1. Q. by H. Wroe:

How exactly do you think the machine will be built?

I think that perhaps to comment on a little gossip, the French indicated some time ago that they were v. likely to support this proposal. The Italians always seem to have been v. keen and sometimes they do not seem to know exactly where the money is going to come from, but nevertheless they are quite happy they will be able to join in this project. The German scientists seem somewhat divided as to how keen they are to push this in relation to their national programme. We haveof course a v. strong national programme; there is no question whatever about its security during the next 10 years or so, and so we do not have that particular worry- in fact we are excellently poised to proceed to this next step, and so a great deal depends on the UK attitude towards it. If the UK says no then the programme will certainly proceed; if it says yes, the position is such that it certainly will.

I think that perhaps the only things which really may go wrong are political and there are political things also which may make it go right.

2. Q. Could you hazard a guess which is going to be the site?

I think that would not be a good idea. In fact there is not really enough known to decide. You can make up your own ?lean table. You can decide ~~what~~ which position those countries are easy to get at, and which are not. Where you would like to live and so on, and put yourself in the position of other Europeans when you are asking these questions and see what answer you get. The technical aspects and geotechnical features of the site are important. They are not all that important provided you have a certain minimum standard. You do not have to have the perfect site, as long as you have got one that is good enough geotechnically and certainly there are some which are good enough - possibly

all of them, but there is not enough known about the geotechniques yet. That gap will probably be filled in during the course of this year, but I th ink Mundford is a good site.

3. Q. Are there good reasons for choosing the particular energy range of the 300 GeV?

No. There is no threshold from the point of view of particle production - no known threshold. It could be that someone will suddenly discover that if you have 350 you will make quarks, and if you do not you will not, so you will make 350 of course in your own good time. There is no good reason from that point of view. You have got to make this significant step to get a reasonable increase in the centre of mass energy. That is why one for a factor of 10. You have got to make something that you think you can get the money for and really 300 has just got to be a reasonable compromise. So much work has been put into it now and people have got so used to the idea. These projects get launched because people get used to thinking about them, as well as because they are good ideas. In fact, it takes a while to get people to acclimatize.

GHS I might say I think there are two things in addition:

There is not a great deal of sense in bringing in negative thinking of something less and if you go down say to 200 rather than 300, you really might shorten the timescale, but the actual rate of annual spend remains about the same, so by postponing the utilization for a year, or another couple of years, you get that much more energy. You in effect spend a couple of years operating money building LCWH to a higher energy. That is how it looks, and similarly if you go up to more than 300 you GHS advance the time, judging by what is being old existing laboratories and people feel that this is about the right timescale. There is nothing magical about it.

4 What is the main factor preventing a shorter timescale? Dr. Kabir

Ithink it is really this short of achieving a reasonable balance between the numbers of people and the money that you think you might have available. Certainly you could shorten the timescale by a couple of years by putting more people on to the job and spending money at a greater rate ..... I do not think the annual budgets at the moment are quite enough. There is a tendency for projects of course to settle down for a few years after construction is complete with annual operating budgets which are about equal to the construction budget, so one would be committing oneself inevitably to higher operating budgets. It would be v. difficult to avoid this. There is also the question of the rate of build up of staff. You have only to build this machine entirely with people who know all about accelerators. About 500 or 600 peoplejust to build the machine have got to be obtained from somewhere. Some will be obtained from existing laboratories with experience, but also a lot of people who are at present studying at universities will come into this and so the question is at what rate do you think you can build up the technical staff?

GHS You may not realize it Kabir, but it takes an awful lot of effort to

2008 spend a lot of money.

Q.5. about superconducting magnets

You cannot design any vital part of any major accelerator today depending on superconducting technology. It just isn't on.
There is a possibility - I haven't mentioned this. One idea which is now being promoted is that by building any major accelerator like this in a ring of larger diameter, but putting in a lot more gaps, increasing the gaps between the magnets, you could have space later on to put in other magnets so the machine might be built initially for 200 GeV in the American case on a diameter that would be 27% or so bigger, than you would otherwise make. Later on you could boost it up to a 300 GeV level machine. It might be at this stage you could exploit superconducting technology as by that time it would have come along ahd be well established. Then you may even go to higher energies still at this second stage _____ expandible.

Q.6. I am wondering what the next accelerator will look like after this one?
Dr. H.H. Atkinson

A. Well you can wonder!

Q.~~5~~ 7. What is the shortest delay in the switch-on time between 200 GeV and 300 GeV machines?

Wilson says he is going to build the machine in about 5 years, so this would make it 1973; and if the 300 GeV proposal is accepted by the end of this year it would result in the machine going in 1977. Both these times .....

Q. 8. Would the Americans have an advantage over the Europeans in timescale, because there is not likely to be any political .... against themselves.

It cuts both ways. You probably have heard that many people are extremely dissatisfied with the site choice which was made in the U.S.A. and there are other aspects in the way the project is being launched. To some degree I think we have avoided this difficulty so far, because being composed of a number of countries separately, we have had to come together and discuss problems and recognize them from the start. It could be that things could go wrong between now and the choice of the site, but I think really Europe has very much up to the in which she is involved.
