat that, if the pupil did not do so and so, he would not "pass," and, especially, the assurance that if he did do so and so, he would "pass," gave the teacher a lever of discipline of a strength that a teacher under an unrecognised public system of pharmaceutical education cannot possess. Under the existing public system a student may attend one class one year, another class another year, attend a third class for too much or too little of his time, according to his predilections, and not according to the teacher's recommendations; attend or neglect the teacher's educational examinations at pleasure, or only attend them for a month just before going up for examination; and frequent the library or museum when he pleases, and as much or little or not at all as he pleases. Were not the pharmaceutical student, as a rule, a man anxious to get the full value for his money, a man having, from his childhood, associations of

labour with life, some care would have to be exercised to prevent such intermittent efforts having a demoralising tendency. But institute a public curriculum, permissive or compulsory, into which the requirements of the Boards of Examiners shall accurately dovetail, and a lever of discipline of strength, serviceable alike to teacher and taught, is at once placed in the hands of the former. Lecture from 9 to 10. Conversation with the lecturer at the lecture table, 10 to 10.15. Educational examination by the lecturer or his deputy, 10.15 to 10.45; alternate halves of the class on alternate days, or a different third of the class each day of every three-day period. Work in the laboratory for three hours, say from 11 to 3, including one hour for refreshments. Educational examination arranged like those of the lecture-room, 3 to 3.30. Museum or library, 3.30 to 5. The evenings should be devoted to reading at the student's home or rooms—which should be registered at the school. The student would also be encouraged, or perhaps required, to attend all the classes during the one period of study, taking out an inclusive ticket for an inclusive fee, the work in each class being so ordered that all his labours would harmonise. This is only a sketch of some such a curriculum as would be enforced under the plan proposed.

Five months of such work would possibly, at present, be sufficient for a "Minor" course, ten months for a "Major" course. A certificate or schedule, showing that the candidate had *properly* followed such a curriculum, would be presented to the Boards of Examiners.

The calibre of the teachers for such a course should be such as to include the qualifications indicated on previous pages—men such as now fill similar posts in the public professional schools of this and other countries, and selected as such men are usually selected.

The cost to the student of a recognised permissive curriculum would doubtless be much the same as the cost under the present public system. The cost under a compulsory public curriculum would probably bring such numbers of pupils to the respective public schools that expenses would probably be much below those now obtaining. Not that students often complain of the cost of public education; their complaint is of its uncertainty for their purpose. Indeed, whether or not the entrance to pharmacy should be more or less expensive is a question worthy of consideration by those versed in the politics of pharmacy. The question, "Does education in pharmacy pay?" is answered very strongly in the affirmative in an article in *The Pharmacist* for November, 1879.

The recognition by the Boards of Examiners of such public curricula is, the writer presumes, quite legal. To a layman the law or bye-law under which the Boards can ask for a three-years' certificate of technical training in a private shop would seem sufficient to render legal their recognition of a five-months' or ten-months' certificate of general training in a public school. If not sufficient, a bye-law would perhaps be all that is necessary. And even if application to Parliament were imperative, such an application, made at the present period, when education is occupying so much public attention, and when examinations carried on independently of public curricula are everywhere viewed with some disfavour, would probably receive the sympathy and support of the legislature. Indeed, before now, matters of less public interest have been carried through Parliament by the favour shown to the educational clauses of a bill. But probably the Boards of Examiners already have sufficient power to render such action unnecessary.

And would any one measure give more life and spirit to the Provincial Pharmaceutical Associations than a measure enabling them, or the chief of them, to carry on a curriculum of education affording to the youths of their respective districts the best of entrances to the Boards of Examiners of the Society?

The curricula to be followed by students and to be covered by Educators and Examiners would, perhaps, be drawn up by the Council of the Pharmaceutical Society. Or possibly the Boards of Examiners would do this initial work. Or a committee of Councillors, Examiners, and Educators might be asked to report on the matter to the Council. Perhaps the establishment of a permanent supervising Board of Education may become desirable.

But the points touched in the latter paragraphs are only touched. To consider the details of the scheme before the principle be accepted would be of little use; their consideration afterwards being, apparently, a matter of no very great difficulty. Just to touch them, however, was desirable, if only to show that they are not so impracticable as to render the discussion of the principle unnecessary.

With the motive and object mentioned in the Introduction to this pamphlet, the author has now shown that since 1868 the Pharmaceutical Society's sound system of metropolitan and provincial pharmaceutical education and the system of pharmaceutical examinations have gradually ceased to harmonise with each other; and that this appears to be due to

the fact that the place of true education has been more or less usurped by an unsound variety of teaching the characteristic of which is exact adaptation to examination. He has adduced quite a *consensus* of opinion, including some of the highest authorities on education, showing that the adaptation of instruction to examination is a distinct evil. He has endeavoured to show that the remedy, as regards pharmacy, is to adapt the pharmaceutical examinations to the Pharmaceutical Societies' system of sound education. The welfare of the public and the best interests of pharmacy and pharmacists apparently require that such a remedy should soon be applied.

To the writer's knowledge, the introduction of properly supervised public curricula into English pharmacy is viewed by all pharmaceutical leaders and representatives with marked approbation. He cannot but think that if the proposal were judiciously brought under the notice of members of the Pharmaceutical Society and pharmacists generally, it might be carried out as a matter of internal organisation, to be, perhaps, in due time, sanctioned by parliamentary enactment.

The following conclusions are submitted. The first four are given to clear the way for the consideration of the others.

First. The present spiritless and more or less unsatisfactory condition of the Pharmaceutical Society's public system of education—education which, chiefly metropolitan, is provincial, also, to the extent to which the education of the schools and classes of the Provincial Pharmaceutical Associations has been made to follow the Society's system, and has been fostered by the Society—is not due to any change in the system itself. The system has not been materially altered, that is in its principles, since it was instituted by the Society nearly forty years ago.

Second. The condition is not, apparently, due to the system itself being faulty. For it resembles in its chief features the other public systems of general professional education in this country, and the corresponding systems, including those of pharmaceutical education, in other countries. It has been commended by all British and foreign medical and pharmaceutical authorities in matters of education who have familiarised themselves with it. It has turned out good men, whose names and work are known wherever pharmacy is known. It is a system, therefore, which affords permanent knowledge, and which does train the mind.

Third. The condition is not due to any fault of administration on

the part of the members of the Society or its Council who instituted and who have maintained the system.

Fourth. The condition has not resulted from any action on the part of the Boards of Examiners, in whose hands the legislature has placed a system of examination under which the ability of candidates to answer the questions put by the Board is tested with impartiality.

Fifth. This condition of the Society's system of education, metropolitan and provincial, is traceable to the reflex action of the system of examination. It is traceable, in the following manner, to a liability, that could not be foreseen, of every selective examination not fitted to a public curriculum (and therefore a liability, unforeseen, of each of the pharmaceutical examinations), to become, according to all good authorities, that for which and for sake of which a student works, instead of, as originally designed, a test of work undertaken for the sake of education. This liability rests, as regards all such examinations, say all these authorities, on an unforeseen difficulty in accurately distinguishing between or giving credit to a trained mind as against a charged memory by any system of examination that can practically be carried out with a reasonable expenditure of time and money. According to such authorities this weak point leads (in most of the students or candidates for selective examinations) to the practice of seeking privately what no public system of education could stoop to afford, namely, a sort of teaching which charges the memory for the purposes of, and for the period of examination, but which is of a kind that, according to the same authorities, does not in itself produce permanent knowledge, and does not in itself include due training of the mind. The Pharmaceutical Society's public system of education is specially devoted to the training and storing of students' minds, and not to the mere charging of their memories. Students gain credit at examinations for having their memories charged and do not gain commensurate credit for having their minds stored and trained. What follows? Students accept systems of teaching which do cheaply charge their memories and reject systems of education, like the Society's, which are more specially devoted to the training of the mind. Hence the more or less failing condition of the Society's system. The majority of students will not spend time and money on a system of education specially devoted to the training of the mind and only indirectly adapted to the improvement of the memory, while they can gain their object, namely, the passing of an examination, with the expenditure of less

time and money, even though it be at the cost of not having their minds well trained. They know the value of a license to practice pharmacy and take the shortest, instead of the best, way of obtaining it.

Sixth. The Pharmaceutical Examinations were instituted to encourage the permanent possession of sound general pharmaceutical education, that is, of a trained mind, by the pharmacist, as well as to ensure the possession by him of technical skill. The languishing condition of the Pharmaceutical Society's system of education, which does train the mind, accompanied by the flourishing condition of a system of learning which apparently only temporarily charges the memory, shows that the object, as regards general pharmaceutical education, with which the examinations were instituted, is not now, through unforeseen circumstances, satisfactorily accomplished. Apparently, therefore, it is desirable that measures be taken to so supplement the Pharmaceutical Examinations that they shall still encourage the permanent possession by pharmacists of sound general pharmaceutical education.

Seventh. A widely recognised method, and probably the best method, of preventing students temporarily charging their memories or getting them charged, instead of securing the permanent training of their minds, a method applicable to pharmacy, is to adapt or fit or unite the official examinations to properly founded, properly maintained, and properly supervised public systems of education. In other words, a public educational curriculum of character, extent, and cost, appropriate to the needs and means of pharmacists, being deliberately laid down, the subjects should be taught by the teacher and learned by the pupil with the utmost thoroughness. Any approach to mere "preparation for examination" should be discouraged in every way, inasmuch as that process has in an unforeseen manner become something quite different and far inferior to "the acquirement of sound education." The official examinations should then be set to test the area of the curriculum to the fullest extent that selective examinations can test education; the examiners' inferences respecting the knowledge and state of training of the candidate being, however, drawn as well from the information afforded by his schedule, or certificate, or report, or statistics respecting his education, as from his answers to their questions.

Eighth. Such adaptation of examination to education is in pharmacy, apparently, practicable and easy. For a properly-arranged public system of general pharmaceutical education is already organised by the

Pharmaceutical Society of Great Britain with fair completeness at Bloomsbury, in London, and with more or less completeness by local officers at several public provincial schools of pharmacy connected with certain of the provincial Pharmaceutical Associations.

Ninth. Should expediency render desirable a *gradual* introduction of measures having for their object the sound permanent pharmaceutical training of the pharmacist, the official recognition by the Pharmaceutical Boards of Examiners of a public system of general pharmaceutical education might for a time be permissive, with, in that case, the offer by the Pharmaceutical Society of the greatest incentives and encouragements to follow the system that could be devised.

Tenth. It may be added, that although the unsound habit of the majority of students of studying for examination instead of studying for education is illogical, and like "putting the cart before the horse"—examination being a means and education the end, not education the means and examination the end—they are not therefore to be actually blamed. For the habit is, apparently, founded on weak points not discernible by a student in the present system of examination. Again, students do under that system of examination get more credit for devoting a given time to studying for examination than for devoting the same amount of time to studying for education. And, thirdly, at the time they commence studying they probably have no means of knowing that a course of study for the sake of education is better than, or in any way different to, a course of study for the sake of examination. That such students are enslaved by the habit is true, however, though they may not realise their condition; and any measures tending to its avoidance, even compulsory measures, work in the direction of enlargement, instead of curtailment, of true freedom. Such measures would also tend to save the men from being placed in the false position of possessing a certificate of knowledge without the knowledge itself, the latter having faded from their minds almost before the ink with which the document was written became dry.

Eleventh. It must also be added, that although the cause of the unsatisfactory condition of the Pharmaceutical Society's system of sound public education and the remedy are as stated, the remedy is not recommended with the mere object of once more making the system thoroughly successful—desirable and even praiseworthy though such a purpose may be. It is recommended with the far more important object of improving

the condition and position of the pharmacist himself, and, again, for the still higher purpose of the better fitting pharmacy to be the handmaid of medicine and the more trustworthy servant of the public.

JOHN ATTFIELD.

ASHLANDS, WATFORD, *January 25th, 1880.*

## APPENDIX.

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Proof copies of this pamphlet having been sent by the Author to about fifty leaders in Pharmacy, with a request for opinions, the following replies were received—mostly in the course of February or March, 1880. The letters are arranged in the alphabetical order of the names of the writers, as [1] Members of The Council of the Pharmaceutical Society of Great Britain, [2] Members of the Board of Examiners for England and Wales, [3] Members of the Board of Examiners for Scotland, and [4] other Leaders in Pharmacy.—J. A.

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### [1] MEMBERS OF THE COUNCIL OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

THE MOUNT, ELM GROVE, SALISBURY.

DEAR DR. ATTFIELD,

I beg to thank you for an early sight of your pamphlet. I have read it with the attention which the importance of the subject and the authority of the writer deserve. You have directed enquiry to a manifest and growing evil—the want of systematic and thorough training in pharmacy, and the want of adaptation in our present system of examining, to detect the mischief. You have further rendered valuable help in formulating a sound judgment on the case, by collecting such a general consensus of opinion from the highest educational authorities of the day.

The remedies you suggest, an authorised curriculum of education and an adaptation of examination to the same, are well worthy of mature deliberation on the part of Pharmaceutical authorities. It is desirable, too, that action should be voluntary rather than enforced. I am quite aware “commercial considerations” involve the argument, and I fully admit the cogency of the reasoning, that if the public demand an educated pharmacist, he should be protected in the exercise of his calling.

Faithfully yours,

S. R. ATKINS.

DEAR DR. ATTFIELD,

DOVER.

I desire to thank you for the opportunity of perusing your comprehensive *brochure* on "Pharmaceutical Education," and to tell you that my convictions are very much in accord with your own.

I have observed for a lengthened period that ephemeral preparation for examination has been supplanting and taking the place of that broader and deeper training which far better fits a man for the battle of pharmaceutical life. I feel assured that many of those who, from want of proper guidance or want of industrious application, have contented themselves with a superficial dressing up for examination without a basis of more solid foundation, will, in after life, often have cause to regret that the knowledge which enabled them to pass through the examination rooms was not deeper rooted. A compulsory curriculum is, I am convinced, the best remedy for a state of things which you and I and many other well-wishers for the progress of pharmacy deplore. Perhaps the present time may not be opportune for the *complete* change, but this is a point for discussion.

Yours very sincerely,

ALEX. BOTTLE.

46, NEW STREET, BIRMINGHAM.

DEAR DR. ATTFIELD,

Your vigorous pamphlet has pointed out very clearly the ill effects of the present system, which directly encourages the process of fattening for the show. The radical remedy is, I fear, too much to expect in these hard times, but it is evident that some measure in the direction which you indicate, or in that of a succession of examinations, is rapidly rising above the Pharmaceutical horizon.

With many thanks,

Believe me, very truly yours,

WALTER J. CHURCHILL.

113, BUCHANAN STREET, GLASGOW.

DEAR DR. ATTFIELD,

There can be no question as to the desirability of such a course of instruction as you sketch in your paper being given, where practicable, to all who desire to graduate either as "*Chemists and Druggists*," or as "*Pharmaceutical Chemists*." I fear that there is at present little prospect of our Society having at its disposal the means of equipping a sufficient number of public schools suitable for our purpose. If, however, this difficulty can be got over, I, for one, will welcome their establishment, provided that attendance at them be only permissive.

Yours very truly,

DANIEL FRAZER.

DEAR DR. ATTFIELD,

I have eagerly availed myself of the opportunity of carefully reading the pamphlet, in which you have succeeded most clearly in shewing the superiority of the system which really educates to that which merely "crams." I agree with the desirability of establishing a public curriculum which shall include all the subjects requisite to ensure competency in those who practice pharmacy, but in the present depressed condition of all interests in Great Britain I would only make this permissive. With regard to the examinations, they should of course be "fitted to the education," though I fear that no means can be devised which will *absolutely* ensure sound education and prevent mere "preparation for examination."

Thanking you very much,

I remain, yours very sincerely,

T. P. GOSTLING.

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20, NEW STREET, DORSET SQUARE,  
LONDON, N.W.

MY DEAR SIR,

I have very carefully read your pamphlet on "Pharmaceutical Education," and in the main am in agreement with you. Having already, after a tour in North Germany, published my views on this subject, I need not repeat them here. The *systematic* education of the pharmacist of that country leaves little to be desired, and to that *thorough training* which his well regulated course of study ensures, may be referred his pre-eminence as a scientific pharmacist. This graduated course of *public* study, combined with the necessary practical work, appears to me the only sound system of the future for the pharmacist of Great Britain.

Very truly yours,

THOMAS GREENISH.

TO PROF. ATTFIELD.

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205, ST. JOHN STREET ROAD,  
LONDON, E.C.

DEAR DR. ATTFIELD,

I have read your exhaustive pamphlet with much pleasure. I need scarcely say that I heartily sympathise with you in your main object, namely, *genuine Pharmaceutical Education*. You will perhaps remember that when this important subject was discussed at Brighton in 1872 I advanced the opinion that the principal cause of inefficient Pharmaceutical Education was the very limited demand on the part of the medical profession and the public for improved, or even passable, pharmacy. I believe that this condition remains the

most important obstacle to be overcome. There is still very little real interest shown by the Medical Profession and the public with regard to pharmacy, and at this time the prospect of a beneficial change appears more remote than ever. Knowing how woefully contracted the sphere is for the use of thorough pharmaceutical knowledge when obtained, is it surprising that short cuts and devious ways are taken to secure success in the examination room? I could not allow this opportunity to pass without again stating this view of the subject. Yet your remedy is most worthy of full and candid consideration, and I shall be ready to urge its adoption, if it can be so arranged that injustice or undue hardship be not inflicted upon students in town or country.

Thanking you for the full exposition of the subject,

I am, yours truly,

ROBT. HAMPSON.

338, OXFORD STREET, LONDON, W.

DEAR DR. ATTFIELD,

I quite sympathise with the object you have in view, but should prefer to have more time for consideration before giving an opinion as to the manner of carrying it out.

Yours very truly,

T. H. HILLS.

CANNING STREET, ATHOLE CRESCENT,

EDINBURGH.

DEAR ATTFIELD,

As you are aware, I have long held the desirableness of a proper course of study in connection with our candidates for the Major and Minor Examinations. As a proof of this, I may mention that more than twenty years ago I suggested that in Scotland we should have a special clause in all our indentures obliging parents and guardians of apprentices to pay for the attendance of each pupil at a full course of Chemistry, Materia Medica, and Botany, the employer being bound on his part to give the requisite time for so doing. Personally, I have carried this out in every case. I am glad, therefore, at the efforts you are now making, from which, I believe, when successful, much good will result to a cause which we have all had, and continue to have, so much at heart.

Yours truly,

JOHN MACKAY.

LEICESTER.

DEAR DR. ATTFIELD,

I have perused your able and exhaustive pamphlet with the greatest pleasure. You, as an eminent pioneer in pharmacy, and an educationalist of progressive energy, would be expected by pharmacists to deal with the subject of pharmaceutical education in the most complete manner; but your lucid treatment has given a charm and interest to what is too often dry and little appreciated. All followers of pharmacy should thank you, and give you their fullest support.

Faithfully yours,

J. G. F. RICHARDSON.

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 57, WARRINGTON CRESCENT, MAIDA VALE, W.

DEAR DR. ATTFIELD,

The relation of Examination to Education is a most important question, and the views expressed in your pamphlet coincide in many respects with my own. To promote real rather than superficial education should be the aim of the Pharmaceutical Society, and I quite agree with you that an effort should be made to remedy the existing evil. After so clear an exposition of the subject in all its bearings as you have given us, I feel confident that the Council will appoint a committee to give the matter the consideration it deserves.

Yours truly,

J. ROBBINS.

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 8, ALBANY COURT YARD,

PICCADILLY, W.

DEAR DR. ATTFIELD,

You know how much I regret the growth of what may be called the *veneering* system of preparation for the examinations of the Pharmaceutical Society, and therefore may infer that I was glad to have an opportunity of reading your pamphlet. I think that if the Examiners could be assured that candidates had really gained their knowledge by *work* and not by "*cram*," it would be a great advantage. As for the students themselves, the benefit would be life-long.

Very truly yours,

G. W. SANDFORD.

BRIGHTON.

MY DEAR SIR,

I have read and considered the cumulative evidences, so clearly furnished in your pamphlet, of the evils resulting from the too prevalent system of instruction as applied to examinations, especially those having reference to pharmacy. The subject is one of much importance. The "National Union of Elementary Teachers," now holding their annual conference at Brighton, have added their testimony, in considering what they call "The Examination Mania." They quote from the *Times* and cite Professor Max Müller, as you have done, and conclude with these remarks:—"What is really wanted is men who are willing to teach others how to work for themselves, how to think for themselves, and how to judge for themselves. The true academic stage in every man's life is when he learns to work, not merely to please others, be they schoolmasters or examiners, but to please himself; when he works from sheer love of the work, and for the highest of all purposes—the acquisition of truth."

At page 56 of your pamphlet, under the seventh head, I find much that I can endorse. Of course I foresee difficulty in establishing a system, permissive or compulsory, to supersede that which, unfortunately, seems to have grown up in every department tested by public examinations. However, any means that can be devised to promote a more healthy state of things shall have my most cordial support.

Yours truly,

W. D. SAVAGE.

PROF. ATTFIELD.

7, REGENT STREET, CLIFTON.

DEAR DR. ATTFIELD,

I have read your pamphlet with all the care its subject demands, and am much interested to find with how much of it I cordially concur; indeed, substantially I find myself agreeing with what you have written. The time is, I think, approaching when modifications of the system of examinations at present practised by the authorities of our Society will have to be introduced, and your pamphlet will largely assist those upon whom will rest the responsibility of any changes in arriving at wise conclusions. I sincerely hope you will be able to offer to many others, as you have so kindly offered to me, the advantage of perusing so clear an exposition of the case as it now stands and of the opinions to which your large experience has brought you.

Yours most truly,

G. F. SCHACHT.

24, GREAT GEORGE PLACE, LIVERPOOL.

DEAR DR. ATTFIELD,

Thanks for your pamphlet on "Pharmaceutical Education." I have read it with much interest. I am afraid there is much reason for believing that the information gathered by a number of students is too much akin to that of the special pleader in our law courts—here one day, and gone the next—with the important difference that the barrister's data are admittedly ephemeral, while the graduate's knowledge has the pretence of permanence. The former, too, has the power, as you indicate, of making his own summaries, while the crammed candidate is only temporarily stuffed with the summaries of others. You have adduced much valuable evidence in support of compulsory attendance at recognised schools. I have no hesitation in saying that such attendance would materially contribute to the more efficient acquisition of pharmaceutical knowledge. Under present circumstances and aspects of pharmacy, however, I could not look with much favour upon compulsory attendance, but should be pleased to see, as you suggest, such voluntary certificates received and recognised by the Board of Examiners, and their acquisition by students promoted as much as possible by the Council, and by all connected with pharmacy.

Yours faithfully,

JOHN SHAW.

9, CLAREMONT SQUARE, N.

DEAR DR. ATTFIELD,

I thank you for giving me the opportunity of perusing your pamphlet, and am fully convinced that some system of training students of pharmacy, different from the too common one, is essential to the prosperity and well-being of the pharmaceutical body in the future. Attendance on a course of lectures and laboratory instruction would not be expensive. Trusting that your suggestions will be thoroughly examined and considered, and feeling sure that ultimately they will result in much benefit to the rising generation of pharmacists.

I remain, yours faithfully,

JAMES SLIPPER.

277, OXFORD STREET, LONDON, W.

DEAR DR. ATTFIELD,

Thank you for sending me a proof of your pamphlet. I think you have done good in bringing forward the subject of education and examination. The existing evil is very clearly set forth: I hope you will be equally successful in arriving at the remedy. I think, with you, that examinations should be fitted to sound education. This and your other proposals shall always have my sympathy and support.

Yours faithfully,

P. W. SQUIRE.

14, HARDMAN STREET, LIVERPOOL.

DEAR DR. ATTFIELD,

It has afforded me pleasure to peruse your pamphlet, and that more especially as we have arrived at much the same conclusions by reasoning from different points of view. You as a teacher have ably dealt with the relations which exist between pharmaceutical education and examination. I as a pharmacist look on education as a means to an end, that end being the practical business of life. Examination is to my mind but the portal through which a man must pass from the one to the other. As now conducted it only tests his knowledge, his memory, and power of concentration—it fulfils the demands of the law. But it is an insufficient guarantee, either to the student himself or to the public, that he really possesses the kind or amount of knowledge necessary to make him a proficient and thorough pharmacist. If by some such method as you have suggested, and to which you have given so much attention, this deficiency could be remedied, and the examinations be more comprehensive whilst retaining their impartiality, I feel assured it would be a boon to all concerned, and would give a more healthy tone to not only the Society's school but also to those in the provinces, indeed to any pharmaceutical schools that may be established with the same object held in view—viz., real education.

Very faithfully yours,

CHARLES SYMES.

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16, CROSS STREET, HATTON GARDEN,  
LONDON, E.C.

DEAR DR. ATTFIELD,

I thank you for permitting me to see the proof of your pamphlet upon Pharmaceutical Education. You have treated the subject very fully and impartially. With your general conclusions I quite agree. There are points of detail which will require, as I have no doubt they will receive, the most careful consideration before the Council of the Pharmaceutical Society consents to enforce a "public system of education, arranged to meet the practical needs and requirements of a not too remunerative calling."

Yours very truly,

JOHN WILLIAMS.

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69, MARKET STREET, MANCHESTER.

DEAR DR. ATTFIELD,

I am obliged to you for the opportunity you have afforded me of perusing your pamphlet. I am quite with you in believing that compulsory public curricula, under suitable supervision, would be popular with pupils. Students in the provinces ought to have the opportunity of acquiring their education gradually; in fact, to spread it over the same number of years

as it is rapidly becoming the practise to cram it into them in months. They have no alternative at present, and cannot be blamed for the existing condition. The work you have taken up demands the careful consideration of all who are interested in pharmacy.

Yours very truly,

GEO. S. WOOLLEY.

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## EXAMINERS FOR ENGLAND AND WALES.

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### [2] MEMBERS OF THE BOARD OF EXAMINERS FOR ENGLAND AND WALES.

ENGLAND HOUSE,

PRIMROSE HILL ROAD, N.W.

MY DEAR SIR,

The opinions that you express so strongly in your pamphlet I can fully endorse. I am convinced, after some considerable amount of experience in teaching, that *lasting* scientific knowledge can only be obtained by practical work. Learning from books only is ephemeral. Verbal teaching, alone, is unsatisfactory. Any steps that can be taken to induce students to submit themselves to such a curriculum as advocated by you will be fully supported by me. I hope the day is not far distant when the Examiners of the Pharmaceutical Society will be enabled to *insist* upon such a course of study from the candidates before presenting themselves for examination.

Yours very truly,

ALFRED ALLCHIN.

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KNIGHTSBRIDGE,

DEAR DR. ATTFIELD,

I thank you for the opportunity of perusing your pamphlet on Pharmaceutical Education.

There cannot be a doubt that systematic instruction in the scientific subjects as distinguished from mere coaching is alone conducive to the acquirement of sound knowledge of the same.

Yours very truly,

J. B. BARNES.

7, EXCHANGE STREET, MANCHESTER.

DEAR ATTFIELD,

From my experience of young men, before, during, and after the examinations, I am convinced that in too many cases they are none the better, and in some instances are much worse for the "preparation" they have undergone. The loosely attached information which deceives alike themselves and their examiners, does not stand the wear and tear of practical application in daily life. Like cheap gilding it rubs off rather than brightens in use. We are probably justified in assuming that the process of pharmaceutical education should not differ very materially in principle from that which the experience of centuries has taught us affords the best mental training in other special departments of knowledge. Hence the proposal that candidates shall attend a curriculum of a properly guaranteed public character, previous to presenting themselves before the Boards of Examiners, has my hearty approval.

Yours sincerely,

F. BADEN BENDER.

HILLFIELD, GATESHEAD.

DEAR ATTFIELD,

I thank you for the opportunity of reading your pamphlet. With the views therein expressed on the general question of Pharmaceutical Education, and the lamentable insufficiency of the methods at present so commonly adopted, I entirely agree. Those who are interested in the progress of pharmacy are much indebted to you for formulating the results of evils which have become scandalous, and suggesting an intelligible basis for the discussion, at least, of the best means for their removal.

Faithfully yours,

HENRY B. BRADY.

180, NEW BOND STREET, LONDON, W.

DEAR ATTFIELD,

I have read with much interest the proof of your pamphlet. The proposals embodied in it I have long entertained, and any scheme that may hereafter be devised for carrying them out judiciously shall receive from me the most cordial assistance.

Yours very truly,

M. CARTEIGHE.

37, LONDON STREET, NORWICH.

DEAR DR. ATTFIELD,

Thank you very much for the perusal of your very able and excellent paper. I fully agree with you in all you say as to the necessity of thorough education, as well pharmaceutical as otherwise. Certainly, to be of value, it must be as a rule slowly attained, not by a spasmodic swallow.

Faithfully yours,

OCTAVIUS CORDER.

338, OXFORD STREET, LONDON, W.

DEAR DR. ATTFIELD,

Many thanks for the opportunity you have given me of perusing your pamphlet on "Pharmaceutical Education." If the method you suggest can be carried out, it will be of immense benefit to students themselves, and give more satisfaction to examiners. The subject deserves very careful consideration by a committee.

Yours very faithfully,

SAMUEL GALE.

20, NEW STREET, DORSET SQUARE, LONDON.

DEAR SIR,

I have given careful consideration to the subject of your pamphlet. From long observation I have been impressed with the desirability of some recognised course of study, and although my experience as an examiner is of recent date, it quite tends to confirm my previous convictions. I have frequently been surprised at the unsystematic arrangement of even that amount of information which the candidate has acquired, and could only refer it to a too hasty acquisition of knowledge which, as we know, requires some leisure for its digestion and assimilation. This deficiency would be partially, if not entirely, remedied by a recognised course of study. The introduction of a system similar to that which you propose would be hailed as a boon by every true lover of his profession.

Faithfully yours,

T. EDWARD GREENISH.

PROFESSOR ATTFIELD.

2, LANCING TERRACE, EALING DEAN, W.

DEAR DR. ATTFIELD,

Thanks for your paper, which I have read carefully. I believe that your main contention is right. I trust that the difficulties that lie so evidently in the way of the adoption at present of a *compulsory* public curriculum may ere long be overcome, especially for the "Major," to the advantage of both examiners and examinees. Anything that would make a more thorough scientific education compulsory would, in the end, benefit everyone—the public, the teachers, and the students; the latter especially.

Yours faithfully,

JOHN S. LINFORD.

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10, NEW CAVENDISH STREET, LONDON, W.

DEAR PROFESSOR ATTFIELD,

I have been much interested in the perusal of your pamphlet. Generally, I agree with you. I am certain that students would in after life only be too thankful that they had been *compelled* to attend sound curricula of education. A certificate that a candidate had properly passed through such courses of instruction, while lightening the labours of examiners, would add to the trustworthiness of their decision.

Faithfully yours,

WM. MARTINDALE.

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300, HIGH HOLBORN, LONDON, W.C.

DEAR DR. ATTFIELD,

I am pleased to have had an opportunity of perusing your pamphlet, which expresses my own views so well that, both as an examiner and as one who for some years was engaged in educational work, it receives my warm approval. In particular, the proposal to fit examination to education has my fullest support. During a recent visit to the United States I was impressed with the fact that in pharmacy they have nothing which corresponds to that system of "preparation for examination," that is "cram," so rife in this country.

Yours faithfully,

JOHN MOSS.

ST. THOMAS'S HOSPITAL,

ALBERT EMBANKMENT, LONDON, S.E.

DEAR DR. ATTFIELD,

I have read your pamphlet with very great interest. I unreservedly accept the principle enunciated by you, that the pharmaceutical examinations should be adapted to pharmaceutical education. The future of pharmacy is, in my opinion, largely dependent upon the carrying of this principle into practice. Successful candidates who have merely "prepared for examination," who have, in fact, "worked to pass, not to know," are not likely in after life to advance their calling or to add to its dignity. I hope the time is not far distant when it will be compulsory for candidates to pass through a public educational curriculum before presenting themselves for examination. In the meantime I will heartily support any practical scheme which will bring us nearer this result.

Yours faithfully,

SIDNEY PLOWMAN.

BULL STREET, BIRMINGHAM.

DEAR DR. ATTFIELD,

I thank you much for the opportunity you have afforded me of perusing your valuable pamphlet on Pharmaceutical Education. I fully agree with you as to the propriety of a curriculum of education that can be officially recognised. The subject is of the greatest importance and your contribution to its elucidation most valuable.

Yours very truly,

WM. SOUTHALL.

13, QUEEN'S TERRACE, ST. JOHN'S WOOD, N.W.

DEAR DR. ATTFIELD,

Thank you for the proof of the pamphlet. I am in perfect accord with you as to the desirability of even an enforced curriculum, at a recognised school.

I regret the difficulty experienced in persuading young men to look beyond passing examinations, and to see that knowledge obtained by application will be of service to them through life.

Yours very truly,

GEORGE S. TAYLOR.

## EXAMINERS FOR SCOTLAND.

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### [3] MEMBERS OF THE BOARD OF EXAMINERS FOR SCOTLAND.

58, GEORGE STREET, EDINBURGH.

DEAR PROFESSOR ATTFIELD,

I have perused your pamphlet on Pharmaceutical Education with much pleasure, and agree very much with the views therein expressed. If the curriculum mentioned could be legalised and carried out in its entirety it would go far to realise the intention of Jacob Bell, and the other founders of the Pharmaceutical Society. Evidently the time has come when a check must be given to the wholesale system of cramming now so rampant.

Yours truly,

WM. AINSLIE.

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7, KING STREET, KILMARNOCK.

DEAR DR. ATTFIELD,

I have read your pamphlet on "Pharmaceutical Education" with pleasure, and feel that I cannot refrain from expressing my hearty acquiescence in much that you have so forcibly advanced. Every effort, I think, should be made by those who value the future progress and prosperity of Pharmacy to guide the training—the educating—of our young men into a channel differing greatly from that which at present so largely obtains. Your suggestions appear to me to point to the most effectual method of accomplishing so desirable an object, and the pharmaceutical body at large might wisely urge the adoption of many of them—tentatively, perhaps, at first, but ultimately permanently. Fitting education to examination is pernicious in its results, and should be discountenanced as far as possible. Examination should be fitted to sound education.

Yours faithfully,

J. BORLAND.

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11, ELM ROW, EDINBURGH.

DEAR DR. ATTFIELD,

I have long foreseen that we will come sooner or later to a compulsory curriculum for our students, and it was therefore with pleasure I received and perused your pamphlet bearing on this question. With very much that it contains I heartily concur. No one at all conversant with the circumstances of the case can deny that the examinations have created a pseudo education, which should be put an end to as soon as possible. It is bad

for the students, it has a reflex influence on the examinations, and it makes the duties of the examiners doubly onerous.

I may add that there has been a wonderful progression of opinion here of late in the direction now and previously indicated by you. There are few of the leading pharmacists but are, I believe, prepared for some such step.

I am, yours very truly,

W. GILMOUR.

To PROFESSOR ATTFIELD.

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106, HIGH STREET, PORTOBELLO, MIDLOTHIAN.

DEAR DR. ATTFIELD,

I have read your pamphlet on "Pharmaceutical Education" carefully, and with much pleasure, on account of the clearness and force with which you have stated the case as it stands at present and as it ought to stand in the future. Your proposal to adapt examination to a public and officially recognised system of education has my hearty approval. It seems to me well fitted to prevent the evils resulting from mere preparation for examination, and to confer lasting benefit on the rising generation of pharmacists. I think, however, that if any changes in the direction you have so ably pointed out are to be introduced, these should be, in the meantime, and as you suggest, only gradual and permissive.

Yours very truly,

DAVID KEMP.

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69, SOUTH PORTLAND STREET, GLASGOW.

PROFESSOR ATTFIELD,

Dear Sir,

I have read with great interest your pamphlet on Pharmaceutical Education. In Scotland the smallness of our numbers renders it impossible to carry on schools simply for the purpose of "preparing" candidates for examination. Our young men therefore properly qualify themselves, either by private study or by attending regular classes, and thus we very rarely see specimens of "prepared" candidates. A compulsory curriculum would no doubt obviate many of the evils pointed out in your remarks. The innovation must, however, be made very cautiously, lest it should lay an additional burden upon what you justly characterise as a not too-remunerative calling.

Faithfully yours,

ALEXR. KINNINMONT.

139, PRINCES STREET, EDINBURGH.

PROFESSOR ATTFIELD,

DEAR SIR,

I have perused the pamphlet you kindly sent. I was once of opinion that the youth of our trade should be allowed to get their education where they pleased, so long as they came up and passed their examination. Now, however, since those "cram" schools have so unblushingly cropped up in such numbers, my opinion has changed.

I think that if (to quote your own words, page 55) "an educational curriculum of character, extent, and cost, appropriate to the needs and means of pharmacists," could be laid down, it would be a great advantage to the trade. It would certainly require to be "deliberately" done, and with due regard to the fact that we are apt to look upon ourselves in too professional an aspect, and keep out of view the trade side of our daily duties. Hoping your views will meet with the measure of success I wish them,

I remain, yours faithfully,

A. NOBLE.

71, GEORGE STREET, EDINBURGH.

DEAR DR. ATTFIELD,

I have read your pamphlet with great interest and pleasure. With your views generally I have complete sympathy. (See the *Pharmaceutical Journal* of 8th December, 1877, p. 458.) My only misgiving has been as to the practicability of giving effect to them. I always hoped and at first believed that the Pharmacy Act of 1868, by establishing a compulsory demand for qualification, would create a commensurate supply of trustworthy educational agency. Most of the supply has hitherto, however, been of a most unsatisfactory character, as the Examiners of both Boards—but especially the London one—can abundantly testify. Any endeavour to render it of a more legitimate character has my heartiest sympathy and co-operation; for if successful, I believe it would confer a great boon—direct and immediate—on Examiners, as well as Examinees, and eventually on the whole pharmaceutical body.

Yours faithfully,

J. B. STEPHENSON.

38, CHALMERS STREET, EDINBURGH.

DEAR DR. ATTFIELD,

Very much in the interests of the candidates (as I thought) so many of whom are obliged to carry on their educational work in country districts, I long entertained the opinion that if they produced evidence of having had the necessary technical training, we might trust to the examinations for testing their general acquirements. My experience, however, as an examiner, has gradually convinced me that evidence of systematic training in all the branches would be a mighty gain to all parties, and I would welcome any judicious scheme having that result eventually in view. I am pleased at the opportunity you have given me of reading your valuable pamphlet.

Truly yours,

J. R. YOUNG.

## OTHER LEADERS IN PHARMACY.

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1, TREBOVIR ROAD,  
EARL'S COURT, S.W.

DEAR ATTFIELD,

I thank you very much for giving me the opportunity of reading a proof of your carefully compiled and thoughtful pamphlet on "Pharmaceutical Education." This subject is one of great interest and importance at the present time. I entirely agree with you in the wisdom and expediency of adapting examination, as far as possible, to education. I hope the time is now approaching when, at least, a permissive curriculum of study in connection with pharmacy will be officially recognised.

Yours very truly,

ROBERT BENTLEY.

TO PROFESSOR ATTFIELD.

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ROYAL INSTITUTION, LIVERPOOL.

MY DEAR SIR,

I have read your paper with great interest and thoroughly agree with your views. I would even make systematic training compulsory, as soon as a sufficient supply of such training was provided. Students, I find, want to save time and money more than work, and as the present system of special training meets their wants they will only abandon it on compulsion. The principal difficulty in the provinces is to get a class at all except at a nominal fee.

Yours truly,

E. DAVIES,

*Liverpool School of Pharmacy.*

PROFESSOR ATTFIELD.

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BATH.

DEAR ATTFIELD,

I quite agree with you about the desirableness of a prescribed curriculum before examination. As it happened, I passed my examinations during my apprenticeship; and although I do not undervalue the educational training of unaided private study, I regretted, when it was too late, and still regret, that I was not compelled to undergo as well a systematic course, say for a year, at Bloomsbury Square. Your pamphlet comes just in the nick of time. For certain well-understood reasons, which I need not enter into, the position of Pharmacy in this country is not only precarious, but, I believe, altogether false. I differ from you so far as regards the permissive character of your

recommendations, for I consider the day for permissive legislation as regards Pharmacy has gone by, and I would boldly apply to Parliament at once to authorise some such scheme as you have shadowed forth, and which the safety and welfare of the public imperatively demands.

Yours very sincerely,

CHARES EKIN.

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WEYMOUTH.

DEAR DR. ATTFIELD,

The gist of your exhaustive pamphlet is the recommendation that the present haphazard style of Pharmaceutical Education should be superseded by a definite curriculum of study at a recognised school of pharmacy. There I am altogether with you; but, to satisfy me, the curriculum must be compulsory—not permissive or tentative, or too curiously fenced about with safeguards. Cramming, so long as it can be made to pay, will continue to exist, but its evils will be much mitigated by the adoption of the plan you propose. In fact, it would soon be understood that the legitimate mode of acquiring pharmaceutical knowledge was both better and cheaper than its spurious substitute. A compulsory curriculum would, I am convinced, do more in ten years for the elevation of the social and scientific status of pharmacists than has hitherto been accomplished by the Pharmaceutical Society during its whole existence.

Believe me, yours faithfully,

THOS. B. GROVES.

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11, GREY STREET, NEWCASTLE.

DEAR ATTFIELD,

Thank you for the copy of your pamphlet on Pharmaceutical Education. You know you have my cordial good wishes in anything you can do to promote soundness in the mental development of young pharmacists. Theoretically, I should prefer to pass all candidates who could satisfy the examiners, regardless of how or where they had got their information; but practically I am satisfied that general competence is best ensured by requiring a curriculum as well as an examination, for it gives more than double probability of the results being correctly representative of the truth. I know that my lectures on Pharmacy, at the College of Medicine here, were not permanently successful, because students were not bound to attend them. There is a very limited number of students willing to spend time and money in true culture unless under some form of compulsion. I have no doubt, also, that the want of popularity of my published lectures, with the so-called

student class, is partly the consequence of my desire to stimulate thought rather than to save it—that is, to help the culture which the Pharmacy Act aimed at developing, rather than to evade the spirit of the Act.

I shall rejoice when any system of examination can be put in operation which will show *when the student's experience has developed his judgment and power of thought*. The way a man attacks a difficulty is to my mind the best indication of his development, but I fear it will be long before much can be done in the way of adopting such a test in any examinations. We find it out at the dispensing counter and in the laboratory, and then detect the weakness of a well crammed graduate.

I remain, yours truly,

BARNARD S. PROCTOR.

PROF. ATTFIELD.

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17, BLOOMSBURY SQUARE,

LONDON, W.C.

DEAR ATTFIELD,

I have read your pamphlet, and concur with the views you have so well expressed in it. Although I hope sooner or later to see something more than a permissive curriculum officially recognised in connection with pharmaceutical education, this is perhaps as much as we should look for at the present time. The method you suggest, of fitting examination to an approved system of education, appears to me judicious, and, if adopted, I think it would not only be a step in the right direction but do much towards improving the future position of pharmacy and pharmacists.

Yours truly,

T. REDWOOD.

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CLIFF LODGE, HYDE PARK, LEEDS.

DEAR DR. ATTFIELD,

I go with you altogether in a preference for ensuring systematic training in public schools over mere "preparation for examination." But I am unwilling that your proposals be put into operation unless with such well-considered safeguards as shall ensure their success. If the "proper supervision" of educational arrangements so often mentioned by you can be organised, either by a "Board of Education" hinted at on page 53, or by other means, the scheme may work well. Anyhow I think that a Committee should carefully consider the matter.

Faithfully yours,

RICHARD REYNOLDS.

MANCHESTER.

DEAR DR. ATTFIELD,

I have read with very great interest your pamphlet on "Pharmaceutical Education," and most thoroughly agree with you on all the main points therein discussed. My experience as a teacher of pharmacy enables me to confirm to the fullest extent your observations relative to the practise, unfortunately so common among students of pharmacy, of neglecting courses of real pharmaceutical education in favour of mere preparation for examination. My views on the relation of pharmaceutical education and examination to each other are entirely the same as those expressed in your pamphlet. I most cordially endorse your proposals for placing pharmaceutical education on a more satisfactory basis. I sincerely hope that your efforts in this direction may soon lead to a successful issue.

Yours faithfully,

LOUIS SIEBOLD.

*Manchester School of Pharmacy.*

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GRAFTON LODGE, SNEYD PARK, BRISTOL.

DEAR ATTFIELD,

I have been too unwell to examine your pamphlet very critically, but, so far as I can judge, I can support all your statements. In short, my sympathies are in perfect accordance with your proposals.

Yours sincerely,

W. W. STODDART,

*Bristol School of Pharmacy.*

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23, MIDDLE GARDINER STREET, DUBLIN.

DEAR ATTFIELD,

I have read your pamphlet with a considerable amount of interest. I quite agree with you as regards the importance of suiting examination to a *bona fide* education. I not only think that this principle should be applied to pharmaceutical education, but that it might with advantage be extended to other branches of study.

As President of the Council of Pharmaceutical Education in this country, I may say that this subject has engaged our anxious attention for some years; and so strongly did our Council feel on this question, that they considered it necessary to take the initiative as regards compulsory chemical education. This conclusion was arrived at after mature consideration on their parts, and was based upon the experience and recommendation of their examiners. At the same time I am not, of course, an advocate for over-weighting the student with heavy fees.

Wishing your movement every success in England,

I remain, truly yours,

C. R. C. TICHBORNE.

GLENFARG, CLIFTON COLLEGE, BRISTOL.

DEAR ATTFIELD,

I thank you for the opportunity you have given me of reading your interesting pamphlet on Pharmaceutical Education, and I am prepared to agree with much that you have written. I am grieved to notice that pharmaceutical teaching has fallen so low, as advertisements which appear weekly in the *Pharmaceutical Journal* seem to indicate. I think the time has arrived when the Council and the Board of Examiners ought to come to some understanding with the object of doing away with a state of things which all who are interested in the advancement of pharmacy must deplore. Your pamphlet must be regarded as a most valuable contribution to the discussion of this important question.

Yours very truly,

WILLIAM A. TILDEN.

PROF. ATTFIELD.

*formerly Demonstrator of Chemistry in the  
Laboratories of the Pharm. Socy.*

WILLIAM A. TILDEN

Dear Sir,

I thank you for the opportunity you have given me of reading your interesting paper on Pharmaceutical Education, and I am prepared to agree with much that you have written. I am grieved to notice that pharmaceutical teaching has fallen so low, as advertisements which appear weekly in the Pharmaceutical Journal seem to indicate. I think the time has arrived when the Council and the Board of Pharmacy ought to come to some understanding with the object of doing away with a state of things which all who are interested in the advancement of pharmacy must deplore. Your paper must be regarded as a most valuable contribution to the discussion of this important question.

Yours very truly,

WILLIAM A. TILDEN

Per Answer

*Pamphlet on Pharmaceutical Education—pages 81, 82, and 83.*

REMARKS BY THE AUTHOR ON CERTAIN POINTS RAISED  
BY HIS CORRESPONDENTS.

Doubtless, English pharmacy is not, just now, in a flourishing condition. But, in the opinion of the author, a period of depression in pharmacy affords a good opportunity for erecting educational standards, for at such a time they will not be fixed too high. At all events, that a low condition of pharmacy should, as a few have said, afford a reason why entrance to an already overcrowded avocation should be made cheap and easy, is an argument he cannot follow. In 1868, compulsory registration placed pharmacists in an entrenched position, and, on the understanding that they would provide for the safety of the public, they had the key to that position, namely, examination, placed in their hands. But the territory was over-populous. Hence sound policy suggested that future access to it should be rendered less easy. Wisdom pointed to a decrease in the number and an increase in the size of holdings, which already, on the average, were too numerous and too small to be remunerative. In 1868 the wellwishers of English pharmacy hoped and expected that compulsory examination would have the good effect of gradually decreasing the incoming number of principals in pharmacy, because it would involve compulsory education, and that would exclude men of inadequate means and abilities. That anticipation has not yet been realised, only because cheap ephemeral instruction has usurped the place of lasting education. Adopt the mode now advocated, or any equally good or better method, of reinstating sound education in its proper place, and the expected results of the legislation of 1868 will, doubtless, be accomplished. With fewer pharmacists to divide the future pharmaceutical earnings each will secure a better annual income, even though percentage profits be decreased in obedience to the apparently inexorable demands of the public. Better paid principals will, of course, according to politico-economical laws, command a commensurate supply

of properly qualified, properly paid assistants. All pharmacists seem agreed that something should soon be done gradually to arrest the undue multiplication of druggists' shops—to arrest the production of a large body of mere dealers in drugs in the place of a comparatively small body of skilled pharmacists—that is, to arrest the growth of a distinct evil for pharmacy, for the true pharmacist himself, and for the public. Let pharmacists only take care that whatever be done be accomplished by themselves. Let them keep the government of pharmacy in their own hands. Their title to self-government in the past has been their advocacy, recognition, and practical encouragement of *thorough* education. Their claim to self-government in the future must rest on the same foundation. There are not wanting indications that wise management in pharmacy may raise its followers to a real fourth estate in the English medical constitution, all the work of pharmacists being recognised, under proper guarantees, as a part of the practice of the followers of medicine—physicians, surgeons, apothecaries, pharmacists. Claims to this future position will also best be supported by evidence of thoroughness of education in respect of present position. Examination alone is held to be insufficient evidence of qualification of physicians, surgeons, or apothecaries: it should be recognised as an insufficient guarantee of qualification of pharmacists. Let examination be supplemented by evidence that the candidate has passed through a sound supervised public course of education, and then the guarantee that thorough and lasting knowledge is possessed will be made substantial and trustworthy.

With regard to the question of education and examination being carried on by one and the same man or body of men, the general impression is that certain weaknesses of human nature render such a course undesirable. The impression is perhaps well founded when there is no concurrent control of the work by external agency; but the subject need not be discussed here, as no one proposes that such a condition of things should obtain in pharmacy. A principle which should be as commonly accepted is, that while technical and general education and examination, such as have been defined in the introduction to this pamphlet, should be carried on by different men or different bodies of men, both the men or bodies of men should be under the direction and control of the followers of the calling—in this case pharmacists, who indeed are alone qualified to direct or control matters pharmaceutical. Let pharmacists lose control over what is now defined as general pharmaceutical education, and where is the guarantee that it

will not be superseded by superficial and ephemeral instruction? Let them lose control over pharmaceutical examination, and where is the guarantee that it will be fitted to the requirements of pharmacy? Let the educators and the examiners be separate men and separate bodies of men, as at present, but take care that sound education and sound examination shall in future harmonise, by the directing and controlling action of such a Pharmaceutical Council or Board as is described in the foregoing pages (vii and 53). Of course, ultimately, all properly supervised public recognised schools of pharmacy would be placed on the same footing, unless there were some special reason to the contrary.

The author has been reminded that where examinations are imposed for the safety or protection of the health of the public, a public curriculum is insisted on, the examinations of the Pharmaceutical Society being now the only exception to this rule. Even the examinations of the University of London fall under the rule when medical candidates present themselves.





