

9. Dr. David Crystal

I come from a Department of Linguistics and my full-time job is teaching linguistics. My research field is in the development of language in children, particularly those areas of language abnormality which we are aware of, and also the corresponding development of language disability in adults. But this is a very big field and I know from very little experience of work with the deaf-blind that this field also is your field, and also is very large and covers a very wide spectrum of types of disability. Consequently it would be arrogant of me to pick on one area of disability and illustrate my general points from it. Rather I will first talk generally about my field and how I think it relates to yours, and then you can pick on particular points of contact insofar as you see this to be relevant. That is the preamble. The talk really starts now.

When we talk about a linguistic approach to language I am making the distinction, am I not, between linguistics as a science and earlier approaches to language study, which of course date back some 2,000 years. Linguistics is a twentieth-century subject but, of course, we can trace language back to Plato, Aristotle, the Greek tradition of grammar in particular. So that when we say there is a point in linguistic approach to study of language which is different from the traditions of language study, I mean by that it has something to do with the implications of the term scientific. I don't propose this afternoon to bore you with definitions of what I mean by scientific, but I would make three points about it. That a scientific approach to the study of language insists on being *comprehensive* in the first instance, *objective* in the second, and, if there can be a third instance, *precise*. So comprehensiveness, precision and objectivity between them characterize my view of a linguistic approach to the study of language. Now the implication, of course, is that a pre-linguistic approach to language study, a pre-twentieth-century approach to language study, was not scientific. That is, it was not comprehensive, not objective, not precise. I can illustrate this very easily by simply contrasting the manuals of pronunciation that were written before the twentieth century and those manuals of pronunciation that have been written since. It may be a hard fact to swallow but until two years ago there was no reasonably complete grammar of contemporary spoken English available, and an even worse situation obtains for other European languages. The first reasonably complete grammar to pay attention to the facts of the spoken language as well as the written language came out in 1972, and it was a grammar written amongst others by Randolph Quirk called *A Grammar of Contemporary English*. This grammar was the first to really pay systematic attention to the facts of spoken English grammar and to point to the tremendous difference that exists between the norms of spoken English and the norms of written English, a difference which obtains just as much for French, German or Italian, or any language. We tend to forget that the written language and the spoken language are worlds apart in terms of their grammar. We tend to forget it because until very recently people never studied the spoken language. It is difficult to get hold of real speech. I don't mean the sort of speech you get when you put a micro-

phone in front of somebody and say "Please speak English to me" or French, or German. That way people put on their best linguistic behaviour, their posh manners and they speak their best English, their best German. But that is not the language that they use at home, the colloquial, conversational, informal language which they use most of their speaking life-time and which most children hear exclusively before they go to school. Colloquial, conversational English (I shall not continue to say "or French", "or German"—I will just stick to English as my main language of exemplification), has been much under-studied. People have assumed that Spoken English is simply a reflection of the written language but it is not so. They have therefore been very ready to criticize teachers of the spoken language at the expense of teachers of the written language. For example, when we speak conversational English we rarely and only on the most formal occasions, speak in the complex and complete sentences which we tend to associate with the written language. If you asked me to define a sentence in writing I can do it for you very easily. A sentence is something which begins with a capital letter and, surprise surprise, ends with a mark of final punctuation, not just a full-stop, of course. But in speech there are no capital letters, not even in German, and there are certainly no full-stops. In speech we have intonation patterns and rhythms, but these do not tell you unambiguously whether one has come to the end of a sentence or not, or whether I am going to carry on after a pause and complete my sentence as I just did in that example. That is the trouble with intonation. It is ambiguous. It does not tell you clearly where a sentence ends. Moreover there are many features of grammar in speech which do not occur in writing. For example the ways we have of linking the parts of a sentence together. Phrases like "You know . . .", "I see . . .", "You see . . .", "Mind you . . .", "Well . . .", "But . . ." and all those linking features which don't have a very clear counterpart in writing. "You know", is not something we have in the written language, but it is something we have in the spoken language and it has its own rules—that's the point. "You know" is very often criticized as having no rules. It is just slovenly thinking. But there are rules, as foreigners know when you try to learn English; you cannot just use "you know" whenever you want to. No. There are certain sentence types in which it may go, and certain sentence types in which it may not go. For example I may use "you know" with a statement, "You know, I have been thinking about what you have been saying." There its function is as a kind of mark of style. It is as if I took you round the shoulders linguistically. "You know" has a way of keeping the level of the conversation informal. But I cannot use it as with a question. I cannot say "You know, is it raining?" That is not good English. Nor can I say "You know" with a command. I cannot say to you "You know shut the door." Nor can I say it with an exclamation, "You know, damn!" Now these are all bad English sentences. "You know" has grammatical rules, and you have to learn the rules of grammar and the rules of meaning that go with the use of "you know". This kind of sentence pattern is the sort of thing we use all the time when we are speaking colloquially in English. We must not underestimate its frequency and

its importance as a practical problem of comprehension. If we insist on thinking of language only as a written language, or as a written language spoken aloud, we very rapidly run into the danger of producing a very artificial, stilted kind of communication, which, in its worst manifestation, can become part of teaching materials.

As an example, the traditional approaches to the study of reading in primary schools in this country have, until very recently, used some very strange kinds of English. The kinds of English that I am thinking of, are features of the written language which are sometimes archaic. Take a reading scheme, which, perhaps, had better be nameless, and take a sentence from it which turns up no less than eight or nine times in the first two books. The sentence is "What have you in the shop, Janet?" Now, "What have you in the shop." For those of you who are not well-versed in the English language it may come as a surprise to realize that this pattern is not any longer current in modern English. "What have you" is no longer a pattern for the verb "have". One says these days "What have you got?" Sometimes in certain parts of the world "What do you have?" and so on. But "what have you" is a pattern that was very common in Shakespeare's time. "What have you there, Sire?" You will hear it in *Cymbeline*, but not in Janet and John. That is only one instance of a very frequently occurring artificial syntactic pattern. Here is another example. "One kitten runs to the basket." Now the sentence "One kitten runs to the basket" used to be taught very carefully to all children learning to read and it is bad English on a number of counts. It is bad English because we do not in English use the word one unless you are wanting to stress or emphasize the pattern. We would normally say "a kitten", or "that kitten", but one kitten implies this one, not that one. If the authors of the book meant one kitten—this one, not the others—then there would be nothing wrong with that sentence. But, of course, they do not mean that. And notice also the present tense. What is the most frequently used tense form in all reading schemes in English? The present tense. What is the least frequently used tense form that a four-and-a-half-year-old child would use in learning English? The present tense. There is something odd about insisting that the present tense be used so much when it is used so little in conversation. You and I don't use the present tense in English very much. It is used characteristically in a commentary context. A sports commentary. Yes, if the author means "One kitten runs to the basket, he runs to the basket, he is nearly there, he is there." Great! If he means that in a sports commentary way, then there is nothing wrong with that sentence, but, of course, he does not mean that and children do not get asked to read that sentence in the proper intonation that is appropriate to a sports commentary.

I have so far stated negatively what has come to be one of the fundamental principles of contemporary linguistics, which is quite simply the concentration on the spoken language. And if you think that when we are studying language we should study the spoken language is stating the obvious, then let me ask you to think again of the examples I have given you. Because these examples are not commonly used in textbooks, or used as guide-lines for presenting reading

materials or remedial programmes. Indeed the only type of reading material which tries to take into account the most important structures of the spoken language have been developed in the last two or three years with programmes like "Link Up" in this country, or the "Break Through to Literacy" programme with its sentence maker, where the child is allowed to place on the wooden frame the various words which he has available for him to use, and thereby can make his own sentences, which will, therefore, one assumes, reflect his own basic language ability at that stage. The concentration on the spoken language is principle number one, but having said that, we must now break down this notion of the spoken language because it is all very well agreeing, as I assume you might, that the spoken language is the principal perspective within which we must work. I say this as an ultimate point of reference, not as a teaching device. I am not suggesting here that the issue of oralism and manualism, or any of the associated debates need to be gone into at this point. I am asserting that ultimately contact with the world of normal communication requires reference to the norms of awareness of the spoken language and it is on these that linguistics has tried very much to concentrate. But whether we deal with language primarily in its spoken form, or in its written form, or some visual analogue form, or some tactile form, ultimately we are faced with having to break down this concept into smaller components because language on its own is too gross. It is too large a thing. There is no such thing really as a language remediation programme. Parts of language can be approached from the remediation points of view. Parts of language can be studied systematically from the linguistics point of view; but the techniques that you use to study one area of language must, in the nature of things, be very different from the techniques that you use to study others. There are, in particular, three main areas of language which we must distinguish, and these three are quite familiar. If you can imagine a diagram containing three branches: the left-hand branch is the notion of sound; the middle branch is the notion of grammar, and the right-hand branch is the notion of meaning, these three areas of language structure have been accepted as being three components of language study ever since language has been studied—sound, grammar and meaning, or sense.

In my diagram, grammar is in the middle and that is how it must be. Grammar is the central organizing principle of language. Without grammar to organize the sounds of speech, to organize the meanings of the words we use, we get a jumble, a juxtaposition of meaningless sound. Putting the words together without any order produces unintelligibility. Grammar is the organizing principle. It is central to the whole notion of language. Therefore it is not surprising, that until very recently, nobody studied grammar, either the grammar of the spoken language or, even more to the point, the grammar of the remediation procedures that we may happen to be using. Vocabulary has been well-studied compared with grammar; the various systems discussing key words, the relevant choice of vocabulary; how to organize your vocabulary; making sure that the language of your reading scheme is appropriate to the social, economic background of the child. Vocabulary

has been well studied. At the other end of the scale, sounds have been well studied under the headings of phonetics, and phonology. Indeed, has not a traditional dispute in the study of reading been the relationship between sounds and letters? Whether it should be a phonetic approach, where the letters and the sounds operate in a one-to-one kind of way, or some general approach like the "Look and Say" method, where you are supposed to recognize larger units than the individual letter. Poor grammar has been left out of the discussion, and while these days there are innumerable schemes for evaluating language ability in terms of pronunciation, there are very few schemes indeed for evaluating language ability in terms of grammar. The reason is quite straightforward. It is part of this business of comprehensiveness and objectivity and precision that I was talking about at the beginning. Finding out about grammar is much more difficult than finding out about pronunciation and vocabulary. If you want to find out about vocabulary in a language, what do you do? You look it up in the nearest big dictionary, whether it be *Larousse* or the *Oxford English Dictionary* or *Webster*, or whoever. If you want to find out about pronunciation, what do you do? You look it up in the nearest pronunciation manual. In English, Daniel Jones or somebody like this, will tell you about norms and frequencies in English pronunciation. What about grammar? If you want to find out which is the most frequently used grammatical pattern, or how many people use this kind of sentence rather than that kind of sentence, where do you look that up? Where is your dictionary of grammar? There is no dictionary of grammar written yet. And if you want to find out how children acquire their sounds? Is there an order of development in the sounds that a child learns? The answer is yes, and the facts are fairly well established.

One could illustrate a generalized order of development of acquisition of the main sound types in English, and one could do exactly the same kind of thing if one was working in the visual dimension by placing an order of acquisition of the main visual contrasts in terms of lip movements, and so on. Some recent work suggests you could do the same kind of thing for tactile development also, though this is much less well established. Certainly for speech the order of development is there. When I say that the order of development of sounds has been well established, I do not mean to say that it has been shown that the various sounds in English are learned by a child one after the other in a particular fixed sequence. This is not so. Take any two children and tape record the first sounds they make and the sounds will almost certainly sound different. So what has been shown? What has been shown is, that the types of sound that the child learns follow a fixed order. If we take two children, the first sound that child No. 1 might produce might be the sound /p/, "Pa" he might say. The other child might produce the sound "Ma". All right, but those two children are both doing one thing in common. They are both producing a consonant followed by a vowel. That is one thing they are both doing the same, and secondly the consonant is a bi-labial consonant made at the lips, /p/ in one case, /m/ in the other case. So we can say that a bi-labial consonant followed by a vowel is the common factor between these two

children in this case. What is common to them, in other words, is an abstraction. It is not a physical sound. What is in common is the notion of bi-labiality or using the two lips. Now that example is pretty obvious. It becomes less obvious as we follow the progression of sound development and try and establish what are the most important distinguishing features that differentiate one sound from another. And as one studies the types of language that are used one comes sometimes upon some rather surprising findings. Findings which these days are well known for speech, but I wonder how well known they are for example in the field of tactile studies.

Let us take some sounds /p/, /t/, /k/, and /b/, /d/, /g/ in English. If I am to ask you what is the main differentiating feature between those two groups of sounds, what would you say? Voicing presumably. Vocal chord vibration. And if we are doing a manual touch method you would presumably go for the vibration that you feel with the /b/, /d/, /g/, that you don't get with the /p/, /t/, /k/. But it has been shown fairly conclusively in studies of speech perception that the voicing is not the important thing for distinguishing /p/, /t/, /k/, from /b/, /d/, /g/. It is rather the aspiration which accompanies the sound. So that if you place the back of your hand in front of your lips, and, while you produce these sounds and go /p/, /t/, /k/, you feel the aspiration coming out. Whereas if you do the /b/, /d/, /g/, you feel much less aspiration coming out, negligible amounts. Yet all the textbooks on teaching English to foreigners, for example, still say that the main difference between /p/ and /b/ is voicing, the main difference between /t/ and /d/ is voicing, vocal chord vibration. It is not surprising when you examine the way in which these sounds are used in English. If I say "boy", the word "boy", in fact the first initial letter, the consonant has got very little voicing in it. It is devoiced as the politicians say. It is /b/, with only a partial voicing at the beginning. If I was to completely voice it I would produce /b/ with a very odd sound resonance in the throat. And similarly in final position, if I say to you good, I am not saying good with full voicing at the end. In fact most of the time when you listen to the difference between a voiceless and a voiced consonant in English, it is not the voicing that is causing the difference but the aspiration. And this finding is relatively recent, and something which will obviously affect any analysis of visual discrimination but in particular, of course, tactile discrimination. That is one example under the heading of sounds; but my main example must come under the heading of grammar because there too, the principle has been fairly firmly established in the past ten years that when children are learning the grammar of their language, they also are learning a fixed developmental sequence of structures.

If you ask the question, do all children learn their language at the same rate, the answer is obviously no. Exactly how rapidly you learn your language, the grammar of your language, depends on so many variables about which you know far more than I. Variables such as socio-economic background, intelligence they say these days. Sex is important, girls learning syntax more rapidly than boys, Americans learning syntax more rapidly than English children for the first three

and a half years, and then it evens out, so that boys catch up, and an English grown boy is a match for an American grown girl any time, in syntax anyway. Rate varies, speed varies, but what has been shown for the languages that have been studied (and here again we are talking mainly about English and French and German and a bit of Italian, and very few other languages including Russian), is that the order of acquisition of the structures does seem to be fairly stable. Let me outline what this order is in very general terms. When does language development start from the point of view of grammar? The normal answer in the textbooks would be at, or around twelve months when the child produces his first word, but a first word tells you very little about what the child has done. A first word in my opinion tells you one thing and one thing only. It tells you how good the parents are at recognizing first words. Some parents are good at it and some are bad at it. Some parents can detect what their child is meaning at the age of nine months and recognize its patterns. Other parents at eighteen months are still finding it difficult. The norms of language development as regards grammar have to be cited as beginning before twelve months, because of the development of the intonation patterns, and the rhythm patterns, and the tone of voice patterns, that can be traced back to as early as eight or seven months in most children. If you tape record children in sequence from birth onwards, we all know that over the first six months of life they all babble in the same way, and even deaf children do, within certain limits, babble in the more or less same kind of way as normal children. When do you first begin to tell a French child from an English child, or a deaf child from a hearing child, and so on? The evidence now suggests some time between six and eight months, if you know what to listen out for. And what you have to listen out for, is not the first words, not the vowels and consonants, which are much later, but the characteristic intonation patterns and rhythm patterns, which will by that particular stage of development begin to reflect the patterns of the language of the child's background. You may not be able to recognize the word at all at nine or ten months, but the intonation patterns of that word may be fixed already in the child's productive ability. So, for example, at the end of almost every meal that any British child ever eats he is told that the meal has "all gone". Now the way that is normally said by parents involves a fall in pitch pattern, and most children will pick up the pitch pattern before they will actually pick up the vowels and consonants. So that you get an eight or nine-month-old who will quite happily imitate and say *ág à*, or *áw gàw*, or something like this. The pitch is learned first; and what is the function of the pitch? What is the function of the tone of voice? Why—to indicate, to express sentences, of course. What other meaning could it have? It might express his emotion surely, but the main function of intonation is to mark sentences whenever it can. So take a twelve-month-old who has learned the word *Dada*. What does it mean, the word *Dada*? It does not mean the dictionary definition of father, adult male in paternal relationship to me. *Dàdà*—to begin with (or *màrà*, whatever the word is), means for example "pick me up". The child uses it when he comes up to you and says "*Dàdà, Dàdà*" and you think

"He is calling me Daddy, isn't that lovely." Then your brother-in-law comes in and the child comes in and says "Dàdà" and you think "Hullo! Something odd here", unless you are well versed in linguistics, in which case no problem. So listen to the difference between a statement, a question, and a command for a twelve to fifteen-month old. Dada, statement, pointing. Dádà, outside on the stairs, in his cot. Dadá, rising pitch pattern, Dadá. Dàdà, command in function, though not in syntactic form. Not in grammatical form yet, but in function yes. So consequently quite basic grammatical notions such as statement, or question, or command, can be related in quite elementary notions of pitch movement and rhythm and therefore things that can be readily sensed in a kinaesthetic or tactile kind of way. So when one is thinking about the acquisition of grammar, and I am talking so much about sounds, I am not by definition excluding a category such as the severely deaf-blind. Because most of these elementary grammatical notions can be related to phenomena of articulation whose distinguishing features it is perfectly feasible to sense, using some alternative medium. So stage 1 then, is this stage of using intonation to express grammar and it goes from about nine months to about one and a half years. One word sentences follow phrases, as they are sometimes called. And then what happens?

Stage 2 from about one and a half to two years. Before I go any further I should say that these norms are averages only, based upon the research that has been done. This research is really based upon some thirty or so children of upper ranges of socio-economic background. Very little work on developing syntax has been done with working class children on languages other than English, so these norms have to be taken with a pinch of salt—whatever that is in German or French. Now stage 2 is a straightforward development from stage 1. Stage 1 is one word sentences, stage 2 is two-word sentences, and we all know what they are. They are sentences like "Dada there", or "Want bicky", "Biscuit", "Want biscuit". What are these two-word sentences? Take an adult sentence, the largest types of adult sentence have four parts, subject, verb, object, adverb. "I kicked the ball yesterday." "I" is the subject, "kicked" is the verb, "ball" is the object, "yesterday" is the adverb. This is the most frequently occurring kind of adult grammatical pattern in English. What the child does is choose any two out of these four, as it were. Take your choice. Any two out of four, produces a stage 2 grammatical sentence. For example take the sentence "Daddy kicked the ball on the chair". Right. "Daddy kicked", "kick ball", "ball chair", "Daddy chair", "Daddy ball", "kick chair". Any two, sometimes in any order but usually with the adult order maintained, produces the sentence of the stage 2 period for the most part. And then stage 3, from two to two and a half years, a building-up of this adult sentence pattern. From two-element sentences you go to three-element sentences. Typical sentences from this stage would be "Me kick ball", "Daddy go now", "Stop that running", "Put ball there". Most of the sentences, not all of them, but most of them, have three main elements. An element left out if you like. And stage 4 takes you up to the age of three. During this final stage most of the basic sentence patterns of the

language are established. So a three-year-old is perfectly well able to say things like "Daddy going tata to town now", or "Me go in that car in a minute". There will be lots of little mistakes in it, of course, but the basic range of sentence patterns is there. Some people have therefore assumed that grammar learning stops at three because the basic sentence patterns are there. But no, there are too many mistakes still in the sentence. There are too many other types of sentence that have yet to be developed. The main thing that happens in stage 5, between three and three and a half years is that the child has to learn how to develop more complex sentences using the basic sentence patterns which he has already acquired. At three the child can say "Daddy play with the ball in the garden" but what he cannot say is "Daddy and Mummy are playing with the ball in the garden". In other words putting the two sentences together to produce a more complex third sentence. All this is what happens in stage 5. More complex patterns of sentence structure are developed using, in particular, the conjunctions. A conjunction, like "and" is particularly important in English. And why do I stress that? Because people tend not to like the conjunction "and". Primary school teachers spend most of their time crossing it out of essays. I am sure in writing it tends to be over-used, but in speech it is the most important productive process of syntax to be learned by a three-year-old. When a three-year-old is telling you a story he comes in from the garden, he says, "Daddy, Daddy, Daddy, um, Daddy, Daddy, in the garden, and, and, and he he fell over and, and he hurt his knee and, and, and" while he thinks what next to say he puts "and" in to let you know as it were "don't interrupt, I am talking". It is a sort of hesitation noise at this stage. By three and a half then, the more complex kinds of sentence pattern have been established. Stage 6 fills in the gaps. Take a typical three-and-a-half-year-old sentence, "Her be doing it now", "Her be doing it". Modern English at four and a half years of age will be "She is doing it now". "Beter'n her", "Shouldn't he". The stage from three and a half to four and a half once again. At three and a half there are many aspects of structure which are incomplete, the pronoun system in particular. There are many mistakes in the pronoun system. This is true for all the languages which have been studied. There is no trouble about the intelligibility of the pronoun system at three and a half. You know what the child means when he says "Me do that in a minute", or "David do that in a minute", or "Her be do that in a minute". You know what he means but it is just wrong, incorrect. And we know from some of the research that has been done that you cannot hurry a child at this stage. As David McNeal, one of the linguists whose work in this area has shown, if you try and make a child, linguistically, run before it can walk you are doomed to failure. He tried, or one of his mothers tried, to get a child who had said "Her be doing it now" to say "She is doing it now" and at three and a half the child simply would not do it. It refused point blank. The mother would say "No, no, don't say that", "say, she is doing it now", and the child would say "O.K. her be doing it now". And the child thought he was acting correctly and it was only later that the change took place. You cannot, as it were, induce the personal pro-

nouns before they are ready to come, which provides evidence for a view of language acquisition in terms of maturation. Between three and a half then, and four and a half, what is happening is that the parts of the language that were incomplete, in which errors were being made, become completed. The pronoun system; the auxiliary verbs, may, might, can, could, should, in English and their equivalents in French and German; tag questions like, "isn't he", "shouldn't they", "oughtn't we", tend to get sorted out so that by four and a half to five, tape record a child speaking spontaneously informal English, not in the classroom but at home, and he rarely makes an obvious grammatical mistake. If you wrote it down it would sound rather childish, certainly, but the grammar would be pretty complete and people have therefore concluded that by the time a normal five-year-old goes to school, the grammar is learnt. But they are wrong because there is one more stage that has to be learned.

Stage 7, which takes you from round about five up to puberty, and we can characterize what goes on in this stage under two headings. First of all the child is learning. He knows all about sentence structure for the most part, he is now learning to put sentences together to make as it were paragraphs, only paragraphs of speech. Paraphones if you like. We all notice a normal seven-year-old when she comes out with some of these ways of linking sentences together, using some of these adverbs like "However", or "Actually"; "Well actually" says the little girl, and it sounds odd to begin with. How mature! And it does not happen until about seven or so. Sentences link together round about that age. And the other main process in this final stage? Well, it can be summarized very easily. Just because a child can speak good grammar does not mean to say that he can necessarily understand the grammar that he has spoken. We all know this is true for vocabulary, that children will come out with words they don't understand, but it is true for syntax also. That you can learn a grammatical structure, produce it, so that it sounds as if you have learnt it perfectly, but you don't understand what it means. So that you can try it out, you can take a child and say the difference between two verbs, like promise and tell, in English, causes problems. Tell—"I told him to do it"—"I told John to do it". Listen to these sentences—"I told John to do it"—"I promised John to do it". Now, the first one, "I told John to do it". Who is going to do the doing? John is. And the second one, "I promised John to do it". Who is going to do it that time? I am. I did the promising. The two sentences look the same. Their grammar is exactly the same. I, subject; promise or tell, verb; John to do it. But the meaning underneath is very different and it will not be until the ages of between seven and nine that a child will learn to distinguish the two different meanings underlying apparently similar grammatical patterns. And indeed you can show that grammar learning of this kind goes on until puberty. That is, the spontaneous acquisition of grammatical structures seems to continue until puberty and then seems to dry up. It is extremely difficult to elicit new structures that a child has not already learned after puberty. The implications for remedial teaching are of course tremendous, but the evidence is becoming more and more convincing that puberty is a

language turning point as well as a turning point in so many other areas of behaviour. Evidence? Well evidence like the evidence from hemispherectomy. If a child has been unfortunate enough to be born or to have developed some malignancy in the brain area, such that an operation removing part of the brain area has to take place, and if the left hemisphere (in which the traditional centre of speech is supposed to lie) has to be removed, then if this is done before puberty, from all the cases that have been studied, according to Lenneberg whose work I am really referring to as a review of this literature, the evidence is that the child will spontaneously use the right-hand half of the brain to regenerate some of the structures that were originally, as it were, present on the left. He will catch up an awful lot of language using spontaneous methods, and with proper therapy of course can sometimes become normal in terms of language development in a remarkably rapid period of time. But if the operation is done after puberty there is no case on record of successful spontaneous relearning of language taking place. And indeed even with intensive therapy the results have been only mildly successful. From this evidence and other evidence of a similar kind one would point to the importance of the puberty stage as being, as suggesting, a stage, in which language learning winds down, comes to a halt. Thereafter if one is faced with a remedial programme one has to use different techniques from the techniques one would have used in the pre-puberty stage of language learning. It is not that you cannot get any improvement after puberty, but that you have to use different techniques for getting improvement. Techniques much more similar to those used for teaching a foreign language rather than for teaching the native language. These are some of the implications of what I consider to be a linguistic point of view. It is a linguistic point of view because the aim of the exercise has been to try and establish what the facts are for the various stages of development. It therefore requires a systematic and fairly precise background and training to elicit these facts. This is one lesson that students of normal language learnt the hard way. They assumed for many years that if you wanted to find out about the grammar of a child, all you had to do was to ask him. Just as if you want to find out about the grammar of an adult, all I have to do is ask him. If I want to find out if you know how to make a plural in English, I ask you. What is the plural of dog? And if you don't know what the word plural means I say: "Here is a dog. There are two . . ." "Dogs" you say, if you know the plural. Well, of course, Roger Brown and others tried that out for ages on their children, to find out whether the children knew the plural. They didn't use dog, to avoid the word being familiar; they used words like "wug", and they would say to the child of three to three and a half years, "Here is a wug; here are two of them. Now here are two . . ." Nine children out of ten would stare Roger Brown in the eye and say "Don't like your face", or "Can I go now". Children are recalcitrant as regards grammar learning! Therefore devising proper techniques for getting at the grammatical information, is one reason why this field has taken so long to develop. And it really is only in the last five years that enough information has come together to enable these very broad stages to be suggested with any reasonable degree of con-

fidence. I say these stages with some trepidation, because obviously one is talking only about emphasis within these stages. For every case I cite there is another little child who will do the opposite. But we are talking about majorities, dominant tendencies here, and these stages can be taken with some confidence so long as you don't take the age norms too literally.

Summary of answers given by Dr. Crystal to questions and comments

The aim of remedial programmes was to try and elicit from the child structures corresponding more or less to the normal order of development. It was not possible to grade sentences in terms of some absolute standard of complexity, or perceptual difficulty. It was known that children who were normal in all respects followed the same general pattern as they acquired language. Unless a child had a verb in his repertoire at Stage 1 he was not ready to proceed to Stage 2 which would be two element structures. One should first establish comprehension of verb patterns and then ultimately the production of certain verb patterns. Once verbs were used, then using a range of two element structures, one would proceed to three elements. By a two-element structure, one meant a sentence structure where the two main parts were represented. "Table there" for example was a good two-element structure. He would not want to correct this as "the" and "is" were features of linguistic development between Stages 3 and 4. But the teacher or therapist should not, except as a last resort, use such incomplete patterns when speaking to the child.

It had been shown for normal language development that a child of eighteen months would respond much more satisfactorily to the grammar of the stage ahead of him than to the grammar of the stage at which he was.

One should aim for sentences with three or four basic elements but not with two or three adjectives which would be a rather complex feature of Stage 7.

Concerning the difficulties of using teaching schemes such as the Fitzgerald Key, Dr. Crystal drew attention to difficulties with verbs such as "ask" and "tell", "ask" and "promise", "be eager to" and "be easy to". The surface structure of such pairs were the same, but the deep structure was different. The basic sentence pattern for the simpler verb should be taught first and be well-established before the exception was clarified. The teacher needed to do his homework and to know the exceptions. There were not many, but they occurred frequently. Five-year-olds said that a blindfold doll was not "easy to see" because they expected the subject of a sentence to come before the verb. Seven-year-olds could get it right. Dr. Crystal said that compared with sighted children there were confusions between types of vocabulary which a blind child would make, but there was no essential qualitative difference in the progression through the stages in semantic learning from a normal child.

Some children, notably those going to public schools in this country, changed their accents after puberty, and some people in middle age

who were still able to learn new accents. There was less emphasis on the "Daniel Jones" kind of accent today, even at the BBC.

Mr. Snowdon said how much he had enjoyed Dr. Crystal's very lucid description of the seven stages of acquisition and syntax but wondered how much it was dependent on hearing.

Dr. Crystal said that relatively little research had been done on comparing development styles between hearing and non-hearing people. He did not feel it was dependent on hearing at all. Grammar is the structural centre of language whatever its medium of transmission might be. The various signing systems, the Paget-Gorman system in England, which aimed in principle at a one-to-one swift translation of the units of the spoken syntactic system into a visual representation, Seeing Essential English, Linguistics of Visual English, or similar systems in the USA aimed at exactly the same thing, but the rules or Amslan (American sign language) tended to be more semantic than syntactic in structure.

Dr. van Dijk commented that short term memory was a significant factor in learning language.

Dr. Crystal said that short-term memory was implicit in definition of the first four stages because they were dealing with one, two, three to four elements of structure and there must be some correlation there, so if there was a memory deficit there were going to be problems. Dr. van Dijk said that handicapped people sometimes made progress in syntax in their late teens.

There was further discussion on the expansion of infant phrases by adults.

Mr. Dale asked if "flooding" a child with speech would lead to confusion.

Dr. Crystal said "flooding" the child with speech was precisely what he had seen in every teaching situation he had witnessed. There was a tremendous variety of language stimuli at all levels. A more serious trouble was the lack of a programme for all participants who were in contact with a child. Different people might describe the same toy as "Teddy", "Joe", "Big Bear". This confusion of vocabulary and confusion of levels of syntax produced problems. Keeping the stimulus constant as regards intonation and rhythm was an important task which was often ignored.