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FUTURE EDUCATION METHODS

NOTE: The written record of this session is based on the presentations made at the Nashville meeting (April 2-3, 1987). The written record of the panelists' presentations is published only in the *Record*, Vol. 13, No. 1. Questions asked at the Nashville, Colorado Springs, and New York sessions are published in the the corresponding *Record*, Vol. 13, No. 1, 2 and 3. Each session had different moderators, panelists, and recorders.

The moderator, panelists, and recorder for Nashville were: Moderator: Godfrey Perrott; Panelist: Linden N. Cole; and Recorder: Linden N. Cole.

The moderator, panelists, and recorder for Colorado Springs were: Moderator: Daniel J. Fitzgerald; Panelists: Warren R. Luckner, Reginald C. Yoder; and Recorder: Warren R. Luckner.

The moderator, panelists, and recorder for New York were: Moderator: Godfrey Perrott; Panelists: Judy Faucett, Stuart Klugman and Warren R. Luckner; and Recorder: Warren R. Luckner.

- o The Education and Examination Committee has proposed several changes in our method of educating and qualifying actuaries. These proposals are collectively called FEM and are described in a White Paper on FEM which the Society has distributed to the membership.

The panel will discuss and answer questions on each of these proposed changes at this session.

These proposed changes include:

- Allowing limited alternatives to our present method of self-study that will educate actuaries more effectively for the future needs of their employers.

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- Giving limited credit under certain conditions for university courses on mathematical topics that are not key actuarial topics
- Giving limited credit under certain conditions for research papers.
- Supplementing the current self-study examinations on certain mathematical topics with intensive seminars for elective credit that will apply these topics in a practical environment.
- Requiring attendance at a Fellowship Admission Course as a prerequisite to obtaining the FSA designation. This course will use the case-study method to teach professional ethics and integration of syllabus topics.

MR. LINDEN N. COLE: I would like to introduce Godfrey Perrott who is one of the General Officers of the Education & Examination Committee. He has been closely involved with the development of the FEM proposals that you are going to hear about. He will present the background of the proposals, and I will give some of the details of the proposals, and what we hope to gain if we adopt them. Godfrey will then describe some of the concerns that have been raised about these proposals, and our response to the concerns. Finally, we will open the meeting for questions. We are very glad you have come to hear about a very important subject.

MR. GODFREY PERROTT: How many of you are still taking exams? It appears to be about half. Presumably the other half are here to keep the gates locked and not let unreasonable people into the Society. Linden explained what we will try to do. I would like to stress that this is the time when the proposals are being evaluated. The White Paper has been sent to the membership and to as many other people as we could find who might be interested in it. It is not a secret. If you know anyone who has any interest in it but does not have a copy, please either let them photo yours or suggest that they write to the Society office and get one. The paper asks for comments to be sent to the Society office by July 1st. There they will be summarized for the Board. Part of our charge is to go back to the Board and explain what concerns people have and what we propose to do about them. Please read the White Paper and answer the questionnaire.

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Different organizations within the Society have different responsibilities, and I thought it would be helpful to outline what they are. The three key bodies that work on the education system of the Society are the Education and Examination (E&E) Committee, the Education Policy Committee and the Society staff. The Education Policy Committee is a Board level committee. More than half its members are Board members. It is responsible for approving educational policy, and by and large, acting for the Board. The E&E Committee consists of a large number of volunteers who propose policy issues to the Board or to the Education Policy Committee, and who oversee the whole education and examination process. The Society staff, which includes three FSAs and many other people, are responsible for as much as possible, implementing whatever policy is adopted.

Just to keep terminology clear, there are two three-letter acronyms running around: FEM and FES. FEM stands for Future Education Methods. FES stands for Flexible Education System. We do not propose to say anything about FES in our prepared remarks. Questions about that can be addressed in the question and answer session.

The impetus for the Future Education Methods proposals originally came from different parts of the Society: the Planning Committee, the Board of Governors, the E&E Committee and actuarial programs in academic institutions. The Planning Committee was especially concerned, believing that we were no longer educating the actuaries that our employers and the general public needed, and that the drive of our education system was toward people that could solve narrow, constrained problems. In contrast, the demands of our employers, whether they be insurance companies or consulting clients, were for people who could answer unconstrained, unstructured questions, so that if actuaries did not provide that kind of expertise, the employers would look elsewhere to find it.

The E&E Committee has been concerned a long time that the Society method of testing people is not the only method and might not be the best one. Some of you may have heard how the Society would teach people to swim. They would seek out the best text on swimming. They would assign the exact pages that the student should study. They would give a multiple-choice examination on the contents of the book on swimming. And they would pronounce everyone who passed the examination a swimmer. That is an extreme example, but it shows some of the fallacies of our current system.

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Lastly, the academics among Society membership feel that there are better ways to educate than the way I have described, and they have a definite interest.

The FEM proposals have been developed over the past three years. Initially, the Education Policy Committee set up a committee called the FEM Steering Committee which had a very broad charge. It was to look at any education methods that might be of value to the Society, and determine whether they were worth pursuing. This committee was finally disbanded about six months ago, after having reported on several ideas. Their work is the basis for most of the FEM White Paper. The Board has discussed the proposals primarily at two meetings. In May of 1986, we made a presentation to the Board, and the Board then passed a resolution stating that it believed that the FEM concepts may strengthen or improve the educational process. It asked the E&E Committee to develop a White Paper containing the FEM proposals that the Board could review and use to circulate to the membership.

In January, the Board passed a three-stage resolution after reviewing the White Paper which said that it believes the FEM proposals have merit and are worthy of the membership consideration. It approved the distribution of the FEM White Paper, and it will consider the final E&E Committee recommendations in October in light of membership and student response. This brings me back to my selling pitch: read the White Paper and respond. The only way that we can substitute facts for appearances is from your responses or from comments in sessions like this. We will gather your opinions from what you say during this session.

That is how we got where we are. Linden is now going to go through the White Paper briefly, and then discuss the benefits that we expect to get from the FEM proposals.

MR. COLE: Please be aware that although there are several proposals in the FEM White Paper, the proposals do not come as a "take it or leave it" package. We can take some of the proposals and not all, and each one will be considered on its own merits. The first proposal on the list is that in limited situations and with proper controls, we give credit for some college work. This will be in two general categories. We call them Level 1 and Level 2 for convenience. Level 1 are subjects which really amount to prerequisites. Level 2 are subjects for

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which the methods of education in a good university course are likely to be better than going off by yourself with a textbook to learn to swim.

Another proposal is that we have intensive seminars at the ASA level for exam credit. We will give you an example of that later on. Another proposal is that we make somewhat wider use of the exams of other organizations where appropriate. This would be limited, but there could be some use. We will give you more details about this later. We would allow credit for research papers. These would be major projects.

In a somewhat different category, we are proposing the consideration of a mandatory Fellowship Admission Course that candidates would take as their last Fellowship requirement. Candidates would have to come to the place where the course was to be given. It might well be in connection with one of these Society meetings. At that course, we would cover professional ethics, which we presently feel we teach very badly. Also, to some extent, we would help candidates to integrate the individual subjects studied separately. Presently, we study underwriting and pass an exam. We study pricing and pass an exam. We study evaluation and pass an exam. But these things are interrelated. In a course like the one proposed, we might use a management game. We might use case studies, a very effective educational approach. This would be our last attempt to prepare these near FSAs; for the real world where these different subjects studied separately actually interact.

None of the FEM proposals are going to be enacted until the membership has had extensive chance to comment, which is the reason for this presentation. That is also the reason for the questionnaire in the FEM White Paper.

What is the rationale for proposing these changes? You have probably heard speeches on this and I would rather not give my long version on the subject. The world is changing rapidly, and we must re-examine the way we have been educating people. That way may not be good enough any more for a world that is changing all the time. The actuary's role is changing, too. I came into professional education in 1980. The company I worked for previously has a different product line. The projects they work on are very different from what I worked on. They have an actuary in their investment department working on

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cash flow problems. There are all sorts of things that are different. These kinds of differences are likely to increase.

This means that we need more generalized skills now, and less specific information on how the ancestors did it 50 years ago. It is time to look at our education system, and make sure that we are positioned to take advantage of the best educational methods around. We have to get ready for the future, because the future is going to be different from the past and from the present.

We want to enhance the value of the ASA and the FSA. We want to provide better and broader education. We want to attract, select and train the people that are going to do well in the future as actuaries. We want people that are at least as good as we are.

We have mentioned that the FEM proposals are independent of each other. They are designed to meet the objectives. We think they are designed to maximize the benefits. We also think that they are sensitive to the concerns that have been expressed, but that will be for you to tell us. We are putting limits on credit that you can get by methods other than exams. In fact, once we get to the details, you may be surprised at how limited the proposals are in terms of how much credit you can get. The key topics such as contingencies, interest, and risk theory will remain under our complete control. Credit for these courses will be by SOA exam only. The proposals may change as we develop them, and also over time as we get experience. Some of our methods may be changed, hopefully to improve them.

The first proposal is Level 1 college course credit, under certain limited conditions. Level 1 credit is designed for subjects which are really prerequisites. If you do not know these subjects, we will catch you on the later exams. In that sense we can use the later exams for screening purposes. We are proposing that we give credit for the first two courses, which you knew as Part 1 and Part 2, now called Course 100 and Course 110. These are 30-unit courses. That means, in the old language, three hours of exams each. The candidates have to pass the corresponding college course. They have to get grades of B or better. The college has to be generally accredited by one of the standard accrediting agencies in Canada or the U.S. We will not accredit individual courses. In order to get this type of credit, however, the candidate has to

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pass subsequent Society exams. That is the screening. You will not get that credit unless you pass later exams.

I want to give you more details on these "validation" rules. Suppose you had college credit for calculus and linear algebra courses. We will give you Level 1 credit under the proposal for Course 100 if you successfully pass 30 credits of higher numbered exams. If you cannot do that, we will not give you that credit and your only alternative will be to pass the course exam. If you want credit for both Course 100 and Course 110 which is 60 credits, then you've got to pass 60 credits of higher numbered SOA exams. In the old terms, you would have to pass, for example, Parts 3 and 4 to have your college work on Parts 1 and 2 recognized. We feel that passing Parts 3 and 4 is good evidence that you are a good student, and that you learned what you were supposed to learn on the Parts 1 and 2 subjects. We think that limit is going to be a very severe one. That is the way it ought to be. It keeps our standards up. If you fail the exam for Course 100, you eliminate any chance of ever getting Level 1 credit for it. Once you have failed an exam, you cannot get credit for it by means of college courses passed. This is yet another limit.

Level 2 is different. Here we are actually going to accredit the courses. We want evidence that the education method used is better than our method of textbook followed by examination. A good example is the Part 3 course in Applied Statistical Methods. Course 110, the old Part 2, is a good exam, and widely respected. ACT does it for us. It is a textbook-oriented exam on probability and statistics. A student who can learn what is in the textbooks can pass the exam. Course 120, which is supposed to be Applied Statistical Methods, is not supposed to be a textbook exam. It is intended to teach students how to use statistics. In our traditional way, however, we educate by giving students a textbook and telling them when the exam is going to be. It is my opinion that if you take a university course where students receive a project to do, and they have to go out and gather data and put it into a computer and massage it into shape and interpret it, and the teacher critiques it, and so forth, that is how to learn how to use Statistics. You do not learn it out of a book in that same way. If we can find courses where that is done, the students will come out ahead of where our people are coming out now, for that particular course. I would think that to be true for all the old Part 3 courses, in fact.

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You will notice that for the moment, and probably for quite a while, we propose to limit this kind of credit to subjects that are not used extensively in the later exams. This type of credit would certainly not apply to Life Contingencies, for example. The three courses that were on what was Part 3 are now Courses 120, 130, and 135. These are the ones that we are proposing for Level 2 credit.

Once a student fails an exam in a subject, he/she gives up any chance of receiving credit for it by either of these methods. We also want to put an overall limit on the total credits a student can get for Level 1 and Level 2. We are proposing 75 units out of 200 for Associateship. If you try to construct scenarios, it is an extreme scenario that results in a student actually receiving 75 units of credit. Thus, out of 200 credits, students still have to take at least 125 by SOA exam, and that includes Life Contingencies, Compound Interest, and all these good old subjects that we have come to treasure over the years.

Now we move to a different subject, course credit for a Society-sponsored intensive seminar. We are thinking of ten unit courses, perhaps as ASA electives. The one we are proposing as an experiment is the Applied Statistical Methods course. That is the one where I feel very strongly that the textbook approach does not work. Students who can pass Course 120 by means of the Society exam can come to the seminar within the next two years and get additional credit for the seminar. Visualize a one week "total immersion" kind of experience, with a trained educator in charge. Visualize personal computers all around the room; projects that students are given that they have to finish before they go to bed to get coffee in the morning. Credit would be based on coming to every session, completing assignments and passing a final examination. There would definitely be controls. It would be possible to come to this seminar and fail it. We could market this to employers with a good conscience, because students would come back from this course knowing what Statistics is all about. They would be more valuable employees. We hope that employers will be willing to pay for the seminar because it saves giving study time, and also because their students will be more valuable. I think we have a winner here if we can set it up right. I am a strong advocate of this particular option. I would also like to do this for Survival Models some day, too.

As far as giving credit for exams of other organizations is concerned, we have been giving credit for British Institute exams and Scottish Faculty exams for

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many decades, presumably because there's been a pattern of immigration from England and Scotland to Canada and the U.S. We propose to continue that, and we would also like to consider giving elective credit for some of the Casualty Actuarial Society exams. Some of the things that they do in credibility and loss distributions, for example, are directly relevant to health insurance work. We see no reason why our students should not get ASA elective credit for those. We are negotiating with the CAS now to see what the political problems are. In general, this category of course credit would be for exams as rigorous as ours, given by another actuarial organization.

The second idea is for nonactuarial organizations. Suppose that some of our students are interested in investments and get the Chartered Financial Analyst designation. That is a pretty respectable designation. Their course actually goes into more detail than our course does, and so does the Home Office Life Underwriters Association (HOLUA) in underwriting. There is no reason why we should not give small amounts of credit for these designations. If you wanted to go the HOLUA route, which involves quite a few exam hours, we would give you credit for one hour or whatever our underwriting exam is, and we feel that you would know more as a result.

The research paper idea has been around for a long time. In graduate schools, particularly when you get your Ph.D., the research paper is one of the fundamental achievements where you have to demonstrate, as one of my professors said years ago, that you can be left alone in a library. The key phrase there is "left alone." It has to be independent work. We are proposing some credit for that kind of work under proper guidance and control. Only one paper could receive credit, probably 30 credits. This would be a Fellowship elective. The paper would be refereed, and it would probably be on the level of a Masters thesis rather than a Ph.D. thesis. We have some very creative people coming up through the ranks. Under proper guidance, they might actually push the frontiers of actuarial science out a little bit. Some papers might be good enough to be published in the *Transactions*. This could really help the profession.

Finally, there is the Fellowship Admission Course which we have mentioned already with two subjects required; professionalism and ethics, and integration of subjects. This would be mandatory. Students would have to come to where the course is given.

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Now we would like to talk about what we hope to gain from all these proposals. Some of these things have already been mentioned, so we will move fast. There are some topics that are learned better through methods other than self-study. If you have a qualified instructor, if you can have interaction with a group, if you have computers there and you have to use data sets and interact with that data, the education will be better than sitting off by yourself at home with a book. On the ethical issues, case studies can be used effectively. There are just some subjects where the textbook method is not the best.

Problem solving is an area where we need improvement. If students study to pass a Society exam with a prescribed syllabus, they learn to solve a certain kind of problem, but maybe the kind of problem they will face in their work will be different. The Fellowship Admission Course would address that by showing how different subjects interact. The research paper would certainly help, because students would be going off to work in areas that are not well defined in the course of reading. The objective would be to turn out more people who can solve unstructured problems. This is a move away from the set structured examination problems that are our tradition.

We feel that North American academic actuarial education programs would be strengthened somewhat by the proposed changes. For one thing, we would recognize them for the first time. Even though there are limits involved on the research paper option, if the papers were done through institutions, it would enhance the research aspect of actuarial academic programs. It is time we built some bridges to the academic world. We need to increase our understanding of each other and promote actuarial research.

A wider diversity of entrants to the profession is viewed as a large potential benefit. An example here is Harold Ingraham, president of the SOA, who took an undergraduate degree at MIT. If you heard him talk at an actuaries club meeting, you have heard this story already. He had gone years beyond the material in the Part 1 exam. When he decided in his senior year to consider *being an actuary rather than an engineer*, he almost decided *not to* because we were asking him to go back to square one and do freshman math again. We wonder how many people we lose who are very strong quantitatively, but are so strong that they are far ahead of Part 1 by the time they consider us. They do

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not want to go back to square one. Why not recognize the academic achievements of these people and get some of them into the profession?

Another benefit is to recognize the value, in a limited way, of nonactuarial professional designations like HOLUA and CFA for them. Those are good designations and we might as well give some credit for them. That might be reciprocal some day, by the way, as they might give some credit for our courses.

Now we come to the concerns about the proposals, and our responses to them.

MR. PERROTT: The first concern, which was expressed primarily in responses to the first White Paper a year ago, is that credit for college courses weakens the value of the FSA. I think a lot of people are concerned that college courses in North America are not homogeneous. There are certainly strong and weak colleges and universities, and the prospect of having people with very weak courses getting credit for Society exams frightens just about all of the membership.

The primary response to this has been to include two requirements. These requirements are for the Level 1 courses, which is where this concern seems to be greatest. One requirement is that students pass as many units of a Society exam as they are requesting credit for, and that they cannot get credit for an exam that they have ever failed. Mr. Cole didn't mention this, but if you study the White Paper, you will note an additional requirement that these exams must be passed before failing more than 40 units. Our thinking here was that anyone is entitled to fail one exam. Almost all of us underestimated the Society exams when we first met them, and we were somewhat shocked by how rigorous and difficult they were. Any good candidate, and we only want to give college course credit to the good candidates, may fail an exam once. That wakes them up, and then they will study and pass exams. The kind of person that takes four attempts to pass every exam is not the kind of person that we are proposing should receive college credit.

The Level 2 college credit has caused much less concern, as far as I know, because it is proposed to be only for courses that are preaccredited, and there is adequate control.

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Finally, students have to pass more than half of the ASA syllabus by Society exam. Our thesis is that this is an adequate hurdle or set of controls. We will not materially weaken the FSA, while we will hopefully attract a wider group of people.

A second concern, not as serious, is that giving credit for designations of nonactuarial organizations relies on them to maintain the Society's high standards. This is theoretically true, but when the amount of credit that we are proposing is only 10-30 units out of the entire FSA syllabus, I do not think it is material. It is more a courtesy to people that have switched professions than anything else. To control this, we propose to require the entire designation of the other body for credit to be granted. We definitely want to avoid the situation where someone decides they dislike the Society exam on underwriting, and can pop over and take a two-hour HOLUA exam or something. That would offer too much opportunity for antiselection.

People have raised the concern that credit for intensive seminars provides a way to buy credits. This certainly could be true. We are as concerned about this possibility as the people that raised it. We structured the intensive seminar so we do not feel that a candidate can buy credit, or perhaps that the purchase price is equivalent to passing an SOA examination. The seminar is only available if you pass the exam first. We feel that a week's intensive work is comparable to the effort that it would take to study for a one-hour exam, and that there are distinct benefits from taking this risk. Mr. Cole said that we would get someone that knew what statistics were about. I would submit that we will get someone who can actually use this material in their work.

People have commented that the complexity of the system will discourage qualified candidates. The system is somewhat complex although I do not feel that it is so complex that it will drive people away. Any time you add options, you add complexity. Originally the Society exams were monolithic. There was one set of exams that everyone took. There was no differentiation by field of study or by national emphasis. This has changed. It is right that it has been changed, and it has added complexity. We feel that the options added are worth the complexity.

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Many people are concerned that FEM produces inequities in qualification methods. If the FEM proposals are implemented, all actuaries will not have passed exactly the same set of exams to qualify. This is true but it is also true today. This is not something that we have introduced. For example, you do not have to take Part I today; you can get credit for the Graduate Record Exam. Some candidates convince their employers to pay for them to go to cram courses. I don't think there is any question that they have a higher passing rate. There is some question as to whether their retention is better than the candidates who studied it themselves. Certainly part of the cram courses deal with the art of passing exams, not the mastery of the material in the exams.

Candidates will still have to pass rigorous Society exams. I think most people have trouble passing the old Part 4. Almost everyone regards that as one of the keystones of what makes an actuary: the ability to deal with life contingencies or contingencies in general. There is no way around that under the FEM proposal. There is no weak path to FSA or the ASA. We feel that we have maintained standards successfully under the present system with options in Parts 7, 9, and 10. Particularly in Parts 9 and 10, people that have passed with different primaries and secondaries have clearly taken very different material. To get better educated actuaries overall, actuaries that are more prepared to do what we are convinced actuaries need to do, we can afford to take some risks.

There is concern that FEM will increase the time and cost of Fellowship. This is possible, though I do not feel that FEM has to necessarily. It may be the concern that the Fellowship Admission Course will increase the time and expense of getting to Fellowship. It certainly increases the expense somewhat, although that is probably an expense that employers would be willing to pay. The benefits, particularly the benefits in teaching professional ethics, are well worth the cost. Professional ethics is on the syllabus at the moment, and it is probably one of the weakest topics. It is very difficult to cover from book learning. It can be covered much better in case studies or in places where you have to argue which gray is grayer. Other professions spend a lot of time on professional ethics. We feel that this would be a tremendous improvement in the education of the actuary.

FEM (and for that matter FES) present challenges to employers in how they administer actuarial student programs. This has been raised as a concern. I

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think this is a true statement. It is also a manageable concern. I cannot believe that ultimately we will decide how we should educate actuaries, by their employers' ability to manage their actuarial student programs. We have seen examples of redesigned student programs to meet the flexible education system. We believe the same kind of redesign will meet anything that is changed by FEM as well.

There is concern, primarily from employers, that the FEM proposals effectively get rid of Part I, which has been used as a screening device by employers. One easy way to deal with a marginal candidate is to say "Go away and pass Part I. If you can pass it, you've got a job." This is true. We are proposing something that gets rid of Part I as a screening device if the candidate has the requisite background. We think there are ways around it. When all is said and done, we do not think the primary thrust of the way we educate actuaries should be helping the employers screen their applicants.

Lastly there's a concern that several people have stated as follows: "Why do you need FEM? If the college courses are good, then the candidates won't have any trouble passing the exams." This is, on the face of it, a very reasonable concern. The difference is that the good college courses, with Applied Statistical Methods being an excellent example, will teach people to use statistics, not merely to pass a multiple-choice exam. If they have passed an exam, they will study the material differently than if they have to use it. The benefit we expect from giving credit for the right courses in Applied Statistics is getting people that can use statistics, instead of people that know some of the key formulas but have very little idea of why they know them. All you can really test effectively on a multiple-choice exam is which of the following five is related to the formula on page 132.

That is the end of our prepared remarks. We will try to answer any questions that anyone has.

MR. T. MICHAEL PRESLEY: I am distraught you're implying over and over that there are benefits from using instructional courses as opposed to self-study. I know this is oversimplistic, and I'm sure it's been looked at before, but why can't we just restructure more of the whole program around strictly defined college campuses and curricula with appropriate exams if necessary?

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MR. COLE: In the United Kingdom, the Institute of Actuaries is making a serious effort to turn over the education in subjects contained in our association exams to the universities. They of course have fewer universities and it is much easier to accredit there than here. The reason we want to keep as much control as we are proposing here, a minimum of 125 credits out of 200, is because of the question of standards, the lack of homogeneity in college courses. We are limiting the Level 1 credit to subjects that are in the nature of prerequisites, and Level 2 credit to courses that are rather strictly controlled, and where the educational benefits are clearly superior. We feel that giving up any more would be giving up more control than would be acceptable to our members, or that we would feel comfortable with.

MR. PRESLEY: Is it really so difficult to recognize strong university programs?

MR. COLE: The accreditation process is viewed as very difficult. This has been particularly hammered into us by academics. The idea that you can accredit an entire university program and rely on that for your education, essentially giving up control, is considered unacceptable because of the wide possible variations in results.

MR. PRESLEY: The medical profession has medical schools; why can't we have actuarial schools?

MR. COLE: One reason is that there are a lot more people studying medicine than studying actuarial science. If you had an actuarial school, there would have to be only one or two. That has been proposed. Maybe some day the trend will go that way, but we are not proposing a revolution at this stage. We are proposing something that looks a bit more evolutionary.

MR. PERROTT: I would like to add a little bit to that. When you get to the later exams, there appear to be cohorts of around 500 students a year moving through the system, which would only support two or three programs. I don't think enough people know at the high school level that they want to be actuaries, or are willing at the college level to elect to take a Masters Degree in Actuarial Science, rather than start with an employer and get paid. I would be personally very nervous as to what kind of actuaries you would get out of that system.

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MR. PRESLEY: The only point I would make to that is that you are not seemingly concerned about employers' abilities to screen or how to pay students, so why are you concerned about that particular ability of the employers? Was this idea your consideration or was it just not seriously considered at this point?

MR. PERROTT: We considered it. We have not considered it extensively because of our perception that the numbers involved are too small to make it viable.

MR. COLE: You will find a proposal for an actuarial university in C. L. Trowbridge's presidential address several years ago. He was talking about achieving a "critical mass," with faculty involved in education, research and so forth. If you want to go back and read that, the idea was already formulated there, and perhaps you can promote it for the future.

MR. PRESLEY: One more question and I'll be quiet. I believe you might concede that most students today are already taking calculus and/or statistics courses. I'm really not sure of you trust in the credits for Part 1 and Part 2, and forgive my falling back on old terminology. If the overriding concern is more reliance on classrooms and less screening, we are already getting that in classrooms today. So it looks like you are really saying "We don't need to give those two exams any more, because the students are already, to a large part, taking courses that would qualify."

MR. PERROTT: I think that is fairly accurate. We are saying that we want to make the profession more attractive to people that don't decide to become an actuary until about the time they graduate from college. We want to tell them that if they have taken courses that cover the material, and if they can demonstrate that they can pass exams, we will waive these two exams. They will not have to take these two exams and they can get there faster. I agree with what you say.

MR. DAVID MORGAN ANDREAE: I have some concern about the Society's administration process for giving college credit. It currently takes about two months to grade a multiple-choice exam. There will be a great deal of additional complex record keeping, keeping track of who's failed how many exams, and who's passed how many exams. Also, I am wondering about the cost. Will there be

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any fee to get credit for college exams? If not, will the later exam fees be increased again to further subsidize the earlier people?

MR. PERROTT: I think you asked two different questions. First of all, the systems to keep track of who passed what and when are currently in place at the Society office. Second, we propose that the cost for obtaining college credit be at least as much as the cost of taking the exam. Although there is no final decision yet, some proposals say one and a half times, while others feel it should be equal. No one is saying it should be free.

MR. ROBERT J. RIETZ: I would like to applaud your concept of the Fellowship Admission Course, particularly the areas that are to be included in that. When I was taking the exams, the Guides and Opinions were added to the syllabus about the time of Equity Funding. I thought "Ah, I know exactly what questions are going to show up on the exam." Unfortunately, they never did. The point is that there are actuaries who are coming through the system who really have no practical concept of what should be included in an actuarial report, and in communications to the client, the third-party implications. I think that this is vitally necessary if we are to maintain our image to the public before it is pre-empted by other bodies. Here I am thinking specifically of FAS 87. I do welcome that addition.

I have one question which you may or may not choose to answer. It regards continuing education for Fellows. Is there anything that you could tell us about that?

MR. COLE: There is some talk around the profession about some sort of "not quite mandatory" continuing professional education (CPE). It would amount to pressure to meet certain CPE guidelines. I believe the Conference of Actuaries in Public Practice already has a program in place. There is a task force of all the actuarial organizations to work on this problem. Their objective is to avoid having different requirements for every organization, but rather work for uniformity. That idea is in the wind. You should watch the newsletters of the various organizations, because there will probably be developments over the next 24 months. There are also proposals for CPE requirements to retain the Enrolled Actuary designation at the time of renewal.

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MR. RIETZ: Are you considering attendance at meetings or writing papers which is pretty much along the same lines as the Conference?

MR. COLE: It is my understanding that the type of ways they have proposed to get credit are acceptable.

MR. EDWIN H. KING: About six months to a year ago, our actuarial club had a speaker who made this type of presentation. He was then the president of the E&E Committee. In some informal remarks afterwards, I was astounded to find out that he personally opposed the FES and FEM proposals. He stated that if he had to vote yes or no, he would vote no. Would you be willing to respond to the question yourselves? Are you messengers or are you advocates? If you had to vote yes or no, how would you vote? And I wonder about extending that to others on the Society staff.

MR. PERROTT: First of all, I would like to disagree with you on what this gentleman's views are. I believe that he is opposed to FES but not FEM. His opposition was, at least as I understand it, that the effort required to put FES into place is very large and precludes needed efforts in other places. He also recognized that he was in a minority, and went along very gracefully with the majority. I was originally opposed to FES and originally for FEM. I have always been an advocate of FEM. We need other education methods. We badly need to broaden the ways we educate actuaries. I was opposed to FES because I don't like cutting the syllabus into little digestible pieces and *pablumizing* it. I have fought at various points to keep bigger chunks and less easily digestible chunks, because for one reason, I feel very strongly about my own FSA designation and I don't want it weakened by the system. I think that what has emerged or what is emerging is meeting my concerns, and it will provide benefits. It is a lot of work, but I support it at this point provided it is not too *pablumized*.

MR. COLE: I would like to approach it negatively. Our present system of so-called education doesn't work for some subjects. Last night I talked to a friend about someone he had just hired who just got an 8 on Part 5. The person had attended a university course for Part 5, which I believe was more of a cram course than a normal educational course. My friend gave this kid some data and said "Graduate it." And the guy looked at him like he didn't know

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where to start. Why didn't he know how to start if he got an 8 on Part 5? The weakness isn't with the student. (He also didn't have Dick London's new textbook, which is very good and probably would have helped. Graduation has a much better course of reading than it had a year ago.) But the problem is with the system. You can learn to pass our Part 5 without being able to do any of this stuff or even know how to start. That is why I think we had better look for better ways of educating. I support the FEM thrust. I am stronger on some of the proposals than others.

In terms of FES, this looked to me like a necessary prerequisite to FEM, which was the major reason we did it. We are working now on Fellowship catalogues. That may be a year or two away from exposure. I find the logic of the courses in the pension track, for example, and in the group track very attractive. I think actuarial students in the future are going to be able to select a more logical sequence of courses and plan their careers much better under FES than under the present system. We are trying not to be advocates here by the way; we are simply trying to convince you that these ideas at least have some merit.

MR. JOHN W. ROBINSON: My question concerns students who are overseas. What provision might be made to accredit courses taken overseas?

MR. COLE: At the present time, we do not plan to accredit any courses overseas. We considered overseas students, and our conclusion was that we are a North American actuarial body and should not go out of our way to accommodate students overseas. We shouldn't preclude students overseas, but the thrust of our efforts should be toward the North American students.

MR. ROBINSON: What is the line of thinking toward foreign students in general?

MR. COLE: I do not think we have a line one way or another. We have regular exam centers at four or five places in the far east, one in Jamaica, and one or two in Europe. We are willing to do this as a convenience. Our mission, as stated in our constitution, is for Canada and the U.S.

MR. ALAN D. FORD: I'm a little concerned about sending students to seminars, say for a week, just because they want to go there for credit. What about the

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smaller companies that need those students back at the office to work? This would be true even for Associates who can't get away because their company is small. How are they going to get the credit? Won't they be stuck studying out of the book?

MR. COLE: We figured out that the amount of study time you have to give an employee to pass a one-hour exam is about the same as a one-week seminar. In that sense, the time the employer is giving up is the same time; it's just in a concentrated block. The employer has to convince himself that the employee will get something of value. Hopefully, the courses that we construct will give that. We grant you that it is just one intensive week. The employer has to get along without them for a week and let the IN box pile up. Once they're back, though, they're back for good. They have the credits, there's no more study time to give, and they're done. I think there are advantages to that from a small employer's point of view. In fact, it might even give them an advantage to offset some of the large centers that have actuarial club courses to help students, which you might not have in a small company in an isolated center. This would be something these small companies could do to get the advantage of professional training.

MR. PERROTT: I have to disagree with one thing you said, Mr. Cole. I don't think any company gives a full week of study time for one hour of exam. I think the typical amount of study time is in the 70 to 100-hour range for a three to five-hour exam. We are deliberately proposing the seminar as an elective because there will be people who can't take advantage of it. That is not a sufficient reason to preclude experimenting with it at all. The effect is that if you want to take the intensive seminar in Applied Statistics, and if you can convince your employer to support you, then you don't need to take a ten-unit course such as Numerical Methods. If your company won't send you to the seminar, then you need to study and pass Numerical Methods, for example.

MR. DAVID W. REIMER: I agree with a lot of what you have talked about. I was one of the poor guys who went through the syllabus, who learns much better from audio stimulation than visual. Studying from a textbook was really a disaster for me. The one thing that concerns me is the lowering of the standards for Parts 1 and 2. Any college that's worth its salt doesn't just look at the grades from high school in considering candidates for admission. It also has

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requirements for taking certain examinations and getting minimum scores. I would almost rather see us delete Parts 1 and 2 and have a minimum GRE requirement than to delete the standard, since we all know that colleges are not standard. Different colleges, although accredited, have different levels of teaching ability and testing ability. Has any consideration been given to that?

MR. PERROTT: We considered that at great length. That is why we designed Level 1 college credit by imposing the condition of passing the same number of units of Society exams without failing more than 40 units. We really tried to design it for the strong candidate and not for the marginal candidate. In fact, there is a significant risk to marginal candidates in applying for Parts 1 and 2, in that if they proceed through the old Parts 3 and 4 and fail, they are probably about two years down the road. They reach the point where they are no longer eligible for the credit that they were trying to get, and now they have to go back and study Part 1. That is not accidental. We like that aspect of the proposal because we think it will deter marginal candidates, or it should deter them if they are intelligent. I'm not sure what you can do with unintelligent marginal candidates.

MR. ANDREAE: I have a question on the number of college courses that would be required. It seems that for Part 1, you have to require at least four courses; three semesters of calculus and one of linear algebra. But for statistics, would it be one, two, or three?

MR. COLE: My recollection is that one year of probability and statistics is not enough. I would have to look it up for calculus; I think it is less than four semesters, but I don't remember how we got to that. It is more than one year's worth, though.

MR. PERROTT: The way the proposal is written, the courses must cover the existing material. In our discussions we felt that it would take a full year of college calculus plus linear algebra to come up to Course 100. I think we felt that a year of statistics would cover Course 110. But again, I'm unsure. That is the kind of level we are thinking about. We are not thinking about only one course.

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MR. COLE: By the way, we are not letting students get credit for the "Calculus for the Layman" course. They must take the calculus courses that the math majors take. We will watch for that. Once more, we urge you to read the FEM White Paper, fill out the questionnaire, send it to the Society office and make your voice heard. Thank you very much.