

Wednesday, 16 March 2022

(10.00 am)

**Presentation by Counsel to the Inquiry about
self-sufficiency and domestic production of blood products
in England and Wales**

SIR BRIAN LANGSTAFF: Yes, Mr Hill?

MR HILL: Sir, before we return to the chronology, just something to pick up on from a discussion that we had about Factor VIII production and albumin production at BPL and plasma supplies. Yesterday we discussed the fact that there isn't a competition, as it were, between the two. If you expand the number of donations and you expand the plasma supply, then you can make more albumin and you can make more Factor VIII. All of that is correct but there is one caveat which is relevant to some of today's evidence, and that is about the use of time-expired plasma.

If we could go, please, to WITN3431001, this is from a statement of Terry Snape, Dr Snape. If we could go, please, to page 75 and paragraph 211 of that statement, Dr Snape describes it this way:

"[Regional Transfusion Centres] in England and Wales continued to supply so-called 'time expired' plasma (TEP) to BPL in the 5 litre Vallet pack, but

1

requirement was for fresh frozen plasma. And I'm afraid I've used the term rather lazily, but if we are talking about the plasma required for Factor VIII, that is fresh frozen plasma not time-expired plasma.

SIR BRIAN LANGSTAFF: Yes.

MR HILL: And it is a point which is important in Dr Lane advocating the switch to single plasma packs, which is something that we will touch upon later and is covered in appendix 5 to the main written presentation.

So that is the caveat that I raise and add to our discussion yesterday.

SIR BRIAN LANGSTAFF: Thank you. That's valuable.

MR HILL: Yesterday we left the chronology after having considered the rise in demand for concentrates in England and Wales, the response to that demand culminating in the DHSS committing £500,000 of central funding.

We also considered the effect of that spending, which was that the numerical targets set were achieved, and they were achieved by mid-1977, but England and Wales was still importing as much concentrate as England and Wales was producing domestically, according to the answer given by Mr Moyle in Parliament in 1978.

If we could go, please, Paul, to INQY0000336,

3

this was only suitable for manufacture of non-labile plasma products (human albumin solution and immunoglobulins). Time expired plasma or TEP was plasma recovered from whole blood donations that had exceeded their expiry date. Provided there had not been too much breakdown (haemolysis) of red cells, the TEP could be separated by centrifugation and pooled into Vallet packs for manufacture of albumin and immunoglobulin products -- but not factor VIII or other coagulation factors."

SIR BRIAN LANGSTAFF: Yes, that presumably would be because the Factor VIII has a shortish half-life in the body and it doesn't necessarily last long unless it's frozen -- fresh frozen plasma -- after donation. So I can understand why that would be.

MR HILL: That is as I understand it, sir.

A point which is raised by Dr Lane in some of the documents that we are going to see later today is that BPL was receiving a large amount of plasma generally, which was a mix between fresh frozen plasma and time-expired plasma. And he talks about the quality of the plasma, and that is one of the measures of the quality of the plasma.

We have been using the term "plasma supply" to BPL. If we are talking about Factor VIII, the

2

page 42. If we could expand the bar chart at the top of that page, please.

This, sir, is a bar chart that the Inquiry legal team has created. It is based on a graph that was provided in the annual returns of the Haemophilia Centre Directors from 1990, the UK annual returns. And it is -- a graph was not accompanied by specific figures. So the Inquiry legal team have taken the graph and have transposed as best they can what is shown in the graph into what is shown in this bar chart.

The reference is HSOC0000596 at page 16 for the original graph.

So what this shows isn't an attempt at a precise set of figures for each of these years. It is a representation of what is shown in that graph. It is for England and Wales, even though the original graph comes from the UK Haemophilia Centre Directors.

SIR BRIAN LANGSTAFF: And it involves, it must involve, assumptions, particularly in the earlier years before international units were standardised, as to how much activity there was in cryoprecipitate, and the relevant strengths concentrations of the commercial concentrate and the NHS commercial concentrate.

MR HILL: That's absolutely right, sir. Tomorrow, when we

4

1 discuss some of the more thematic parts of the
2 presentation, about how plasma supply and production
3 changed over time, I will begin that with, I'm afraid,
4 quite a lengthy list of caveats about the data, and
5 that is a very important element to that.

6 All of these graphs that I've shown, all of the
7 figures that I give, need to be understood to have
8 a degree of qualification to them. Some we can be
9 more confident about than others, particularly as time
10 goes on, but in the early period there is, as you say,
11 a lot of assumption which goes into it.

12 Our general feeling is that when one looks at
13 a bar chart like this, or a graph or a table of
14 figures, it is helpful to show a general trend but we
15 shouldn't be confused into thinking that there is
16 a false precision about the figures that are given.

17 **SIR BRIAN LANGSTAFF:** Yes, that must all the more be so
18 given the source of this, because the Haemophilia
19 Centre Directors annual reports were sometimes
20 missing, not necessarily accurate it all depended who
21 compiled them. We've been through this when we
22 looked at the Centres. They weren't any better than
23 indicative, really.

24 **MR HILL:** Yes.

25 **SIR BRIAN LANGSTAFF:** Pretty indicative, but no better

5

1 overwhelmingly cryoprecipitate, with a small thin blue
2 line showing the domestic NHS factor concentrates.

3 As a general trend, we can see that the amount
4 of international units provided in treatment rises
5 consistently, with the possible exception of 1971 to
6 1972, and significantly over this period from
7 somewhere below approximately 7 million international
8 units to somewhere above 55 million international
9 units.

10 So that is the general trend.

11 We can see at first that cryo is the dominant
12 treatment form. From 1971 we have the introduction of
13 more NHS concentrates, shown by the blue element of
14 the bar chart. In 1972, that drops off a little, and
15 1973. Then '74, relatively static, a slight upward
16 trend. That upward trend continues into 1975 but we
17 can see there that, by now, commercial Factor VIII is
18 beginning to feature on this bar chart.

19 That is not to say there was no commercial
20 Factor VIII at all before 1973, there may have been on
21 a named-patient basis, but it becomes statistically
22 more significant after 1973. And we can see how, as
23 years pass, you do get more NHS Factor VIII and you
24 get a significant increase between 1975 and 1977,
25 which we discussed yesterday, and that is as a result

7

1 than that.

2 **MR HILL:** Yes, that's right, sir. And your team have gone
3 through a large amount of different sources of
4 evidence to try to pick out reliable figures, but
5 there is no single data set. There is no set of
6 records that one can just simply trace back along. So
7 there is always a concern that you might not be
8 comparing like with like. So that's why we say it's
9 helpful for general trends, but it comes with a health
10 warning about how precise each of these figures are.

11 It's also helpful at all points to cross-refer
12 a particular data point from this bar chart or another
13 graph with what is being said in the documents at the
14 time and see how closely they correlate. And I'm
15 afraid they don't always correlate and sometimes you
16 end up with two figures which are different and
17 there's no real way of telling which is more reliable.
18 So that, again, is a further qualification.

19 But having said all of that, what this bar chart
20 does help to show is the general trend and
21 development. And if we look in particular -- if we
22 can expand, please, Paul -- from 1969 to 1978, this is
23 period that we were touching upon yesterday, we can
24 see at the start of that, 1969, a relatively small
25 level of international units being used and

6

1 of the increased plasma supply and of the changes to
2 BPL. But during that same period, you are getting an
3 increase in the use of commercial Factor VIII as well.

4 And you get to the period 1977, which is
5 probably the period that Mr Moyle was talking about in
6 his Parliamentary answer, and we can see very
7 approximately from this graph that it is about
8 one-third cryo, one-third commercial Factor VIII and
9 one-third of NHS Factor VIII, very approximately,
10 which would tally with what Mr Moyle was saying at
11 that time.

12 We can also see -- we'll come on to this
13 shortly -- that the rise that took place between 1974
14 and 1977 tails off between '77 to '78, and plateaus
15 from there until 1980 in terms of NHS Factor VIII, and
16 we can also see that during this period there is an
17 expansion of commercial Factor VIII. Cryoprecipitate
18 in that period becomes -- takes up a smaller and
19 smaller portion of the provision of treatment.

20 We will come back to that chart in due course
21 today, and indeed tomorrow, but it's helpful just to
22 show where we were yesterday.

23 If we could just leave it up for one moment as
24 I give you the figures. I mentioned these yesterday.
25 1973, around 2.7 million international units

8

1 produced from BPL and PFL.
 2 1975, around 2.2 million.
 3 1976, 6.1 million.
 4 And 1977, 11.5 million.
 5 By 1978, according to Mr Moyle, the figure was
 6 around 15 million, which he said was the capacity of
 7 BPL and PFL at that time. The Inquiry team have
 8 a figure of about 14.1 million, which we'll look at
 9 tomorrow. There is inevitably going to be some
 10 variation depending on how you measure these things,
 11 and Mr Moyle was speaking approximately when giving
 12 his answer in Parliament so we don't make an issue
 13 about the fact that there is a distinction between
 14 14.1 and 15 million. It is, by any stretch, an
 15 increase on what was there before, in 1977, but not as
 16 big an increase as there had been between '74, '75,
 17 '76 and '77.

18 The increasing amount of red that can be seen in
 19 that bar chart in the late '70s reflects the fact that
 20 even as the special financing programme was
 21 commencing, there was a growing demand for factor
 22 concentrates.

23 We can take that down now, Paul, please. Thank
 24 you.

25 The DHSS was facing criticism in the press for

9

1 I quote:

2 "The answer lies in the reorganisation of the
 3 British Blood Transfusion Service. Personally, I am
 4 not prepared to wait for that reorganisation or for
 5 a British product to become available in sufficient
 6 quantities. When I see my patients growing up and
 7 suffering, I am convinced that home therapy is the
 8 only answer. The sooner a patient treats a bleed, the
 9 sooner it stops, and the less concentrate is required.
 10 It's the same old British story; no money to develop
 11 anything."

12 That was Dr Jones's view given in the article in
 13 January 1975.

14 In March 1975, we have a Government DHSS minute
 15 that refers to a suggestion that Dr Owen appears to
 16 have made that the DHSS consider writing to Regional
 17 Health Authorities asking them to view requests from
 18 clinicians for the supply of commercial concentrates
 19 with sympathy. That's Dr Jones suggesting sending
 20 that letter. The officials thought that this would,
 21 and I quote, or "could cause irritation". They
 22 suggested that instead of writing directly, Dr Owen
 23 make the point in answers to Parliamentary questions.
 24 We looked at some of those questions yesterday.

25 Again, sir, you may feel that shows one of the

11

1 failing to meet that demand, and the criticism wasn't
 2 just about domestic supply but was also about
 3 the provision of concentrates generally, including
 4 commercial concentrates. The criticism was that
 5 patients were being under-treated, and that, in
 6 particular, young boys were not being provided with
 7 the best quality treatment which they could have,
 8 which was commercial concentrate, according to the
 9 articles that were written.

10 At paragraph 124 and in the footnote, there is
 11 a series of references to the articles to which I'm
 12 referring. There were campaigns in both the Yorkshire
 13 Post and the Sunday Times in the early months of 1975.
 14 Stories also appeared in The Sun and the Daily
 15 Telegraph. There was a particular article in the
 16 Yorkshire Post which I make reference to at
 17 paragraph 125 which quoted Dr Biggs,
 18 Professor Blackburn, Dr Jones, Dr Ingram, Dr Swinburne
 19 in an article entitled "Angry doctors speak out" in
 20 which they all expressed frustration at what they saw
 21 as the under-treatment of their patients and the
 22 under-provision of concentrates.

23 Dr Jones was asked for his view about how that
 24 situation had arisen, and he said -- I won't take you
 25 to the article; I'll just read the quotation.

10

1 themes that we have been discussing which is the lack
 2 of central control and the amount of levers that were
 3 available to a minister in the DHSS to try to effect
 4 action at Regional Health Authorities.

5 There was a tension which is evident in some of
 6 the papers between what the clinicians were pushing
 7 for, which was greater home treatment, greater use of
 8 concentrate, greater treatment generally of their
 9 patients, and what at least some of those who were
 10 responsible for providing the plasma and providing the
 11 concentrates thought should be provided.

12 If we could go, please, Paul, to PRSE0002133.
 13 This is a report from the Scottish National Blood
 14 Transfusion Service from 1975 to 1976. The page I'd
 15 like to take you to is page 10, electronically, and
 16 the relevant section is under the title "Factor VIII".
 17 This is what is written in the annual report for the
 18 SNBTS, 1975 to 1976.

19 "Factor VIII:

20 "General. Of all the blood products available,
 21 the only one which has aroused an emotive response in
 22 the United Kingdom (Scotland is less vociferous) is
 23 the supply of Factor VIII and its use in the treatment
 24 of haemophilia. Parliamentary questions, newspapers,
 25 wireless and television have all been used to

12

publicise the demands of pressure groups, mainly from lay sources. Propaganda has been along two main lines -- a demand for immediate implementation of home therapy regimes (the administration of Factor VIII in the home by the patient, relatives or the general practitioner when a bleeding episode occurs) and the philosophy that the haemophilia patient should lead a perfectly normal life.

"Home therapy holds out the undoubted advantages of early treatment, hence lessening the risk of sequelae such as ankylosing joints and of convenience to the patient. Intermediate factor VIII, being less bulky than cryoprecipitate and remaining potent in a domestic refrigerator as opposed to deep freeze requirements for the latter, is certainly the product of choice, and the BTS must endeavour to meet demands as soon as possible. Cryoprecipitate, however, has proved a most valuable preparation, and a gradual changeover to intermediate factor VIII can be achieved without recourse to commercial preparations."

I pause there. This is Scotland we are talking about.

"Haemophilia patients have a permanent disability and, as in all physical handicaps, should live within it. Encouragement to lead a perfectly

13

paragraph 34 of that appendix, and a letter from Dr John Watt in which he expresses similar views to those expressed here and explains his reasons for them and his own personal experience which lies behind some of this thinking. And given the similarity between those views and Dr Watt's position, it may be that he either wrote this or was influential in the document that we have just seen.

Turning to the question of safety and self-sufficiency. We saw reference yesterday to the World Health Organisation resolution from May 1975, resolution 28.72, on the utilisation and supply of human blood and blood products. I won't take you to the document. It is one that we have considered before. The resolution expressed serious concern about the international blood and plasma trade. There were three bases for that concern. The first was that it, and I quote:

"... may interfere with efforts to establish efficient National Blood Transfusion Services based on voluntary non-remunerated donations."

The second concern was that there was, and I quote:

"A higher risk of transmitting diseases when blood products had been obtained from paid rather than

15

normal life involving increased hazards of traumatic haemorrhage not only increases the chances of ankylosing complications but involves considerable additional quantities of a valuable therapeutic agent, human Factor VIII. The importance of this can be gauged by the fact that some 90,000 donations are required to meet Factor VIII requirements for some 400 patients in Scotland annually."

I won't take you through the rest of that passage. The point is made that the author of this is questioning the assumptions made by clinicians and, as he puts it, the pressure groups and lay sources that people with haemophilia should be encouraged to live an active life and that Factor VIII concentrate should facilitate that. Instead, the suggestion is that people with haemophilia should learn to live, as he puts it, within the confines of, to use the terminology in the paper, "physical handicap".

The use of the word "propaganda" in the first paragraph is striking. And this is part of a wider debate on this question about what people with haemophilia should be advised to do in terms of their day-to-day life that was prevalent at the time. And that is discussed further in appendix 1, and I would draw your attention, sir, in particular to

14

from voluntary donors."

And the third was because of the harmful consequences on the health of donors as a result of frequent paid donations.

As a result of those concerns, the World Health Organisation urged Member States, and I quote:

"... to promote the development of national blood services based on voluntary non-remunerated donation of blood."

So that is a proposition for Member States to promote voluntary self-sufficiency in blood and blood products.

We saw yesterday in a number of documents that one of the WHO's concerns about the interference with national voluntary schemes is one that found an echo in the documents from as early as 1974 and seems to have had a particular influence on Dr Owen -- a desire to protect the voluntary nature of the UK blood donation system.

The influence of product safety on the initial drive for self-sufficiency is harder to discern from the documentary evidence. The expert group that we looked at yesterday considered hepatitis infection. They were referring in the early documents to hepatitis B. But they considered it to be

16

1 a theoretical risk that was not borne out in practice,
2 and they said that it was not something that should
3 inhibit the adoption of concentrates.

4 The issue of safety and of comparative safety
5 between domestic and imported products did not feature
6 in the discussions leading to the announcement of the
7 £500,000 special funding, nor did it feature in the
8 Parliamentary answers that followed. It didn't
9 feature either in the efforts of the DHSS to persuade
10 Regional Health Authorities to expand plasma
11 production prior to that announcement in 1975. It
12 wasn't an argument that the DHSS was making.

13 Dr Owen had raised the safety of commercial
14 imports in his 1971 review of *The Gift Relationship*.
15 I won't take you to it, but the reference is
16 LDOW0000343.

17 He did raise it there in a sentence in his
18 review of *The Gift Relationship*, but he did not return
19 to it, at least explicitly, in his Parliamentary
20 answers in 1975, or in his speech to the World
21 Federation of Haemophilia in 1976. It wasn't a point
22 that he made publicly at that time.

23 During 1975, concerns about the safety of
24 commercial blood products grew. It's not the place
25 here to go into what was known and not known at any

17

1 commercial product with its higher hepatitis risk is
2 more costly than producing our own."

3 The reference for that is DHSC0002313_004, and
4 it's at paragraph 134 of the written presentation.

5 In or around March 1976, Dr Waiter produced
6 a paper comparing Factor VIII concentrates available
7 for use at that time in the UK.

8 If we go to that, please, CBLA0008747. We can
9 go to page 2, first of all, please.

10 We can see at the top of the page the origins of
11 this document. It's a memorandum for the meeting of
12 the Factor VIII production directors on 11 March 1976,
13 which is where we get the date of around March 1976
14 from. It is a survey of commercially-produced and
15 NHS-produced Factor VIII concentrates.

16 The purpose behind this is Dr Waiter trying to
17 understand what clinicians want from the product and
18 what they're getting from the product, so that the
19 UK domestic product can be the match of the commercial
20 concentrates.

21 Dr Waiter we spoke of yesterday, the predecessor
22 to Dr Walford, in the role that Dr Walford would take
23 from 1978 and 1979. And again, Dr Waiter, with
24 Mr Dutton, is somebody whose name is going to come up
25 repeatedly today.

19

1 particular time, but we can see increasing concerns
2 over 1975 and going into 1976. We've already
3 looked at what the World Health organisation said in
4 May 1975. 1975 also saw the publication of
5 Dr Craske's article about the outbreak of hepatitis in
6 Bournemouth, and the end of the year saw the World in
7 Action documentary on commercial blood products and
8 commercial transfusion centres in the United States.

9 We can see safety beginning to be picked up in
10 the documents as a further reason to promote
11 self-sufficiency in 1976. On 20 February 1976, there
12 is a minute written by Tom Dutton who, by that stage,
13 was the official leading the efforts to increase
14 plasma supply -- and Mr Dutton's name will come up
15 repeatedly today -- and he wrote in February 1976, and
16 I quote:

17 "... something we cannot possibly
18 contemplate ..."

19 Sorry, he wrote that the prospect of
20 the self-sufficiency programme floundering was, and
21 I quote:

22 "... something we cannot possibly contemplate,
23 as the Minister of State has only recently reaffirmed
24 his aim of NHS self-sufficiency in substance. Quite
25 apart from this, the alternative of buying the

18

1 If we could turn, please, Paul, to page 7.

2 You can see the wider context of this document,
3 the comparisons that Dr Waiter is making between
4 the different products. The previous one is the
5 activity of the reconstituted product. She has also
6 looked at the volume of the dilution required,
7 the presentation of the product, the availability, the
8 cost. All of these different factors.

9 And factor 7 is hepatitis. What Dr Waiter wrote
10 is this:

11 "The risk of acquiring hepatitis, and in
12 particular hepatitis B, following infusion of
13 factor VIII Concentrates has recently been
14 highlighted. The commercial products are prepared
15 from large pools of fresh human plasma which may
16 contain the causative agents of viral hepatitis."

17 "This is especially likely if the sources of the
18 raw material are paid donors or donors from
19 geographical areas where the diseases are more
20 prevalent. It is not possible to subject the
21 Concentrate to any treatment known to diminish the
22 risk of transmission of hepatitis.

23 "The commercial products available in the UK
24 carry a warning that a risk of acquiring hepatitis,
25 although small, accompanies the infusion of these

20

1 blood products. It is now obligatory for commercial
2 firms to test individual donations of blood or plasma
3 for HBsAG and to batch test the final product by
4 radioimmunoassay (RIA).

5 "The NHS products are prepared from small pools
6 of plasma obtained from voluntary donors. Each
7 donation is tested for HBsAG by a method of reversed
8 passive haemagglutination (RPH) or RIA. Each 5 litre
9 pool and each batch of a final product is tested for
10 HBsAG by RIA."

11 There is an asterisk next to "5 litre pool" and
12 in the margin we can see that it says, "This applies
13 to BPL, Elstree".

14 Returning to the document.

15 "It is accepted that no test is 100% certain to
16 identify all infective material and a risk therefore
17 persists albeit very small, of transmitting
18 hepatitis B. However this risk is considerably less
19 than that accompanying the use of commercial products.
20 It should progressively fall as the number of antigen
21 positive individuals in the donor pool in the UK falls
22 following the introduction of more sensitive tests for
23 HBsAG on all donations, and exclusion of HBsAG
24 individuals. Some clinicians accept the risk of using
25 Hemofil, claiming that the benefits of using a high

21

1 If we could go, please, to a first document
2 in a sequence that we're going to look at on this. It
3 is CBLA0000336. It is a document that was prepared by
4 Dr Ethel Bidwell of the Protein Fraction Laboratory,
5 PFL, in Oxford. We can see her initials in the bottom
6 right-hand corner and we can see a date there of
7 27 January 1976.

8 Now, this isn't an easy document to follow but
9 we can see at the top of it, it is entitled
10 "Production of factor VIII concentrate", and then it
11 states:

12 "Assumptions based on latest data from Dr Biggs,
13 internal data from PFL and RTD (75) 26."

14 Which is a paper that was prepared for the
15 Regional Transfusion Directors.

16 So this is Dr Bidwell through a series of
17 assumptions to come up with a figure for Factor VIII
18 concentrate requirements. She starts off with the
19 number of patients and suggests that that is going to
20 be less than 3,000. Then there is an assumption about
21 how many international units per year will be required
22 by the patient, and the figure which she uses here is
23 12,000 to 15,000 international units. She says:

24 "This is an average figure -- severely affected
25 patients on home therapy may require up to 25,000

23

1 purity product outweigh the risk of transmitting
2 hepatitis, particularly for the severely affected
3 patient who is less susceptible following repeated and
4 frequent treatment. Others prefer to use an NHS
5 product regardless of the relative inconvenience of
6 using these products to avoid the risk."

7 That is what Dr Waiter writes in March 1976.

8 I won't take you to the meeting at which that
9 paper was discussed, which was on 11 March 1976. The
10 reference, should anybody need it, is CBLA0000343.
11 But a feature of that meeting is that Dr Maycock said
12 at it that the UK target, as he put it, for
13 Factor VIII requirements that was set by the Expert
14 Group on the Treatment of Haemophilia in March 1973
15 was now considered by some to be too low, and that the
16 target should be, and I quote "considerably higher".

17 That takes us in to the discussion about
18 the revision of estimates that took place around this
19 time, 1975 and 1976.

20 It is examined in some detail in appendix 1.
21 The short point to take from it is that around this
22 time, concern was being raised with the DHSS that
23 the figures that had been adopted as targets by the
24 DHSS were out of keeping with what the MRC and the
25 expert group had said in their previous reports.

22

1 [international units] per year; mildly affected
2 patients may require few doses."

3 So a broad average is taken.

4 The total requirements, which she gets by making
5 the calculation of 3,000 times 12,000 or 3,000 times
6 15,000, is between 36 and 45 million international
7 units per year. So that's the output that is
8 required.

9 She then turns to the input of plasma, fresh
10 frozen plasma, that will be needed to produce that
11 output. And she makes an assumption that a kilogram
12 of plasma, when fractionated on a large scale, will
13 yield about 200 international units. She notes that
14 the PFL yield is about 240 financial units but PFL is
15 a smaller plant.

16 The calculation for 36 million international
17 units is that that will require 180,000 kilograms of
18 plasma. 45 million international units will require
19 225,000 kilograms of plasma.

20 She then does a conversion to donations and
21 the donation figures required to get to that level of
22 plasma are 970,920 donations for the lower figure and
23 1,213,650 donations for the higher figure. So
24 approximately 1 million to 1.2 million donations.

25 I'll remind you, sir, of the figures that we saw

24

yesterday, they -- an estimate between 500,000 and 750,000 donations that was made in the MRC paper. Reference then made to the Regional Transfusion Directors paper which anticipates 343,100 donations from England and Wales by June 1977. So very approximately a third to a quarter of the amount that Dr Bidwell has considered necessary.

Dr Bidwell goes on to say that it would be expected from that figure, 343,000 donations, that that would provide about 61,000 kilos of plasma or 12.35 million international units of Factor VIII, ie, about 30% of the total requirement of Factor VIII as dried concentrate.

She then discusses the capabilities of the Plasma Fractionation Laboratories in Oxford, in Edinburgh and in Elstree, and she concludes that the -- together they can fractionate at least 110,000 kilograms per year from 593,340 donations. And that is, and I quote:

"Greatly in excess of the 343,100 donations planned for June 1977 but about 50 per cent of the capacity envisaged in paras 1-5."

So the short point that I take from that, in terms of fractionation capacity, is that there is sufficient capacity to cope with the amount of plasma

25

calculates are necessary.

He does, however, also point out that her figure for patient usage is, in his view, low. He is saying this looking retrospectively. It's not known what he thought at the time, but he said that the figure that Dr Bidwell gives of severely affected patients needing up to 25,000 international units, Dr Lane comments that such patients reach the level of between 40,000 and 50,000 international units when supply allowed.

I stress that is him looking back retrospectively in saying that. But it does help to explain why Dr Bidwell's calculations here, which come out at between 36 to 45 million, are eventually superseded by estimates and by demand levels which are higher than that.

Both of those aspects -- the need for assumptions on the yield and the need for assumptions on how much product is actually going to be used -- demonstrate the difficulties in trying to make estimates and the reasons why people came up with different estimates. If you tweak those figures and then multiply them by the number of patients -- 3,000 -- then you get significant differences of outcome as a result.

The second document that I would like to look at

27

that is coming in now, but if you want to meet the demands in the future that Dr Bidwell has calculated, then the current capacity is about half that which you will need.

Dr Lane commented on this paper in his fifth draft proof of evidence which he provided for the HIV Litigation in 1990, and Ms Richards will take you to that document later in the week, so I won't go into detail on it now, but what Dr Lane said was that he considered Dr Bidwell's calculations were, and I quote:

"... based on yields which were far closer to what I consider realistic."

And overall he thought that this was, and I quote:

"... a more realistic assessment."

So Dr Lane, the fractionator, is particularly interested in this question of yield. How much, in terms of international units of Factor VIII activity, will you be able to get from your 1 kilogram of plasma? And he thinks that Dr Bidwell here is being more realistic than previous estimates. And it is notable that Dr Bidwell's calculations lead to a significant rise in the number of donations required to meet the necessary levels of Factor VIII that she

26

is the notes of the meeting of the Expert Group on the Treatment of Haemophilia and Allied Conditions which took place on 4 May 1976.

If we could have, please, CBLA0007964.

This, you will recall, sir, is the same body that we looked at yesterday, the expert group that was set up to try, among other things, to look at future demand for Factor VIII. That is not its sole role; it is also, as the name suggests, looking more widely at the treatment of haemophilia and allied conditions.

We can see the list of those who are present. It is chaired by Dr Raison. Dr Bidwell, the author of that paper that we have just looked at, was there, as were a number of other figures that -- names we'll recognise: Dr Delamore, Dr Gunson, Dr Jones, Dr Maycock. Dr Preston was there representing Professor Blackburn from the Sheffield Centre. Dr Rizza is there. And the secretaries, we will see, are Mr Dutton and Dr Waiter. Also in attendance Dr McIntyre from the Scottish Home and Health Department.

If we could turn, please, to page 2. The heading is "Demand for Factor VIII", and two papers were discussed at the meeting, and they were followed by a general discussion which I will come to in

28

1 a second.

2 The first paper was Dr Jones's paper which
3 considered the amount of Factor VIII that was being
4 administered around the world, and I draw attention to
5 the position in West Germany where high, very high
6 levels of Factor VIII were being used. The position
7 in Sweden is mentioned as well.

8 I quote from about halfway down that paragraph,
9 starting "Speaking to his paper":

10 "Dr Jones's own estimate for UK home treatment
11 was 18,000 units per patient per year of freeze-dried
12 concentrate which suggested an annual need for
13 21 million international units if the needs of 1,164
14 severe haemophiliacs who may qualify for home
15 treatment within the next 5 years were to be met."

16 I pause there, sir. We discussed the figure
17 yesterday for severe haemophiliacs. Now Dr Jones
18 refers to 1,164, but that is with the qualification of
19 those who are considered to qualify for home
20 treatment.

21 Dr Jones went on to say that the UK dosage
22 regimes were presently below those of centres abroad,
23 and so the figure of 21 million units per annum may
24 prove to be an underestimate.

25 If we can go on to the next paragraph, please,

29

1 "The introduction of knee prosthesis would
2 increase the demand significantly, at least initially,
3 but if the surgery was successful, it might eventually
4 reduce the overall demand. The Chairman said that by
5 mid-1977, when the current production target was
6 expected to be achieved, the NHS supply of Factor VIII
7 might be of the order of 31 to 34 million units (ie,
8 12 to 15 million international units of concentrate in
9 England and Wales, 15 million international units in
10 the form of cryoprecipitate, and 4 million
11 international units of Factor VIII produced in
12 Scotland), provided that the rate of production of
13 cryoprecipitate could be maintained as production of
14 the freeze-dried concentrate increased. Dr Stratton
15 said that his understanding was that the production of
16 cryoprecipitate would be phased out as freeze-dried
17 concentrate production increased, but other members
18 thought that it had never been the intention to phase
19 out the production of cryoprecipitate completely. It
20 was agreed that it would be necessary to look further
21 into the question of whether it was possible, with
22 present resources and donations, to continue with the
23 production of cryoprecipitate at the present rate, at
24 the same time increasing the output of concentrate by
25 the NHS to 12 to 15 million international units

31

1 and I am going to read from here the discussion that
2 followed. And we will see reference to some of the
3 previous figures which have been mentioned that we
4 looked at yesterday, and we will see what those
5 involved in creating those figures thought about their
6 use. I quote:

7 "Dr Biggs referred to her estimate of a total
8 requirement of 40 million international units of
9 Factor VIII in all forms in the United Kingdom. This
10 was based on a known haemophilic population of
11 approximately 3,000, but given the probability of the
12 total number of haemophiliacs being greater and of
13 development in treatment, coupled with the fact that
14 the estimate was prepared on the basis of an
15 assumption that 200-220ml of plasma would be obtained
16 from each donation, whereas only 180ml was being
17 removed, the 40 million international unit estimate
18 was likely to be on the low side. The introduction of
19 knee prosthesis would increase the demand
20 significantly".

21 I pause there, sir, to say that's further
22 surgical operation, and were that operation to be
23 performed, then obviously factor concentrates or
24 cryoprecipitate would have to be given to cover the
25 bleeding:

30

1 per annum.

2 "It was accepted that there was no shortage of
3 concentrate in the United Kingdom. Commercial
4 producers could meet all the requirements likely to be
5 made on them on demand but at considerable cost.

6 "It was suggested that the money at present
7 being spent on commercial concentrate might be better
8 spent if it were used to increase still further the
9 output of NHS concentrate, but it was generally agreed
10 that money was not the only limiting factor. The
11 Chairman drew attention to the fact that expenditure
12 on commercial concentrate was continuing to rise, even
13 though more NHS concentrate was becoming available.
14 Members said that this was unavoidable if
15 haemophiliacs were to receive the treatment which
16 clinicians and patients knew could now be provided.
17 It was misleading to measure treatment in terms of the
18 cost of Factor VIII alone; it was anticipated that
19 home treatment would lead to substantial savings in
20 hospital costs, and if the crippling effects of the
21 disease could be avoided, as was now possible, there
22 would be very large savings in the cost of additional
23 care and disability allowances. When urged by the
24 Chairman to try to produce data which would illustrate
25 this and which could be used in planning discussions,

32

the meeting believed it would be very difficult, although the need was readily seen. It must be accepted that the old target was now quite irrelevant to the widely recognised treatment needs of haemophiliacs; it had been rendered out of date largely by the advance of home therapy. Dr Jenkins thought it would be necessary for commercial concentrate to be purchased centrally and for a committee to control the purchases, reducing the quantity as more NHS concentrate became available.

"Dr Davies commented that Factor VIII production should not be considered in isolation from the production of other blood products (eg albumin) and that a comprehensive program was desirable.

"Most members agreed that in practice clinicians would have to accept a limitation on the quantity of Factor VIII available to them.

"Mr Watt thought that it would be reasonable to fix the new target at 35 million international units of Factor VIII in both forms (freeze-dried concentrate and cryoprecipitate), but it was agreed not to fix a new target for the time being but to review it again when the original target figure had been attained. The Chairman drew attention to the fact that competing pressure on resources meant that it was most unlikely

33

"This was inevitable and comes as no surprise at all. This only demonstrates once again why we must reform the National Blood Transfusion Service."

The reference is DHSC0100006_145.

The discussion of the expert group was also reported to the Central Committee of the National Blood Transfusion Service at a meeting on 22 June 1976. The reference for that is DHSC0103254. The minutes there record that -- perhaps we'll bring this up.

DHSC0103254, please, Paul.

We can see there the heading:

"Central Committee for the National Blood Transfusion Service

"Meeting ... 22 June ..."

And if we go to the bottom of that page, please, Paul, paragraph 7, item 7.

"Factor VIII in the treatment of haemophilia -- oral report

"It could be reported that plasma is being sent to the Blood Products Laboratories at a rate which is well up to the expected amount. The Expert Group on the Treatment of Haemophilia has recently met and has revised their earlier target which provided for the preparation of Factor VIII from the equivalent of

35

that there would be any addition to the special allocation for this purpose. Nevertheless, the Department would consider the views which had been expressed about a new target, possible methods of achieving it, and the cost of doing so after taking account of the offsetting factors."

As of May 1976, therefore, the expert group had identified the need for a new target for Factor VIII but had not alighted on what that target should be.

Dr Owen was informed by Mr Dutton of the views of the expert group on 18 June 1976. The references are at paragraph 145 of the written presentation. Mr Dutton attributed at least part of the predicted demand for concentrates to the increased use of home treatment which he said, and I quote:

"... involved a much greater use of concentrates, at least in the early months."

Mr Dutton also wrote that the DHSS was now considering the implications of what the expert group had said, and in particular, and I quote:

"A situation in which approximately 60% of the total blood donations collected may have to be fractionated in order to provide sufficient of 1 factor to treat 3,000 patients."

Dr Owen's response was:

34

slightly over 400,000 blood donations annually. The Expert Group now believe that with the extension of home treatment, joint surgery etc the current target may represent no more than [one third] to [one half] of the amount of Factor VIII which may be required in 5 years time or less.

"The Department is considering the implication of the new advice -- Dr Waiter can enlarge if necessary."

I should note, sir, that it appears to be a briefing note ahead of the meeting rather than the minutes themselves.

So no figure has been set by the expert group but there is a broad indication that their previous estimate of 400,000 donations is only about a third or a half of what they anticipate may be required in five years or less.

The same meeting, of the Central Committee of the NBTS, proposed a review of the clinical use of blood and blood products, and I will come to that document a little later. That was a review that was carried out by Mr Dutton and Dr Waiter.

Before I do go to that document, it's helpful to look at two further meetings, which show the range of estimates now being given and tensions between the

36

1 DHSS, the clinicians and the fractionators on the
2 interpretation of what had previously been said and
3 whether or not the figures that the DHSS had taken
4 should have been considered as targets.
5 The first of the two meetings I am going to take
6 you to was a meeting of the Transfusion Centre
7 Directors, regional scientific advisers and
8 Haemophilia Centre Directors which took place on
9 26 July 1976.
10 If we could go, please, to CBLA0000391. Please
11 can we go to page 5 of that document.
12 Sorry, that's page 5, internal page 7 of the
13 electronic document. Actually, let's go to page 9.
14 Apologies, Paul. My mistake.
15 Internal page 5, electronic page 9:
16 "3. The Clinical Service provided by
17 Haemophilia Centres
18 "(a) Supply of therapeutic materials.
19 "Dr Maycock said that he had a target of
20 15 million units of factor VIII per annum. This would
21 include both cryoprecipitate and NHS intermediate
22 potency freeze-dried factor VIII. The rate of
23 production needed to reach this target should be
24 achieved early in 1977. Dr Maycock said that he was
25 aware that a new target of 35 million units per annum

37

1 give a unit cost for NHS factor VIII, surely it must
2 be much cheaper than commercial factor VIII.
3 Dr Maycock said that he would soon have cost figures
4 and that the material would be substantially cheaper
5 than commercial factor VIII.
6 "Dr Maycock said that at present the total
7 capacity for fractionation in England did not exceed
8 15 million units of factor VIII and thus large
9 increases in the supply of plasma would not be
10 helpful."
11 That figure of 15 million international units
12 for capacity is the same one that Mr Moyle would give
13 in Parliament the following year.
14 Dr Lane commented upon this document and
15 surrounding documents in his fifth draft proof of
16 evidence at paragraph 123. The reference is
17 CBLA000000_002. I won't take you to it; I will simply
18 read what he said. Dr Lane said and I quote:
19 "One is driven to the conclusion that 15 million
20 international units was never an agreed target in the
21 sense of the self-sufficiency target or, for that
22 matter, any other type of target. It was simply
23 a target defined by reference to BPL's capacity and
24 the available fresh frozen plasma as enhanced by the
25 modest £500,000 injection of cash in 1976."

39

1 had been proposed.
2 "Dr Rizza said that he had thought that the
3 target for factor VIII was 35 to 40 million units of
4 factor VIII and he wondered how the target of
5 15 million units had been decided.
6 "Dr Stewart said that the DHSS was committed to
7 supply factor VIII within the NHS but that estimate
8 indicated a shortfall of 20 million units per annum
9 since the needs of patients had been estimated at
10 35 million units per annum.
11 "Dr Biggs said that the Haemophilia Centre
12 Directors had never supported a target of 15 million
13 units of factor VIII."
14 If we could go over, please, Paul to the next
15 page.
16 Item (c) on it:
17 "Steps to be taken to increase the supply of
18 factor VIII
19 "Dr Biggs said that she had thought that the
20 Haemophilia Centres might buy more commercial
21 factor VIII as a temporary measure to allow more
22 plasma to be released for fractionation. Dr Badman
23 said that there would not be funds for this in the
24 Regions.
25 "Professor Nelson asked Dr Maycock if he could

38

1 That's Dr Lane's retrospective view.
2 The second meeting to which I would like to take
3 you, which enlarges on some of this debate, was
4 a meeting of Haemophilia Centre Directors and some
5 representatives of the DHSS which took place on
6 13 January 1977.
7 If we could go, please, Paul, to PRSE0002268.
8 I won't go through the full list of attendees
9 but if we could just flick over on to the next couple
10 of pages, Paul, we can see that this is a ... thank
11 you. And keep going for a couple more.
12 We can see there is a lengthy list of attendees.
13 If we could turn, please, to page 9, electronic
14 page 9.
15 I just note this in passing: that one of the
16 items considered was the trial of prophylactic
17 treatment of haemophilic patients at Alton. That's
18 Lord Mayor Treloar. And Dr Kirk reports on the third
19 trial of prophylactic treatment there.
20 If we could go over to the next page, please,
21 page 6. Internal page 6., electronic page 10.
22 I won't take you through everything that was
23 said about that trial but just at the bottom, and
24 I quote from "Prof Stewart" onwards:
25 "Prof Stewart felt that prophylactic treatment

40

1 for haemophiliacs should not be entered into
 2 a large scale ..."

3 **SIR BRIAN LANGSTAFF:** I'm sorry, it's in the wrong
 4 highlight --

5 **MR HILL:** Just above that section, Paul. Thank you.
 6 "Prof Stewart felt that prophylactic treatment
 7 for haemophiliacs should not be entered into
 8 a large scale until there was sufficient evidence that
 9 it was beneficial to patients. Dr Rainsford said that
 10 the prophylactic trial was aimed to provide
 11 information for the future and not with the intention
 12 of immediate implementation."

13 I leave that there. Just to note that it is
 14 being discussed at the same meeting, which is
 15 January 1977.

16 If we could now turn, please, Paul, to page 14,
 17 which is the discussion about demands and estimates of
 18 demand.

19 Item 3, "Activities of Reference Centre
 20 Directors and the Supply of Factor VIII".

21 And I'm going to read a lengthy section from
 22 the minutes to give you an idea of the debate that was
 23 then taking place.

24 I quote:

25 "Prof Blackburn reported that there had been

41

1 met. Dr Biggs said that the target had not shifted.
 2 The first estimate given in recent years was
 3 40-50 million units ..."

4 She cites "(Biggs 1974)". That is a reference
 5 to the MRC paper.

6 "She did not know where the lower targets had
 7 come from. They certainly had not come from either
 8 the Expert Group on Haemophilia or the Haemophilia
 9 Centre Directors. Dr Barkhan asked if the figures
 10 covered total needs at Centres and meant that
 11 cryoprecipitate and commercial concentrates would be
 12 obsolete.

13 "Dr Biggs said that if the supply were
 14 unlimited, and neither patient nor doctor had to pay
 15 for the factor VIII, it was difficult to forecast how
 16 much factor VIII might be used. Doses could be
 17 increased and prophylaxis could become popular. The
 18 estimate of 40-50 million units per year made by the
 19 Haemophilia Centre Directors and the MRC Working Party
 20 concerned a minimum reasonable need. This amount
 21 would in their opinion supply enough factor VIII to
 22 cover for surgery and emergencies and give on-demand
 23 and home therapy sufficient to prevent crippling and
 24 to permit a reasonably active life. The amount would
 25 thus render the UK independent of supplies of plasma

43

1 several meetings of the Reference Centre Directors.
 2 Two major items of importance which the Reference
 3 Centre Directors considered were:-

4 "1) Supplies of factor VIII concentrate. It was
 5 established that the Blood Transfusion Service could
 6 supply sufficient plasma for fractionation to provide
 7 a minimum of 40,000,000 units of factor VIII
 8 per annum.

9 "2) There was a hold-up in the expansion of
 10 fractionation in the UK. Prof Blackburn was planning
 11 to organise a meeting to look into ways of expanding
 12 the facilities for fractionating. Dr Holman commented
 13 that the Directors had for years said that they wanted
 14 concentrate instead of cryoprecipitate. Was it true
 15 that the DHSS were making no provisions for expansion?
 16 Dr Jones declared his interest in this item as he was
 17 a paid Consultant to Hyland Laboratories until the end
 18 of February 1977 and he volunteered to withdraw from
 19 the meeting while the question of supplies were being
 20 discussed. It was agreed that he could stay.

21 Dr Waiter said that the target of factor VIII
 22 requirements had shifted over the years. The DHSS had
 23 understood that the capacity at Liberton, Elstree and
 24 Oxford was adequate. With the stated capacity of
 25 these centres a target of 50 [million] units could be

42

1 collected in other countries and included the present
 2 supplies of cryoprecipitate.

3 "The question about the maximum amount of
 4 material that could be made at the present
 5 Fractionation Units was raised.

6 "Dr Ellis said that 14-15 [million] units was
 7 the maximum amount for Elstree with the present plant
 8 and buildings. This included a proportion made in
 9 Oxford and was a final figure after current expansion
 10 was completed. Dr Macdonald gave a talk about
 11 supplies of factor VIII concentrate in the West of
 12 Scotland. Cryoprecipitate was originally made at the
 13 Glasgow Royal Infirmary and later by the west Scotland
 14 Blood Transfusion Service. Dr Macdonald referred to
 15 the costs of building the Protein Fractionation Centre
 16 (PFC) at Liberton and showed figures illustrating the
 17 amount of plasma which had been sent to Liberton from
 18 the West of Scotland for fractionation. Dr Macdonald
 19 said that the PFC at Liberton that the capacity to
 20 make 60 million units of factor VIII per year. To
 21 reach this target, the Centre would need about £25,000
 22 for new capital equipment and money for extra running
 23 costs which would include payment for staff to operate
 24 a 24 hour shift system of working. Dr Macdonald said
 25 that commercial factor VIII was at present used in the

44

West of Scotland. In 1976, 14% of all factor VIII was commercial. The supply of NHS factor VIII was increasing, and in 1976, 46% of all factor VIII used was freeze-dried NHS intermediate potency concentrate.

"Professor Blackburn said that it seemed as if the PFC at Liberton had capacity to supply factor VIII for the whole of the United Kingdom. Dr Waiter said that the DHSS, together with the SHHD, were planning the supply of factor VIII on a UK basis. Plans had been made to divert plasma from south of the border to Liberton when Mr Watt was ready to receive it. It was planned that the factor VIII made from this plasma would return to centres south of the border. Agreement in principle had already been reached between the DHSS in London and the Scottish Home and Health Department. Dr Prentice commented that there was a big difference between the target of 60 million units and what was actually available for use. Professor Hardisty said that as the plasma for fractionation in Liberton would have to come from all over England, including the south, perhaps it would be better to look into the possibilities of expanding the fractionation facilities in southern England where the largest number of blood donors [resided]. Dr Rainsford asked if England and Wales would be

45

to that end. That was the goal, and it was achieved and, indeed, it was superseded by 340,000 donations.

But that was not an assessment by the MRC working party of the total requirement for Factor VIII, either at that time or in the future. As we saw yesterday, that was a figure for the treatment of about 1,000 patients on home treatment.

As Dr Biggs said forcefully in those minutes that we have just looked at, the report authors had been clear that the overall requirement was higher and was in the region of 40 to 50 million international units per annum. That assessment was based upon patients receiving on-demand treatment and trying to clear at least some of the surgical lists. It was not based on prophylactic treatment.

Dr Waiter was, however, justified in pointing out that the advice that was being given to the DHSS, including from the Expert Group on the Treatment of Haemophilia and Allied Conditions, was to the effect that there was an upward trend in the use of Factor VIII products and, in particular, in the demand for concentrates. And that trend was also reflected in the newspaper campaigns and the political pressure that the DHSS were aware of at that time.

I'm going to turn next, sir, to the review of

47

charged for the use of fractionation facilities in Scotland. If so, might it not be as well to continue to buy commercial concentrates? Dr Holman asked when the Liberton PFC would be fully operational. Dr Waiter said that it was for the Scottish Home & Health Department and Mr Watt would decide when production was adequate to fractionate additional plasma. Dr Bidwell said that the reasons for the limitation of production varied from place to place. Plasma was the present limiting factor in Oxford. Next year, the Oxford production would be doubled, then the capacity for the building would be reached, and there was no possibility of extending on the present site."

We will leave the discussion there, sir.

Just to sum up some of what we can take from those various minutes and papers that we have looked at. There was a lack of consensus demonstrated about what constituted the target for Factor VIII requirements. The policy goal that was associated with the £500,000 of special funding, which we looked at yesterday, had been to achieve the short-term goal that emerged from the MRC working party report of 1974, namely increasing Factor VIII concentrate by dedicating 275,000 donations per annum

46

the clinical use of blood and blood products that was conducted by Dr Waiter and Mr Dutton. I wonder if that might be a convenient point to take a break.

SIR BRIAN LANGSTAFF: Yes. Well, we'll take a break now until 11.50. 11.50.

(11.19 am)

(A short break)

(11.49 am)

SIR BRIAN LANGSTAFF: Yes?

MR HILL: We're going to return now, sir, to the review of the clinical use of blood and blood products that was proposed by the Central Committee of the NBTS in 1976. And that review was conducted by Mr Dutton and Dr Waiter.

The review was proposed as part of that debate that we had been discussing about the type of treatment that people with haemophilia should receive from the NHS, and also was part of a debate about clinical usage of blood products and whether or not there was waste. Again, more detail is provided in appendix 2.

Although that may be why the review was commissioned, Dr Waiter and Mr Dutton went off on a slightly different track and produced a more general document, which is of interest because it shows

48

1 a contemporary insight into the difficulties that
2 Mr Dutton and Dr Waiter faced, both in estimating
3 future demands and in achieving self-sufficiency in
4 domestic products in the United Kingdom. Mr Dutton
5 and Dr Waiter were the two officials who were probably
6 most involved in this area at this time, and so the
7 document has a particular resonance because of that.
8 And I'm going to read extensively from it.

9 Before we get to the document itself, we have
10 the covering minute.

11 Paul, this is at DHSC0002181_045.

12 We can see Mr Dutton and Dr Waiter's name in the
13 bottom right-hand corner, and the date is given,
14 October 1976, in the bottom left-hand corner.

15 Paragraph 1 sets out what they were asked to do,
16 which was to review the clinical use of blood and
17 blood products and to examine whether optimal use was
18 being made of the raw material, namely donated blood.

19 Then paragraph 2, and I'll read it in full.

20 "In the course of preparing the paper it became
21 apparent that little information was available to show
22 whether current practices represented optimal use of
23 these products or whether the figures were misleading,
24 due to wasteful practices, and should not therefore be
25 used as a basis for planning. It was also difficult

49

1 originally prepared by one of the joint secretaries
2 for a Departmental meeting. It forms a background to
3 the problem and the Committee's views on the paper are
4 also invited."

5 So it is Mr Dutton and Dr Waiter presenting more
6 of a reflective piece on the problems that were faced
7 more generally.

8 If we could turn to the next page, please, this
9 is the paper itself.

10 **SIR BRIAN LANGSTAFF:** Whose paper is it?

11 **MR HILL:** Well, it is either Mr Dutton or Dr Waiter, but
12 it is presented as --

13 **SIR BRIAN LANGSTAFF:** Yes, but does it have initials on it
14 at any point or not?

15 **MR HILL:** Not that I have seen. It's dated
16 September 1976. We can try to dig out whether or not
17 it is Mr Dutton or Dr Waiter, but --

18 **SIR BRIAN LANGSTAFF:** It may matter, it may not.

19 **MR HILL:** I'm not -- from what I have seen, I haven't seen
20 a great divergence in views from Mr Dutton and
21 Dr Waiter. And certainly, in the covering minute,
22 they are happy to put it forward in their names
23 jointly.

24 **SIR BRIAN LANGSTAFF:** So it was prepared a month earlier,
25 probably, because this memo, October '76, doesn't give

51

1 to obtain, from the information available in
2 respect of any product, a reliable estimate of the
3 amount required in the foreseeable future, since in
4 many instances the pattern of treatment which had
5 developed may well have resulted from current
6 shortages which might in time be overcome."

7 Paragraph 3:

8 "In addition, suggestions have recently been
9 made that the present organisation of the NBTS might
10 not be perfectly adapted to respond to trends in
11 demand."

12 Paragraph 4:

13 "At a meeting on 20 October representatives of
14 the Health Departments met to consider how to form the
15 best available view on likely future trends in the
16 demand for blood and blood products."

17 I pause there, sir, to say that is a reference
18 to the working group on trends in demand for blood
19 products, the Trends Working Group, which we'll come
20 to later today.

21 Paragraph 6 of the covering minute:

22 "The attached paper is a more general view" --

23 **SIR BRIAN LANGSTAFF:** "... in a more general vein ..."

24 **MR HILL:** "... a more general vein", sorry.

25 "The attached paper in a more general vein was

50

1 a date, but if it's September '76, it's the month
2 before.

3 **MR HILL:** Yes, the final page of the document, which is
4 electronic page 6, we can see in the bottom left-hand
5 corner: September 1976.

6 **SIR BRIAN LANGSTAFF:** Yes, again, no actual date, but --

7 **MR HILL:** No actual date, but yes.

8 **SIR BRIAN LANGSTAFF:** It may simply be, because it was
9 typed, they left a space for someone to put it in in
10 handwriting.

11 **MR HILL:** It could be.

12 **SIR BRIAN LANGSTAFF:** That, I think, was a practice which
13 we've seen elsewhere.

14 **MR HILL:** Yes.

15 **SIR BRIAN LANGSTAFF:** Anyway.

16 **MR HILL:** Turning to the paper, it is entitled:

17 "Problems facing the National Blood Transfusion
18 Service -- particularly with regard to the provision
19 of blood components."

20 The first paragraph discusses component therapy
21 and the different types of component. I'm going to
22 pick it up from paragraph 2, and then read through.
23 What is said is this --

24 **SIR BRIAN LANGSTAFF:** Sorry, could you just go back for
25 a moment to the first -- thank you.

52

1 The starting point is that bit in quotes under
 2 paragraph 1, is it? That the philosophy is
 3 essentially "to give the patient only [the bit that]
 4 he lacks", if you're using replacement or component
 5 therapy, and thereby "promoting more effective and
 6 safer treatment", well, because it's dedicated, "and
 7 the optimal use of blood", in other words, if you use
 8 that bit for this purpose, you have all the other bits
 9 for other purposes.

10 **MR HILL:** Yes, sir.

11 **SIR BRIAN LANGSTAFF:** So that's the starting point.

12 **MR HILL:** That's the starting point. That is what
 13 component therapy is intended to achieve.

14 **SIR BRIAN LANGSTAFF:** And then it deals with the blood
 15 components that they're going to talk about: the
 16 red cells, the white cells, platelets, whole plasma,
 17 plasma components.

18 **MR HILL:** Yes, the paper itself doesn't actually go on to
 19 discuss that in a great deal of detail. It takes the
 20 more general view about structural issues, which helps
 21 to explain where the NBTS and the SNBTS were at that
 22 time, and the difficulties that faced them in trying
 23 to make more efficient and effective use of blood
 24 products. And --

25 **SIR BRIAN LANGSTAFF:** Yes, so the idea is essentially an

53

1 currently being encountered appear to arise to
 2 a substantial extent from the complication of
 3 financing a service in which Regions make
 4 a contribution to a national programme for the
 5 provision of a particular blood component and in so
 6 doing incur expenditure which may bear no relationship
 7 to the value of the amount of that component which the
 8 Region requires for its own purposes. There are many
 9 reasons why a Region's ability to contribute to a
 10 national programme may not always match its
 11 requirements for the finished product.

12 "4. As long as the collection, testing and
 13 despatch of whole blood was the predominant occupation
 14 of blood transfusion centres they were able to
 15 function as independent regional units which were
 16 largely self-sufficient except in times of emergency.
 17 The adequacy of independent self-sufficient regional
 18 units was however greatly reduced with the
 19 introduction of component therapy on a large scale.
 20 What now appears to be needed is some method of
 21 building up a 'production partnership' between the
 22 individual Regional Transfusion Centres and the
 23 central Blood Products Laboratories so that they each
 24 contribute to the maximum to the total NHS requirement
 25 for blood products, possibly according to an agreed

55

1 idea which we've seen in other contexts more recently,
 2 perhaps, of making use of every part of everything
 3 that you're harvesting.

4 **MR HILL:** Yes, that's right.

5 **SIR BRIAN LANGSTAFF:** Yes.

6 **MR HILL:** If we go to paragraph 2, what is written is
 7 this:

8 "Devising and effectively managing a balanced
 9 programme for the preparation and distribution of
 10 these components is probably the most urgent task
 11 facing the NBTS. Apart from the high level of
 12 technology and expensive plant which the production of
 13 certain components require, there is the difficulty,
 14 if excessive waste is to be avoided, which arises
 15 because components are not necessarily present in
 16 blood in the proportions in which clinicians are
 17 accustomed using them. It is estimated that the
 18 treatment of the 3,000 haemophilia patients alone will
 19 require the fractionation of something approaching
 20 1 million blood donations annually, and meeting this
 21 requirement will greatly influence the availability
 22 of the other blood components beside Factor VIII."

23 "3. There is ample evidence that the NBTS has
 24 the knowledge and experience to meet NHS requirements
 25 for most blood components in full. The difficulties

54

1 programme.

2 "5. The customary method of financing the NBTS
 3 is not conducive to the development of such
 4 a partnership and it was probably this more than any
 5 other single factor which led to the delay in mounting
 6 the AHG (Factor VIII) Concentrate products programme."

7 **SIR BRIAN LANGSTAFF:** Just pause there. So this is
 8 blaming the delay in being able to produce enough
 9 Factor VIII for haemophiliacs on the way in which the
 10 Government had chosen to organise the finance?

11 **MR HILL:** Yes, save for the idea of Government having
 12 chosen that way. It was a way that had developed.

13 **SIR BRIAN LANGSTAFF:** Well, who is in control of it?

14 **MR HILL:** Well, that, sir, is a question about
 15 the foundations of the NHS and the way that the NHS
 16 developed.

17 **SIR BRIAN LANGSTAFF:** Yes.

18 **MR HILL:** It wasn't selected as a particular system; it
 19 had evolved that way. But yes, the core point is that
 20 the structure that had developed by that stage was not
 21 conducive to the production of Factor VIII in large
 22 scale, according to this paper.

23 **SIR BRIAN LANGSTAFF:** Yes.

24 **MR HILL:** It is, sir, a view which Dr Lane shares, as we
 25 will hear in due course.

56

Returning to the document:
 "It was not until there were specific allocations of money to Regions, based on the extra expenditure which they were expected to incur in achieving a national target, that production of plasma for the preparation of freeze-dried concentrate began to build up."

That, sir, I take to be a reference to the special allocation of funding in 1975.

"Furthermore, the present method of financing blood products production in the NHS is totally inimical to any rationalisation of the production processes at present carried out at individual blood transfusion centres.

"6. It could be argued that no change in the existing financial arrangements would be required if the efforts of all Regions in contributing to the production of particular components were so arranged as to match their requirements. It is, however, very doubtful whether NHS self sufficiency in blood products could be achieved on this basis, especially in the face of competition from commercial suppliers, if only because such an arrangement would largely stultify attempts to rationalise harvesting and processing arrangements.

57

possibly £1-1.5 million per annum without a clear idea, in many instances, of what the clinicians require. Furthermore, opportunities for bringing the range, properties and indications of blood products to the notice of clinicians, and for influencing their choice, are limited. The uncertainty of clinicians about their requirements is understandable, but it creates major problems for the NBTS and the central Blood Products Laboratories. The clinicians now believe that they will require three times the amount of Factor VIII originally forecast, and there is equal uncertainty about the amount of the specific immunoglobulins required. There are widely differing views on the amount of PPF required. Some clinicians believe that PPF requirements will eventually govern the amount of blood which must be collected, while others maintain that sufficient PPF is already available if full use is made of synthetic substitutes.

"9. In some cases, the reason for the clinicians' uncertainty is well known, as, for example, with Factor VIII, where the availability of the Factor has opened up new treatment possibilities such as home treatment and rehabilitative surgery. In others, the uncertainty may arise from complete

59

"7. It is tempting to think that all processes in the preparation of blood components could be costed so that there could be 'full accountability' at all stages between parties to any transaction concerned with the preparations of blood components. A major problem would arise, however, in apportioning to each of 30 or so products a proportion of the costs of collecting blood, testing it and harvesting components and a complete costing system would be expensive to introduce and operate. A simple arrangement of pricing products so that clinicians can be aware of the value of the blood products they use is however necessary if they are to be used economically. The most immediate requirement appears to be to acquaint Finance Division with the problems inherent in blood component production on the scale now required and seek their advice on means of financing the 'production partnership' which is necessary between the Regional Transfusion Centres and the central Blood Products Laboratories.

"8. Another major source of difficulty for the NBTS arises from the fact that the RTCs [Regional Transfusion Centres] and the central Blood Products Laboratories and the Department have responsibility for a blood components production project costing

58

unawareness that a product is available or doubts about the value of particular components. At the root of the problem lies the fundamental question of whether, in preparing blood components, the NBTS should simply respond, where there is a manifest demand for a product, or should seek to prepare new products, convince clinicians of their value and advise on their use. If the NBTS were to adopt a completely passive role, interest would soon wane, and the industry would probably take over to a greater extent than at present. On the other hand, an aggressive selling role seems equally out of place. At present, Regional Transfusion Directors do what they can to educate clinicians about the use of blood components, but it is doubtful whether, as component therapy expands, they can succeed unaided. The efforts of the NBTS will be largely wasted if their work in preparing components is not matched by a parallel effort to educate clinicians about their use. This subject might usefully be aired on the Central Committee once the Department has a clearer view about what it wishes to achieve.

"10. In view of Ministers' concern that the NHS should attain self-sufficiency in blood products, the Department should consider carefully what is involved.

60

So far, self-sufficiency has been thought of almost entirely in terms of Factor VIII requirement, but there are other blood components available to the NHS from commercial sources. Self-sufficiency in blood products is clearly not a static situation which, once achieved, will require only infrequent modification. In its fullest sense it would mean attempting to keep up with developments in the world industry in blood products which shows few signs of reducing its activities, despite WHO resolutions about the undesirability of relying on paid blood donors. It might be advisable to obtain the views of the Central Committee on what self-sufficiency in blood products can mean in practice, given the strength and limitations of the NBTS, including, possibly, the extent to which it is considered necessary to resort to plasmapheresis."

I won't take you all of the way through paragraphs 11 and 12 which concern cryoprecipitate yields and the range activities that Regional Transfusion Centres should undertake in preparing blood components. I will pick it up again at paragraph 13 which is the final paragraph:

"For those blood products which are not prepared solely to meet regional requirements, equitable

61

covering minutes to a working group that was being established to look at trends, and that is the working group on trends in the demand for blood products.

What we have on the screen is the second draft of their report. I'm afraid this is the most final version that we have been able to provide. It is also the version that is referred to by Dr Lane in his fifth draft proof of evidence. We can see in the top right-hand corner it is dated 10 October 1977, so that is the date of this document. But as we can see from the first paragraph, the working group itself was appointed in January 1977. Its members are listed there on the first page. The Chairman is Mr Benner from the DHSS. Its members are Dr Cash from Edinburgh and South East Scotland Blood Transfusion Service; Dr Darnborough, a regional blood transfusion director from East Anglia; Dr Helen Dodsworth, a senior lecturer in haematology at St Mary's Hospital in London; Dr Gillies, a consultant anaesthetist at the Royal Postgraduate Medical School in London; Dr Maycock, the director of BPL; Dr McIntyre of the Scottish Home and Health Department, and Dr Waiter of the DHSS. Those are the members. The secretary is Mr Dutton. And as the asterisk shows, Dr McIntyre was replaced by Dr Bell in July 1977. Both of those are

63

distribution arrangements must be worked out. The problem is at present being encountered in connection with the distribution of Factor VIII prepared at the Central Blood Products Laboratories, where distribution arrangements based on numbers of haemophilia patients in a region may mean that the amount of finished product may not be related to the amount of plasma sent for processing."

And that, sir, is the end of the paper. There is a summary at paragraph 150 of the written presentation.

SIR BRIAN LANGSTAFF: Thank you.

MR HILL: Turning back to the question of estimates for demand, something which Mr Dutton and Dr Waiter had highlighted in their paper was a difficulty for the NBTS. This is an issue which is set out in appendix 1 in some detail. I'm not going to go through all of that detail here, but I will take you to several documents from this period, and we're in 1977 at the moment, which show the thinking at that time about the demand for Factor VIII that would need to be met in the UK.

If we could go first, please, to CBLA0000672. I mentioned when going through Dr Waiter's and Mr Dutton's paper that there was a reference in the

62

medical civil servants from the Scottish Home and Health Department.

The terms of reference are at the bottom of the first page. They are:

"To consider the likely trends in the demand for blood products over the next five to ten years, taking into account the practicalities of supply."

It is important to note, sir, that it is about blood products generally, not just about Factor VIII.

If we go over to the top of the next page, please, Paul. What is written in the report is this, and I quote:

"At our first meeting, it was explained that the Department was not seeking a series of precise forecast of future requirements; what was needed were broad estimates of likely requirements of each of the major blood components which would enable the health departments, in conjunction with Health Authorities, to plan the development of Blood Transfusion Services and to consider the financial and other resource implications."

If we could go, please -- just before we do, sorry. The next sentence sets the context as well:

"The broad aim of the Health Departments, in conformity with the World Health Organisation's

64

resolutions, is to achieve NHS self-sufficiency in therapeutic blood products and to discontinue the present practice whereby the commercial manufacturers of blood products supply part of the needs of the service, particularly factor VIII concentrate, albumin solutions and certain immunoglobulins."

I'll read on:

"The demand for blood products does not necessarily reflect the need for them. There may be some wastage due to a lack of appreciation of the properties of certain blood products, and to some extent fashion and treatment may inflate the demand for a particular product to an extent which does not solely reflect clinical requirements. Our estimate of albumin requirements is based on the assumption that as experienced in the use of this and other plasma fractions grows, wastage of this kind will diminish and the extent of use of protein solutions will stabilise."

On to paragraph 3, please, Paul.

"We started from the assumption which has gained widespread acceptance in Europe and North America that a blood transfusion service which collected enough blood to provide for its needs of albumin and factor VIII could also produce another of the other

65

On the basis of the best estimates presently available we believe that if sufficient blood were to be collected to provide 200 [mls] of albumin" --

SIR BRIAN LANGSTAFF: Grams.

MR HILL: Sorry.

"... 200 [grams] of albumin per 1,000 population, approximately 1,300 [international units] of Factor VIII would also be available per 1,000 population, an amount sufficient for all likely needs, especially if it is possible to improve yields of Factor VIII."

So what they are saying there is: if we can achieve sufficient plasma and production for albumin, that is going to be more than enough, by our calculation, for Factor VIII.

At paragraph 160 of the written presentation we can see --

SIR BRIAN LANGSTAFF: Just for a moment, just go back, please, to the highlight. Thank you.

The annual donor collection rate, that's five people per hundred, so it's 5% of the population being active donors, which is -- it's on the high side but it's within the range we heard about from the Regional Transfusion Centre Directors that have given evidence to us. So it's a reasonable collection rate but it

67

major components to meet future needs as far as they could be judged on the basis of present practices and discernible trends. We believe this to be correct; but we nevertheless decided to consider requirements of all the major components."

Paragraph 4 goes on to discuss albumin and the requirements for albumin.

If we could just go to the end of that, on electronic page 3 of the document, the conclusion that the Trends Working Group comes to is this, I quote:

"We estimate that within the next 5 to 10 years the annual amount of albumin required can be expected to grow from a basic minimum of about 100 milligrams per thousand population to some 200 milligrams per thousand population. Current annual production in England and Wales is about 50 milligrams per thousand of the population."

If we could go down, please, to paragraph 6. That was about albumin, and it's important -- the importance of that figure for Factor VIII is expressed in paragraph 6.

"We accept the estimate that to meet the needs of haemophiliacs in the foreseeable future the amount of Factor VIII produced will have to be about 1,000 [international units] per 1,000 population per annum.

66

does look to make sure that you maintain your 5% of the population at any one time donating blood.

MR HILL: Yes, that is the assumption that is made there, as part of their calculation.

SIR BRIAN LANGSTAFF: Yes.

MR HILL: The figure that is given there, of 1,000 international units per 1,000 of population per annum, Dr Lane translates that as 60 million international units.

SIR BRIAN LANGSTAFF: Yes.

MR HILL: The reference for that is BART0000686.

SIR BRIAN LANGSTAFF: Well, it's as many millions as there are people in the population.

MR HILL: Yes.

SIR BRIAN LANGSTAFF: So it's whatever the population is of the UK would be -- I suppose, at this time, would be around 60 million. Maybe slightly less, actually.

MR HILL: I think it's around 50 million. But the translation is to --

SIR BRIAN LANGSTAFF: No, of the UK. I think you're thinking England, perhaps.

MR HILL: In 1977 -- I don't have the figures to hand -- I'm not as sure it was as high as 60 million in the UK. But I'm not sure, sir, that is quite the point.

SIR BRIAN LANGSTAFF: It doesn't much matter. It's

68

1 a broad figure.

2 **MR HILL:** Yes. Dr Lane's translation, though, isn't per

3 head of population; it is into international units of

4 Factor VIII activity.

5 **SIR BRIAN LANGSTAFF:** Yes.

6 **MR HILL:** So he --

7 **SIR BRIAN LANGSTAFF:** But it's per so much of

8 the population, and that's where it comes -- it's

9 1,000 units per 1,000 of the population, ie, one unit

10 per person.

11 **MR HILL:** Um ...

12 **SIR BRIAN LANGSTAFF:** If you go back to the way --

13 **MR HILL:** Yes, possibly so, sir. But the --

14 **SIR BRIAN LANGSTAFF:** If you look at the first sentence

15 there, 1,000 international units per 1,000 population

16 per annum equates to one unit per person, so however

17 many million people you have in the country, you have

18 exactly one unit each. So if it's 56 million people

19 in the country, 56 million units.

20 **MR HILL:** Presumably that is where Dr Lane gets his figure

21 from, the reference is BART0000686.

22 **SIR BRIAN LANGSTAFF:** Yes.

23 **MR HILL:** Dr Walford gives a different figure in her

24 evidence, which is 74 million international units, and

25 that is at INQY1000136. We understand that to be

69

1 "We believe that if the Blood Transfusion

2 Services are successful in meeting the requirement for

3 albumin which we have outlined, there could also be

4 sufficient Factor IX to meet anticipated requirements

5 of this component but additional fractionation

6 capacity maybe needed."

7 So that is the consideration that is given to

8 Factor IX.

9 If we go to the bottom of that page, the Trends

10 Working Group conclude, and I quote:

11 "Considerable further investment in collecting,

12 testing, processing and premises will be required to

13 achieve these targets. It will be a major undertaking

14 for most Regional Transfusion Centres to increase

15 further both blood collection and output of red cell

16 concentrates. It is not expected that, given adequate

17 publicity, difficulty will be encountered in

18 recruiting the additional donors needed to provide

19 200 grams albumin per 1,000 population per annum, but

20 increased blood-collecting resources, accommodation,

21 and equipment will be needed in the Regional Centres.

22 "Additional fractionation capacity is also

23 needed, even allowing for some possible expansion of

24 the Liberton plant's output. The present UK

25 capability is less than half that we regard as

71

1 a reference to how much would be achieved if 1,300

2 international units per 1,000 of population was

3 achieved.

4 So the two slightly different -- what appear to

5 be two slightly different figures are actually

6 relating to the different measures which are contained

7 in paragraph 6. One is what the Trends Working Group

8 say is necessary for Factor VIII, which is the lower

9 figure, 60 million international units. The second is

10 the higher figure, which is what they say would be

11 achieved were the albumin figures that they have

12 recommended to be achieved.

13 If we turn over the page, there is a discussion

14 about Factor VIII being lost in collection, storage

15 and processing. And then it says this, and I quote:

16 "We believe" --

17 Sorry, on page 4, I think. You may have gone on

18 ahead of me there. Thank you.

19 So it's the top paragraph:

20 "We believe that the long term aim should be the

21 complete transfer of cryoprecipitate to a fractionated

22 freeze dried concentrate. However, guidance will be

23 needed on a continuing basis from Regional Transfusion

24 Centres on the time scale of such a development;"

25 It then goes on to say:

70

1 essential. Additional major investment is, therefore,

2 also needed for this."

3 There is an echo, sir, in that comment of the

4 paper by Dr Bidwell that we looked at earlier this

5 morning.

6 **SIR BRIAN LANGSTAFF:** So this is Dr Waiter or Mr Dutton,

7 one or the other, but both agreeing, effectively, at

8 the time, the senior officials in the department

9 saying, "If we're going to achieve self-sufficiency we

10 need to spend some money to -- major investment is

11 needed in essentially providing the plant."

12 **MR HILL:** The words used by the report are "considerable

13 further investment".

14 **SIR BRIAN LANGSTAFF:** Yes, well, that's what it means,

15 isn't it?

16 **MR HILL:** Yes.

17 **SIR BRIAN LANGSTAFF:** So this is anticipating that you

18 will need to expand, redevelop or build a new BPL

19 either at Elstree or somewhere else.

20 **MR HILL:** Yes. It doesn't necessarily say that a new BPL

21 rather than a redeveloped BPL.

22 **SIR BRIAN LANGSTAFF:** No, but it's envisaging major

23 investment.

24 **MR HILL:** Yes.

25 **SIR BRIAN LANGSTAFF:** And in order to double the capacity.

72

1 **MR HILL:** Absolutely, yes.
 2 The issue of who puts their name to this,
 3 Dr Waiter is a substantive member of the Trends
 4 Working Group. Mr Dutton is the secretary. I don't
 5 know if that is of any great significance. But
 6 Dr Maycock was at the time the consultant advisor to
 7 the DHSS as well. So although it comes from the group
 8 of eight members chaired by Mr Benner of the DHSS, and
 9 also containing a member from the SHHD, it is
 10 a working group which has representation of officials
 11 on it as well as external experts.
 12 **SIR BRIAN LANGSTAFF:** Yes, I see. Yes. So it's -- yes,
 13 the expert view is what we need.
 14 **MR HILL:** Yes. And that expert view was communicated to
 15 the DHSS and the SHHD.
 16 **SIR BRIAN LANGSTAFF:** Yes.
 17 **MR HILL:** We know that the DHSS considered this, not just
 18 because of the presence of those individuals on the
 19 committee, but also because we have a draft minute
 20 from Mr Dutton, which is stated to be written on
 21 3 January 1977, but this may be an error for
 22 3 January 1978, given when that draft report was
 23 prepared. I won't take you to it, it is quoted at
 24 paragraph 163 of a written presentation. Mr Dutton
 25 said, and I quote:

73

1 the outset.
 2 There is a reference if we could go, please, to
 3 DHSC0105496_010. This is the minutes of the
 4 164th regional meeting of the Regional Transfusion
 5 Directors. It's 8 December 1976, so a little before
 6 the report that we have just been looking at.
 7 Dr Maycock in the chair, various others present.
 8 If we could go, please, to page 5,
 9 paragraph 5.3:
 10 "Future target.
 11 "The meeting agreed that the figure of
 12 50 million international units, in all forms, would
 13 need careful confirmatory examination, and if it were
 14 a fact confirmed, long-term detailed planning would be
 15 necessary. Procurement of the plasma itself might not
 16 prove difficult (donor panels had doubled in some
 17 centres in the last two years without active
 18 recruitment). Some RTDs suggested that the planning
 19 of Factor VIII targets was yet another reason for
 20 advocating that the NBTS should become a national
 21 service."
 22 We can see in December 1976 a figure of
 23 50 million international units in all forms. So
 24 Factor VIII and cryoprecipitate being set out as
 25 a possible basis for long-term planning, but that

75

1 "The question of the acceptance or otherwise of
 2 the report hardly arises since essentially it says no
 3 more about Factor VIII requirements than some experts
 4 have been saying for years, and which has now come to
 5 be generally accepted."
 6 Now while, as a general observation from
 7 Mr Dutton, that may be valid, there were a number of
 8 criticisms made of the assumptions within the Working
 9 Trends report. They are discussed in appendix 1.
 10 In November 1978, Dr Lane said that he expected
 11 the estimate of 60 million international units to be
 12 surpassed that year, 1978, so the year after that
 13 report was produced, and that 100 million
 14 international units was a more realistic assessment
 15 for the 10-year period.
 16 What emerged following the production of this
 17 report, and around the time of its production, was
 18 a production target of around 50 million international
 19 units being adopted in various quarters. It's not
 20 entirely clear to the Inquiry's legal team where that
 21 figure has come from. It may well date back to
 22 the original MRC working report -- sorry, MRC Working
 23 Party report, and as we have seen, Dr Biggs and others
 24 forcefully restated that they had maintained a figure
 25 of between 40 and 50 million international units from

74

1 would need careful confirmatory examination. It may
 2 be that it was felt that the report of the working
 3 group on trends had provided that confirmation, albeit
 4 at a slightly higher figure of 60 million rather than
 5 50 million.

6 But however the figure emerged, and whether it
 7 is 50 million or 60 million, it threw into question
 8 the capability of fractionation plants in England and
 9 Wales to produce the level of concentrates required,
 10 either on their own or in collaboration with PFC in
 11 Scotland. That point was made by the Trends Working
 12 Party, as we have seen. It was also made by
 13 Dr Bidwell.

14 The maximum capacity of BPL and PFL in June 1978
 15 was said by the Secretary of State to be 15 million
 16 international units. That figure was given by
 17 Dr Maycock in the meeting of 26 July 1976 that we
 18 looked at earlier. It is also consistent with the
 19 figure that the Inquiry legal team have adopted for
 20 this tomorrow.

21 So 50 million for England and Wales, a figure
 22 not precisely known for PFC, but a sense in the Trends
 23 Working Party and from Dr Bidwell that collectively
 24 that was nowhere near enough to produce the amount of
 25 Factor VIII that was required.

76

1 Before we turn to look at the effect that this
2 had on BPL and the programmes that were put forward to
3 increase capacity as a result, it's necessary to spend
4 a little time, I'm afraid, discussing the management
5 structures at BPL. And as I do this, I think it might
6 be helpful to have on screen INQY0000333 at page 68,
7 please. If we could expand the table, please.

8 This comes from the written presentation at
9 paragraph 178. It is a simplified table showing the
10 different periods involved that we will discuss in
11 a second, but it's an aide memoire to look at as we go
12 through.

13 The references for this section are set out in
14 the written presentation from paragraph 167, so
15 I won't repeat them here. It draws heavily on the
16 evidence given in the fifth draft proof of evidence
17 from Dr Lane and from Dr Walford's evidence to you.

18 Dr Lane traced BPL's history back to 1943 when
19 the Medical Research Council -- Medicines Research
20 Council Blood Filtration Unit moved from Carshalton to
21 the Lister Institute of Preventative Medicine at
22 Chelsea. That's 1943. Its site of operations moved
23 to Elstree in 1954 --

24 **SIR BRIAN LANGSTAFF:** From Cambridge. I think there was
25 a unit at Cambridge, wasn't there? The production

77

1 in 1946 to the MRC Blood Products Research Unit, and
2 the unit pursued work which had begun there on
3 preparation of plasma fractions for clinical use. In
4 addition, it continued the production of dried plasma
5 in plants which were moved to Chelsea and Elstree
6 following the closure of the Cambridge unit."

7 **SIR BRIAN LANGSTAFF:** So he is suggesting that it was
8 a production unit at Cambridge?

9 **MR HILL:** Well, there was a production unit in Cambridge.
10 There was a blood filtration unit in Carshalton.

11 **SIR BRIAN LANGSTAFF:** Yes. So the production unit was at
12 Cambridge at the end of the war and moved to -- have
13 I misunderstood what you're saying?

14 **MR HILL:** No. I think that is what Dr Lane is saying,
15 yes. There was a ... yes, there was an MRC plant at
16 Cambridge.

17 **SIR BRIAN LANGSTAFF:** It may not matter. It's a place,
18 after all --

19 **MR HILL:** Yes.

20 **SIR BRIAN LANGSTAFF:** -- but it's -- and it's -- but it's
21 within our terms of reference. So, essentially, it's
22 interesting background to the history of what then
23 happened to Lister. So Lister at Chelsea has it,
24 does it?

25 **MR HILL:** Yes. Certainly the Carshalton plant moves to

79

1 unit in wartime. My understanding, from what we've
2 heard earlier, was that there was a wartime unit
3 established by the MRC. That was essentially at
4 Cambridge, and that moved in '54 to Lister. But that
5 may need to be checked.

6 **MR HILL:** What Dr Lane says at paragraph 4 of his draft
7 statement is:

8 "BPL had been established at Elstree since 1954,
9 but I understand that its history goes back to 1943
10 when the Medical Research Council blood filtration
11 unit moved from the London County Council laboratories
12 at Carshalton to the Lister Institute of Preventative
13 Medicine at Chelsea."

14 **SIR BRIAN LANGSTAFF:** A different version, then, than
15 appears elsewhere which I've just recently come across
16 in my reading of documents available to the Inquiry.

17 **MR HILL:** I think it may be explained by what Dr Lane says
18 next:

19 "With associated research on the preservation of
20 human blood, plasma and serum, large amounts of plasma
21 were prepared for freeze drying in the MRC plant at
22 Cambridge, serving military and civilian needs.
23 Continuing under the joint management of the MRC and
24 the Lister Institute on behalf of the Ministry of
25 Health, the title of the filtration unit was changed

78

1 Chelsea. The Cambridge plant seems to continue for
2 a while.

3 **SIR BRIAN LANGSTAFF:** And then moved to Elstree.

4 **MR HILL:** In 1954, there is a move to Elstree. What
5 continues or doesn't continue at Chelsea is, I'm
6 afraid, outside knowledge.

7 **SIR BRIAN LANGSTAFF:** Well, I think my understanding is
8 that Lister occupied premises which it owned in
9 Chelsea, at the end of Chelsea Bridge or near Chelsea
10 Bridge.

11 **MR HILL:** Yes.

12 **SIR BRIAN LANGSTAFF:** That's where it conducted a lot of
13 its research, which, since it was established around
14 about the turn of the century -- that century --
15 initially to do research into maybe smallpox or
16 tuberculosis and it gained a number of Nobel Prize
17 winners in the course of its operations in research.
18 It had the premises at Chelsea which it then occupied
19 until -- because of economic difficulties, it had to
20 surrender those in the early, mid to mid '70s, sold
21 them, and continued at Elstree which it also had come
22 to own. I don't know the history of that, but you're
23 indicating it was -- certainly the site was available
24 in 1954.

25 **MR HILL:** Yes, but on Dr Lane's evidence --

80

1 **SIR BRIAN LANGSTAFF:** Yes --
 2 **MR HILL:** -- that's when the Elstree site begins its role
 3 within the Lister Institute.
 4 **SIR BRIAN LANGSTAFF:** And that was a transfer from
 5 Cambridge. The operation unit, post-war operation
 6 unit transfers from Cambridge to Elstree, on what he's
 7 saying.
 8 **MR HILL:** Yes, and also --
 9 **SIR BRIAN LANGSTAFF:** If it's right.
 10 **MR HILL:** And also the blood filtration unit moves, which
 11 had been in Carlshilton and was then in Chelsea, also
 12 goes to Elstree.
 13 **SIR BRIAN LANGSTAFF:** That goes to Elstree as well?
 14 **MR HILL:** That is my understanding of what Dr Lane says.
 15 **SIR BRIAN LANGSTAFF:** But the research unit goes to
 16 Chelsea, does it?
 17 **MR HILL:** That I don't know, sir.
 18 **SIR BRIAN LANGSTAFF:** I see. So maybe something moves
 19 from Chelsea to Elstree in 1954?
 20 **MR HILL:** Yes. And that -- Dr Lane says -- that, I think,
 21 is the blood filtration unit which is 1954.
 22 **SIR BRIAN LANGSTAFF:** I see. Thank you.
 23 **MR HILL:** As Cambridge closes down, Elstree takes on --
 24 **SIR BRIAN LANGSTAFF:** Yes.
 25 **MR HILL:** -- that role as well.

81

1 of the Central Committee of the National Blood
 2 Transfusion Service. So it's the NBTS, the Central
 3 Committee of the NBTS, and a subcommittee of that
 4 Central Committee advised on blood products and Blood
 5 Group Reference Laboratories.
 6 In September 1978, the Lister Institute ceased
 7 operations at Elstree, it realised its capital
 8 resources and returned to a role, as you've said, sir,
 9 supporting basic research.
 10 This left BPL in something of a limbo.
 11 The North West Thames Regional Health Authority steps
 12 in on an interim basis to take over as the legal
 13 employing authority on behalf of the DHSS. So the
 14 employees need somebody to employ them, and that is
 15 the role that is taken by the North West Thames
 16 Regional Health Authority.
 17 A new management body, the joint management
 18 committee, was formed to determine policy, planning
 19 and financial affairs, and it comprised mainly
 20 representatives of North West Thames Regional Health
 21 Authority and representatives of the DHSS. It held
 22 its first meeting on 13 December 1978, and its work
 23 was assisted by a Scientific and Technical Committee,
 24 and we're going to look at some of the papers from
 25 that Scientific and Technical Committee in due course.

83

1 Dr Lane's understanding was that there was
 2 a complex set of management arrangements, with the MRC
 3 responsible on behalf of the DHSS for policy,
 4 budgetary approval, planning and building
 5 developments, while the Lister Institute continued to
 6 employ the staff and continued to lease the Elstree
 7 site. So a complicated set of arrangements.
 8 On Dr Lane's account, the MRC's role diminishes
 9 over time, such that the extension that was completed
 10 at Elstree in 1972 was built with the Lister Institute
 11 acting as the client.
 12 In 1975, the Lister Institute took over full
 13 responsibility for the administration of BPL on behalf
 14 of the DHSS, who continued to provide the funding.
 15 So that is why we have the move from the first
 16 row to the second row in the table. The MRC is
 17 dropping out of the picture.
 18 **SIR BRIAN LANGSTAFF:** The Lister Institute was a not for
 19 profit organisation, I think, but it wasn't the NHS.
 20 **MR HILL:** It wasn't the NHS, yes.
 21 The management of BPL was assisted at this time
 22 by an advisory body, not an executive body but an
 23 advisory body, which had the title -- I'm afraid it's
 24 rather a mouthful -- the Advisory Subcommittee on
 25 Blood Products and Blood Group Reference Laboratories

82

1 And Dr Walford also gave evidence about this.
 2 So the Joint Management Committee sits at the
 3 top, and then the Scientific and Technical Committee
 4 is a subcommittee of that Joint Management Committee.
 5 **SIR BRIAN LANGSTAFF:** Who was paying for it?
 6 **MR HILL:** DHSS.
 7 **SIR BRIAN LANGSTAFF:** Directly?
 8 **MR HILL:** Yes.
 9 **SIR BRIAN LANGSTAFF:** So nothing, no money coming from the
 10 region?
 11 **MR HILL:** No. As I understand it at least, the region is
 12 there because there has to be an employer, and that
 13 needs to be a Health Authority, as I understand it,
 14 which is why the region steps in to take that role,
 15 but it is the DHSS who are funding this.
 16 The first director of BPL, from its origins back
 17 in the '40s and '50s was Dr Maycock, later
 18 Sir William Maycock, and he remained in post until
 19 September 1978. So at the time when the Lister
 20 Institute ceases to be involved, Dr Maycock also steps
 21 out of the picture. And in his place Dr Lane steps
 22 in.
 23 Now Dr Lane had been appointed the director
 24 designate from 15 April 1977. So he is involved to
 25 a degree in the affairs of BPL from April 1977, but he

84

1 only takes over responsibility in September or
 2 October 1978.
 3 In his draft proof of evidence, Dr Lane says
 4 that Dr Maycock, and I quote, "kept me very much in
 5 the background" in the period when he was the director
 6 designate.
 7 PFL, in Oxford, in the -- was a laboratory that
 8 had developed from the 1960s to support the work of
 9 the Oxford Haemophilia Centre. Because of the
 10 similarities between its work and BPL, it was agreed
 11 that it would be managed by BPL on behalf of the
 12 Lister Institute, and that arrangement stayed in place
 13 until 1978, and BPL continued to manage PFL thereafter
 14 on behalf of the DHSS.
 15 During the 1980s, the role of PFL changes from
 16 being a fractionation site to taking on the role of
 17 a pilot plant for BPL. That is something that is
 18 considered further in Dr Lane's statement and in the
 19 statement of Dr Smith.
 20 Dr Bidwell had managed PFL under the overall
 21 directorship of Dr Maycock and, later, of Dr Lane.
 22 She remained in post until 1981. And after that,
 23 Dr Lane, I think, assumed that management role whilst
 24 also being director of BPL.
 25 As well as BPL and PFL, there is also the

85

1 **SIR BRIAN LANGSTAFF:** For the last few years of that
 2 anyway, he had also been the director of BPL.
 3 **MR HILL:** He had been director of BPL --
 4 **SIR BRIAN LANGSTAFF:** Throughout.
 5 **MR HILL:** For decades, yes.
 6 **SIR BRIAN LANGSTAFF:** So both BPL and the NBTS were under,
 7 if not the same technical formal arrangements, they
 8 were underneath the directorship of the same person.
 9 **MR HILL:** Yes. I'm not as fully aware of the evidence as
 10 you are about the way in which the NBTS was --
 11 **SIR BRIAN LANGSTAFF:** Well, he was technically consultant
 12 advisor.
 13 **MR HILL:** Yes.
 14 **SIR BRIAN LANGSTAFF:** So in effect, I understand he had as
 15 near as a directorship as you would get if you were to
 16 formalise the structure. He was -- he didn't have any
 17 power over the regions. It was a loose federation, it
 18 has been described -- you might call it a coagulation
 19 of different bodies. But he was the person with
 20 influence at the centre --
 21 **MR HILL:** Yes.
 22 **SIR BRIAN LANGSTAFF:** -- over that, however one describes
 23 his position. And he was in charge, as director, of
 24 BPL.
 25 **MR HILL:** Yes.

87

1 Blood Group Reference Laboratory, which is
 2 a laboratory which doesn't feature prominently in this
 3 part of the Inquiry's work. I mention it only to say
 4 that together those three institutions formed the
 5 Central Blood Laboratories of England and Wales. So
 6 if there is reference to CBL or the Central Blood
 7 Laboratories, that is taken to include the Blood Group
 8 Reference Laboratory as well. And it also explains
 9 the name of the Special Health Authority, which was
 10 established in December 1982, which was the Central
 11 Blood Laboratories Authority, or CBLA. And that took
 12 over the management of BPL and PFL and the Blood Group
 13 Reference Laboratory as well from that time. And we
 14 can see that on the last row of the table.
 15 One other body that I will mention is the
 16 Advisory Committee on the NBTS, which, from
 17 December 1980, takes a role advising DHSS, the Welsh
 18 Office, NBTS, on co-ordination of Blood Service and
 19 the Central Laboratories.
 20 **SIR BRIAN LANGSTAFF:** Just on that point, from what -- the
 21 history you'd just given, Dr Maycock was the
 22 consultant adviser in the Blood Transfusion Service
 23 ever since the war, and remained so until he retired.
 24 And that was in 1978, was it?
 25 **MR HILL:** Yes.

86

1 **SIR BRIAN LANGSTAFF:** So you had a way of naturally
 2 unifying the activities of those two bodies. And
 3 since one was supplying the plasma, the raw product,
 4 free of charge to the other to manufacture, and the
 5 other was sending back its products through the Blood
 6 Service to the regions, that made for quite a lot of
 7 cohesive sense, I suspect.
 8 But one of the effects of the 1978 changes was
 9 to change that, was it? Now you had a different
 10 person, Richard Lane, who had been kept in the
 11 background, according to him, by Dr Maycock until
 12 September '78, now in charge of BPL. And a different
 13 consultant advisor became, later on, if not then,
 14 Mr Gunson -- Dr Gunson, in charge of -- or to be
 15 a consultant advisor, the person with influence within
 16 the NBTS.
 17 Did that change of personnel make for any
 18 particular difference? I see from what you've just
 19 said it was thought there was a need to coordinate the
 20 activities of the NBTS and the Central Blood
 21 Laboratories, just as there was with Scotland.
 22 So it's plainly already been regarded as
 23 something of a separate beast in organisational terms.
 24 **MR HILL:** They were separate beasts in organisational
 25 terms.

88

1 **SIR BRIAN LANGSTAFF:** And this is one system which we're
2 looking at, which then has these three different
3 heads: Scotland, producing what it did and having
4 a separate system; the Central Blood Laboratories of
5 England and Wales, Oxford and Elstree and the
6 Reference Laboratory; and the Blood Transfusion
7 Service.

8 **MR HILL:** I think you'll hear from Ms Richards about
9 Dr Lane's evidence in due course.

10 **SIR BRIAN LANGSTAFF:** Yes.

11 **MR HILL:** A theme that runs through that is a frustration
12 at the lack of a central executive body that can try
13 to pull together those different elements: the plasma
14 supply from Transfusion Centres, and the production
15 at BPL.

16 **SIR BRIAN LANGSTAFF:** That may answer the question which
17 really I had in mind, and I'm taking a rather long run
18 up to the wicket, I'm sorry, which was whether the
19 change of control, in the sense of losing the identity
20 of one person being influential in both, made any
21 practical difference or caused practical problems.
22 And it appears from what you're saying that
23 Ms Richards may tell me that at least Dr Lane may have
24 perceived some.

25 **MR HILL:** I'm not sure, though, that Dr Lane would have

89

1 **SIR BRIAN LANGSTAFF:** Yes. Thank you. You were going to
2 turn to Stop-Gap, I think.

3 **MR HILL:** I was about to launch into the Stop-Gap, and
4 I caught sight of my watch at 12.55. I don't know if
5 you would like me to begin now and go for five
6 minutes, or stop now and --

7 **SIR BRIAN LANGSTAFF:** Well, I think we'd better have
8 Stop-Gap as one unit. So if we stop now and come back
9 at 2.00, that's what I think we should do.

10 Thank you. 2.00.

11 (12.56 pm)

(The Luncheon Adjournment)

12 (2.01 pm)

13 **SIR BRIAN LANGSTAFF:** Yes.

14 **MR HILL:** Stop-Gap, sir. As the name suggests, Stop-Gap
15 was a programme that was intended on an interim basis
16 as a partial redevelopment of BPL pending a further
17 decision on the facility's long-term future. It was
18 inspired in part by the decision of the Government to
19 waive Crown exemption under the Medicines Act 1968.
20 That is a phrase we often use but it should be
21 remembered that this was not a full waiver. The full
22 rigours of the Act wouldn't apply to NHS facilities.
23 There was some leeway in the way in which the Act
24 would be interpreted and the principles of the Act

91

1 said that that is the -- the change from Dr Maycock to
2 him is the factor that makes the difference. There
3 was, as you've said, sir, an individual link to the
4 two groups, but there was a lack of a formal structure
5 and the lack of a powerful executive body to direct
6 the Regional Transfusion Centres, even when Dr Maycock
7 had both hats that he could wear.

8 **SIR BRIAN LANGSTAFF:** Yes.

9 **MR HILL:** And I can't obviously speak for Dr Lane, but
10 I suspect that the tenor of his evidence is that that
11 individual link may have been helpful in ensuring that
12 Dr Maycock knew what both groups were saying, but,
13 actually, it didn't help tremendously in terms of the
14 executive decision-making that he felt was necessary
15 to try to achieve self-sufficiency. The NBTS was
16 still a very -- as you've said, a fragmented body made
17 up of 14 different regional centres which wasn't under
18 the directorship of Dr Maycock in the same way that
19 BPL was under the directorship of Dr Maycock. He
20 could say at BPL, "We're going to focus on this, and
21 we're going to do this project." He couldn't say the
22 equivalent to the rest of the Regional Transfusion
23 Centre Directors. He could say, "I think we should do
24 this," and he could suggest it, but he couldn't direct
25 it.

90

1 would be applied to NHS facilities including BPL, and
2 that is important when we look at the outcome of
3 Stop-Gap.

4 Applications were submitted on behalf of BPL for
5 product and for manufacturer's licences in March 1976,
6 and an informal visit from the Medicines Inspectorate
7 was undertaken in November 1976. Even at that stage
8 it was evident that there were concerns among the BPL,
9 and indeed an expectation, that the Medicines
10 Inspectorate report was likely to be critical.
11 Dr Maycock commented in 1976, in the annual report for
12 1976, and I quote:

13 "It is not unlikely that the accommodation of
14 both laboratories [both BPL and PFL] will be
15 criticised and in certain respects found inadequate."

16 He pointed out that both of the laboratories had
17 been designed well before the Medicines Act was passed
18 and to designs that were in keeping with the standards
19 of those times rather than the standards that later
20 came to be expected under the Medicines Act. So an
21 expectation there that the Medicines Inspectorate will
22 find fault with BPL.

23 The other driving force for Stop-Gap is this
24 question of the production capacity of BPL and PFL and
25 how that related to future demand.

92

1 In his fifth draft proof of evidence, Dr Lane
2 recorded that thought had been given to future demand
3 and the future requirements of BPL at various points
4 in 1976 and 1977, but no formal discussions or action
5 were taken save for the initiation of a feasibility
6 study of a pilot chromatography laboratory, and
7 ultimately that laboratory was not commissioned.
8 That is 1976 and 1977.

9 In 1977, in September of that year, a report was
10 produced for the Advisory Subcommittee on Blood
11 Products and Blood Group Reference Laboratories in
12 which Dr Maycock made an observation which may be of
13 relevance here.

14 And if we can go, please, Paul, to CBLA0000664.
15 That's the front cover of the report. If we can go to
16 page 23, please.

17 If we could pick it up -- this is the section of
18 the report that deals with the Blood Products
19 Laboratory. If we could pick it up in the second
20 paragraph there, beginning "The 'stretched'". What
21 Dr Maycock wrote is this:

22 "The 'stretched' capacity of BPL will be reached
23 about the turn of the year."

24 I pause, so that's end of 1977.

25 "The experience of the past year suggests that

93

1 [the Protein Fractionation] Lab."

2 Go on, please, Paul.

3 "It would at least dispel the feeling of
4 uncertainty at BPL if DHSS were to say whether or not
5 it intends to secure its investment (the magnitude of
6 which has not been disclosed) in PFC at the expense of
7 developing its own fractionation potential in NBTS.

8 "Hitherto communication between BPL and PF
9 Laboratory with DHSS and RTCs has been, in some ways,
10 simplified by the fact that the BPL Director was also
11 Consultant Adviser on Transfusion to DHSS. The need
12 to formulate channels of communication for his
13 successor is urgent."

14 "Dr Lane, Directorate Designate, has prepared
15 a paper ... which outlines certain changes he wishes
16 to be about which concern the method of sending
17 fresh plasma to BPL and the preparation of factor VIII
18 concentrate."

19 If we could just scan out for a second, please,
20 Paul.

21 There is a later section which I won't take you
22 to in which Dr Maycock wrote that planning the future
23 of BPL should not be made until the problems of PFC have
24 been resolved. And Dr Lane in his proof of evidence
25 says that he, Dr Lane, was influential in ensuring

95

1 thereafter the laboratory will continue to work in an
2 atmosphere of uncertainty about future development.

3 "There are no means at present of matching
4 future fractionation potential with the potential
5 availability of plasma collected by RTCs and of
6 relating both to therapeutic demand. This is
7 a projection of the fact that since it was opened, BPL
8 has had no means of controlling its 'raw material'.
9 Under the present scheme of organisation, although
10 plasma is sent to BPL by all RTCs, there has never
11 been, with one exception, any means of influencing its
12 volume apart from persuasion. The exemption was the
13 introduction of the scheme for providing fresh plasma
14 for factor VIII concentrate which was made possible by
15 the central provision of money and central
16 co-ordination."

17 I pause there to note that's the Dr Owen
18 £500,000.

19 "The present method of operation will become
20 more difficult if the scale of fractionation grows.
21 What is needed is a programme in which each region
22 would be responsible for carrying out a planned growth
23 pattern within a centrally coordinated plan for NBTS
24 in England and Wales. Without this, or something like
25 it, it will be difficult to plan the future of BPL and

94

1 that that section went in.

2 I pause there, sir, to note just couple of
3 things -- and perhaps we could go back to the previous
4 page, Paul.

5 One is that it picks up on the conversation that
6 we had before lunch about the role of Dr Maycock as
7 both consultant advisor and director of BPL. And he
8 does say there that we need to think about future
9 communication channels because, of course, Dr Lane is
10 not going to be in that position. After Dr Maycock
11 steps down and retires, it's Dr Tovey who becomes the
12 consultant advisor, and then Dr Gunson. So there is
13 a need to re-establish some form of communication
14 channel.

15 But the previous paragraphs are interesting in
16 that they don't suggest that Dr Maycock had the powers
17 to direct Regional Transfusion Centres, that he -- he
18 may have wanted them, but Dr Lane subsequently
19 identifies as being important, because he talks about
20 the fact that BPL, even with Dr Maycock as its
21 director, was unable to control its raw materials.
22 They have to rely on the Regional Transfusion Centres.
23 And Dr Maycock says that the only time in which there
24 has been a national scheme of organisation and
25 co-ordination was during the time of Dr Owen's

96

£500,000 direct investment. So that takes us back to some of that conversation that we had previously.

The other point to pick up there is the general sense of uncertainty over the very future of BPL, and the fact that there is a need to know whether or not the DHSS intends to redevelop BPL and how that is going to interact with the DHSS's plans for the Protein Fractionation Centre in Edinburgh. As Dr Lane insisted on including a sentence to the effect that the planning about BPL shouldn't wait until everything about Edinburgh is resolved. There is a need for a decision.

The final point I would note, just of the last sentence that was picked up, is that there is a reference to Dr Lane's appendix about changing the way in which plasma is collected and provided to BPL. That is a reference to the single-donor pack, the single-plasma pack, which forms the subject of appendix 5, and it's something that we will perhaps come back to a little later today, but that is where its origins lie.

That is the annual report for September 1977. There was a meeting that took place on 25 October 1977 between representatives of BPL, including Dr Maycock and Dr Lane, and representatives of the DHSS,

97

sir, that it is Dr Lane who is doing the speaking here. He is the director designate. Dr Maycock is still the director, but it does seem from this and indeed from other papers that it is Dr Lane who takes the lead on the Stop-Gap programme:

"Dr Lane saw three principal determinants:

"a. The continuing pressure, both from the field and the Department, to produce more Factor VIII concentrate. BPL had almost reached the limit of its present production capacity, and, as a prerequisite, [Regional Transfusion Centres] would have to increase the supply of plasma.

"b. The implications of the recommendations of the Working Group on trends in the demand for blood products (the 'Trends' working group) ..."

That is the group we looked at earlier, sir.

"... which pointed to a substantial expansion of the existing production of Factor VIII and albumin over [the next] 5 to 10 years.

"c. The application of the Medicines Act to the NBTS and the probability that a number of processing units in [Regional Transfusion Centres] and in BPL would not meet the standards being demanded by the Medicines Inspectorate, particularly in relation to open systems for handling blood and plasma."

99

including Mr Dutton, Dr Waiter and Mr Parrott, who seems to have taken the lead on behalf of the DHSS.

And if we could go, please, Paul to CBLA0000682.

We can see from the first paragraph of the note of this meeting that the original stimulus for it was the arrival of letters from Sheffield and West Midlands Regional Health Authorities and Regional Transfusion Centres containing proposals involving BPL processing greater quantities of plasma into Factor VIII concentrate. It was decided that a meeting was necessary and that the scope of that meeting broadened out to consider future production problems at BPL generally. So that's the purpose of the meeting.

And just so that we know where we are going with this, Dr Lane subsequently identifies this meeting as being the point at which the Stop-Gap programme begins.

The Department, for its part, thought that it would be a useful occasion to take stock of BPL's current situation and to crystallise the possibilities for future planning. So a broad remit for the meeting.

At paragraph 3, Dr Lane here sets out three principal determinants. And it may be of interest,

98

I pause there, sir. We'll come back to what open systems are when we look at the single-plasma pack.

Returning to the document, I quote:

"He suggested that developments at BPL should be closely integrated with those at RTCs: for example, BPL might consider looking into the geographically close Thames [Regional Transfusion Centres] alone for plasma supplies, perhaps with plasmapheresis units being funded centrally as BPL satellites; similarly, BPL could mitigate the effects of the Medicines Act in the Regions by redeveloping its production facilities to enable RTCs to send single packs of plasma there, thus obviating the need for sterile areas for plasma pooling at RTCs."

We'll come back to that.

"At BPL, the redevelopment would take place in 3 phases:

"I -- Factor VIII production (with support services, including [research and development]) and the proposed chromatographic separation pilot plant would be relocated outside the present BPL building.

"II -- Albumin production would be moved from the existing building.

"III -- The existing BPL shell would be

100

re-equipped to include units for bacteriology, pharmacology, physiology and quality control.

"The cost of this work would be offset by savings accruing from the fact that less sophisticated facilities than at present would be needed at RTCs. Effective implementation of such a scheme would require a high degree of national co-ordination."

So I pause there, sir, to say that is a scheme that Dr Lane has put forward involving various possibilities of work with the RTCs and a greater sense of the more complex work being done at Elstree, thus freeing up resource in the RTCs which would offset the amount of money that was going to have to be spent at Elstree to make this happen.

We can see that the driving factors behind it are continuing pressures for Factor VIII, the recommendations of the working group, the need to plan forward about how much Factor VIII is going to be needed, and of course the Medicines Act.

So that is what Dr Lane is considering and what he is putting forward as a possible way forward. The response of the DHSS comes in paragraph 4 and is given by Mr Parrott, and I quote:

"Mr Parrott explained the Department's thinking on future planning for BPL. It was clear that the

101

agreed production targets."

I'll come back to that paragraph in a second, but if we could quickly go to paragraph 8, the action point that comes out of the meeting:

"It was agreed that BPL would draw up a list of options for future development, bearing in mind the constraints outlined in paragraph 4 above. The production targets were 50 million international units of Factor VIII annually, and 200 gm/1,000 population of albumin annually. A possible solution involving redevelopment at Elstree is outlined as an Annex to this note."

The figure there, sir, for Factor VIII, 50 million international units, as we discussed before the break. We're not entirely sure where that figure comes from, but it is consistent with the upper end of the MRC paper from 1973 and 1974, and it may be that it was felt that that had been confirmed by the Trends Working Group.

If we could go back, please, to paragraph 4, Paul. Thank you.

What I take from this, and of course other interpretations are possible and may be made to you, is that Mr Parrott is welcoming Dr Lane's proposals and ideas, but he is also making clear that the

103

current constraints on expenditure and the relationship existing between the Department and NHS field authorities were not conducive to the successful implementation of radical expensive solutions to blood products production problems. Although the Department full accepted the desirability of having the activities of RTCs coordinated among themselves and with the central laboratories, it would not be possible to instruct RHAs how to develop their RTCs. However, it was agreed that whatever happened at BPL would tend to influence RHA planning of their own services. Progress would most probably be achieved by concentrating on what needed to be done at BPL, and a phased redevelopment solution, such as that put forward by Dr Lane, seemed to be worthy of future examination. The need to expand blood products production, provided this was done on the basis of low-cost, selective development, was now being accepted by the Department, and the importance of maintaining a separate production unit for England and Wales, and of not being totally reliant on the Scottish PFC at Liberton, had recently been affirmed. The Department would therefore welcome further development of these ideas by BPL leading to the preparation of realistic development plans based on

102

Department is going to be restricted in how much it is going to spend on this, on his proposals. There is a -- the fact in the second sentence that:

"... the relationship existing between the Department and NHS field authorities were not conducive to the successful implementation of radical expensive solutions to blood products production problems ..."

Is notable, as is the later reference to the fact that there was a:

"... need to expand blood products production, provided this was done on the basis of low-cost selective development."

So it is perhaps Mr Parrott just warning Dr Lane and BPL that their proposals are going to have to make economic sense to the Department and that they should not get too carried away with the amount that they are going to cost.

The other point that I take from that paragraph is that while Mr Parrott understands why Dr Lane stresses the importance of co-ordination between the DHSS and BPL and the Regional Transfusion Centres and the Regional Health Authorities, there is a limit in practice to how much that is going to achieve and he states in terms that it would not be possible to

104

instruct Regional Health Authorities how to develop Regional Transfusion Centres. And that brings us back to the point that we have discussed before -- one of the themes that I identified at the start of this presentation about the tension between the need for central planning and central co-ordination and for regional structures that were in place for Regional Transfusion Centres.

The outcome of that meeting is that Dr Lane and BPL are invited to put forward a list of options for future development, and it is that which gives rise to the Stop-Gap proposals.

The paper that BPL duly produce was presented to the DHSS under cover of letter dated 20 December 1977.

And if we could go to that, please, Paul. It is CBLA0000701.

We can see that the letter is sent, as one would expect, by the director, Dr Maycock, and it is sent to Mr Parrott.

You can see that the name "Stop-Gap" is now part of this programme:

"I enclose a paper, 'Stop-Gap requirements for Factor VIII production 1978-1982' ..."

And if we look at the start of the second paragraph, it says:

105

population. A phased redevelopment of BPL is envisaged to meet these targets, but during the interval, before new production laboratories can be planned and built, production of factor VIII and PPF can both be increased using the continuously improving supply of frozen fresh plasma.

"This paper deals with the immediate requirements for increasing factor VIII production. Albumin fractionation is considered separately. Planning on both subjects has been closely co-ordinated.

"Factor VIII Concentrate

"Production will be increased by a gradual rise in the processing of frozen fresh plasma from 1,200L/week to 2,400L/week over a four year period. This is considered in three stages:

"I. 1,200 litres to 1,800 litres per week

"II. 1,800 litres to 2,400 litres per week

"III. Research and development.

"The division is based upon the expected supply of FFP, stage I accommodating the bulk of FFP still in 5L pools but with a small proportion in single plastic bags; stage II is associated with a change from 5L pools to single donations."

That is the single plasma pack, and we will

107

"The paper describes how it is proposed to double in the next four years the preparation of factor VIII concentrates."

And you will remember, sir, that from before the break, the existing level of production is 15 million international units, so a doubling would be 30 million international units, and the proposed timescale is 1978 to 1982.

I'm not going to take you all of the way through the paper, but if we could just turn to page 4, please, Paul.

This is the outline. If we highlight from "Stop-Gap provision aims at", three or four lines down:

"This immediate action has been termed 'Stop-Gap' and is described as follows:

"Stop-Gap provision aims at:

"(a) Maintaining present production rate.

"(b) Enabling stepwise increases in fractionation.

"(c) Preserving co-ordination between factor VIII and albumin production.

"The aims for BPL during the next decade have been fixed at 1,000 international units factor VIII concentrate and 200 g albumin as PPF per 1,000

106

return to that.

Then it goes through the requirements of what will be needed at each of those three stages. Stage I requires space and reallocation of works within BPL, equipment, a change in methods, and research and development for stage II. Stage II requirements include equipment and methods. And stage III, research and development for new coagulation laboratory methods. Further detail is provided in the rest of that paper.

That is the outline of the Stop-Gap. We will see from the section before the heading "Factor VIII Concentrate" that it is envisaged, as the name suggests, as a measure to increase Factor VIII in the next four years, but always with a view to the fact that there needs to be a more fundamental redevelopment of BPL to meet future needs after that. So it is a Stop-Gap.

Although expressed there in terms of litres per week, the capacity upgrade that we are looking at is from 15 million international units to 30 million international units, as was made in later iterations of the plan, and its successor plan MARP01.

There is no suggestion whatsoever in Stop-Gap that 30 million international units is going to amount

108

to self-sufficiency. It is a practical response to try to increase production. It is not presented as a way of achieving self-sufficiency.

The plan received a positive reception from Mr Dutton and from others at the DHSS. And various references to that are made at paragraph 190 of the written presentation. However -- it receives approval in June 1978, but this coincides with the cessation of the Lister Institute's involvement in the running of BPL, and the fact that the Lister Institute are giving up the leasehold of the land allowed for what Dr Lane later referred to as a "unique opportunity for the development and future of BPL", which was to purchase that land and surrounding land in order to make the site physically bigger, which would allow for a greater redevelopment. And that is indeed what was done.

But because of the purchasing of the site, because of the need to alter the arrangements of the employment of the staff, because the Lister Institute was no longer going to be employing them, all of these things meant that the Stop-Gap plan and the proposals had to be reviewed and amended during 1978, and revised plans were submitted in December 1978.

In the background, while all of this was going

109

And this is from a meeting on 26 March 1979, so we've come forward in time a bit. It is a meeting of the Scientific and Technical Committee for the Central Laboratories. So that is the subcommittee of the Joint Management Committee.

We can see present at this meeting, among others, are Dr Gunson, Dr Tovey, who at that time was the consultant advisor; Mr Smart, that's David Smart, who later becomes the first chair of the CBLA, and we'll see a paper from him a little later as well. Dr Lane is there. By now Dr Lane is the director of BPL, Dr Maycock having retired. Also Dr Dunnill is there, and we will see his contribution later. The joint secretaries are Mr Dutton and Dr Waiter.

This is the first meeting of the Scientific and Technical Committee, as we can see from the first entry:

"The Chairman welcomed members and invited their views on the Terms of Reference"

The second item is the Blood Products Laboratory.

If we could go over to the following page please, Paul.

Picking it up from the second paragraph and going down to the fifth paragraph:

111

on, there is still the awareness that there is a possibility, and indeed a likelihood, that the Medicines Inspectorate are going to make damning findings about BPL.

In February 1978, so after the initial plan had been submitted, Mr Dutton warned that, and I quote:

"Superimposed on this is the need to meet the requirements of the Medicines Commission and, from what I have heard, this could cost a great deal. It could amount to seven figures."

The reference for that is CBLA0000801.

At that time there are two hares running, one is Stop-Gap, one is the Medicines Inspectorate. And then a third hare is the consideration that is being given to the longer-term redevelopment of BPL. The land having been purchased, there was an opportunity to expand the laboratory. The question then arose as to how big should you make it and what should its capacity be. And that is tied very closely to estimates of future demand for Factor VIII.

We have seen the figure that was given at the meeting on 25 October 1977 of 50 million international units.

If we could go, please, Paul, to BPLL0008430_001, we will see a new figure emerging.

110

"Dr Lane outlined the constraints on the development of BPL due to its situation on a restricted site within the grounds of the Lister Institute. The Department had now made an offer to purchase the whole of the Lister Elstree site so that over 30 acres would be available for future development. The importance of factor VIII and albumin in dictating the ultimate size of the production capacity needed at BPL was discussed. Usage of factor VIII in the United Kingdom was probably about 60 million international units. Current NHS production was equivalent to about 30 million international units but only about 13 million international units were being produced as concentrate by BPL, the remaining 17 million being issued as cryoprecipitates by Regional Transfusion Centres. The present commercial price of factor VIII was about 10p a unit so that about £3 million was already being spent annually on commercial factor VIII concentrates. If the current rate of increase in usage continued, and if BPL production were not expanded, the cost of factor VIII concentrate to the NHS might reach between £14 million and £24 million by 1982.

"Mr Smart pointed out that with expenditure of

112

1 this order likely to be incurred, there appeared to be
2 every incentive on economic grounds for speedy
3 investment aimed at optimising factor VIII production
4 at BPL.
5 "Dr Tovey said that if the publicity was right
6 there would be no difficulty in obtaining all the
7 plasma necessary to support a factor VIII production
8 programme rising to 100 million [international units]
9 per annum, which was seen as the eventual requirement
10 by some clinicians. Professor Peters suggested that
11 the Committee might examine these estimates of future
12 requirement more closely, and after discussion it was
13 agreed that if clinicians were to retain freedom to
14 treat their patients in the way that was considered
15 most suitable, it was possible that eventual
16 requirements might well approach the 100 million
17 [international units] per annum mark. Dr Tovey
18 referred to the embarrassment he would experience if
19 it became generally known in the South West that large
20 amounts of commercial factor VIII were being
21 purchased. For two years there had been more donors
22 than the NBTS could handle. He pointed out that any
23 further expansion of BPL plasma processing capacity
24 would have to be matched by expenditure in the Regions
25 producing the plasma."

113

1 one of the first times when that figure of 100 million
2 international units is raised.
3 And it contrasts with the 60 million suggested
4 in the Trends Working Group and the 50 million that
5 was raised in the meeting that we looked at a moment
6 ago on 25 October 1977, which was obviously some time
7 before this meeting of 29 March 1979.
8 Just before we leave that document, if we could
9 please turn to electronic page 3 of the document. We
10 can see in the second paragraph down -- I won't go
11 through all of the discussion that took place:
12 "Dr Lane pointed out that the 'Stop-Gap
13 programme', which was designed to give maximum
14 production capacity essentially within the constraints
15 imposed by existing plant and premises, was not
16 capable of being repeated, and there was an urgent
17 need for the planning of substantial additional
18 capacity."
19 Reinforcing the point that he had made, and
20 indeed which is implied from the very name of the
21 Stop-Gap, that that is a programme which can do what
22 it can do in the interim period, but wasn't going to
23 be able to get anywhere near 100 million international
24 units.
25 There is a discussion later in the minutes,

115

1 I pause there, sir, to make a couple of
2 observations. The first is that the figure given for
3 "current" usage is 60 million international units.
4 And that, sir, is the figure the Trends Working Group
5 had suggested might be an appropriate figure for an
6 estimate for the following 10 years. That had already
7 been achieved by 1979.

8 The second point is that there is a slight
9 difficulty here because we translate from talking
10 about 60 million units across the United Kingdom to
11 discussing how much is being produced in England at
12 Elstree, which is -- the figure given there is about
13 13 million international units at that time, with
14 17 million international units of cryoprecipitate as
15 well. We'll come back to those figures a little
16 later.

17 The discussion then turns to thinking about what
18 future demand might be, and the consensus view is that
19 about 100 million international units may be required.

20 That figure of 100 million international units
21 is one which is going to gain increasing agreement in
22 the year or so that follows. It's not possible to say
23 that this is the first time that it is raised, but the
24 Inquiry legal team, having looked at number of
25 documents, have identified this meeting as at least

114

1 which I won't go into now, about whether or not there
2 should be private sector involvement in the production
3 of plasma, something that Dr Gunson floats as an idea,
4 and Mr Smart rejects as an idea. And the outcome of
5 the discussion is that Mr Smart agreed that he would
6 discuss requirements further with Dr Lane, and would
7 produce a report which would be considered at the next
8 meeting.

9 We will come back to that shortly.

10 That was March 1979, thought being given there
11 at the Scientific and Technical Committee to the
12 long-term redevelopment of BPL. But the following
13 month is the month in which the long-awaited
14 inspection from the Medicines Inspectorate takes
15 place.

16 Dr Lane knew from conversations during that
17 visit that the report would be highly critical. He
18 wrote to the DHSS, and wrote to Mr Dutton, saying that
19 he welcomed the report and he considered that it would
20 be contrary to good manufacturing practice to use
21 a privileged situation to hide the considerable
22 deficiencies of BPL, which is a reference to not
23 hiding behind Crown exemption, and he contrasted his
24 view on this with that of Dr Maycock, implying that
25 Dr Maycock may not have welcomed so much the

116

involvement of Medicines Inspectorate.

In his letter to Mr Dutton, which is summarised at paragraph 192 of the written presentation, Dr Lane considered that the deficiencies at BPL lay in three main factors.

The first were intrinsic deficiencies of the building, and the constraints arising from the existing leasehold, the space in which there was -- the space in which BPL had available to it.

The second deficiency was a deficiency in the quantity and quality of staff due to an inability to compete with the private sector.

The third deficiency that Dr Lane identified was the fact that the laboratory was in what he termed a transitional stage between a cottage industry and a major production process moulded along commercial lines.

That is a point to which we will return.

That's April 1979. In May 1979, Dr Lane presented a revised paper to the DHSS and to the Joint Management Committee which brought together various plans that had been part of Stop-Gap and also set out a proposed full redevelopment of BPL.

And if we could go, please, Paul, to BPLL0001508, we can see that the paper is entitled *The*

117

Factor VIII concentrate."

He then goes on to discuss the position of cryoprecipitate and suggests that it's being maintained at a falsely high level because of occasional emergency fallback use.

If we could go on to the next page, please. The second paragraph down:

"In 1976, approximately £1.2 million was spent on commercial Factor VIII purchase, and this rose to nearly £1.8 million in 1977. 1978 figures are not available yet, but with output of NHS concentrates static, the purchase price is likely to be considerable.

"To assess future growth, the trends in haemophilic management must be considered. Gradually increasing numbers of haemophiliacs diagnosed and treated, expected increase in lifespan and associated increased incidence of concomitant illness and surgery, a move towards home therapy and prophylactic care all suggest a continued growth in Factor VIII use.

"The latest complete treatment breakdown is for 1976, and the 1977 figures will be of interest and so will indicate the extent of growth in home treatment, in particular the home treatment of the severe

119

function of Stop-Gap and phased redevelopment of the Blood Products Laboratory, May 31, 1979.

If we can go to page 2, please, Paul. This is the index, just to give you an idea of what is in -- what is a quite substantial 69-page document. It gives the background to Stop-Gap, the way that Stop-Gap had developed, and the proposals for it, and then, importantly, the longer term assessment of laboratory needs and practice, and then a section on the phased redevelopment of BPL.

So it's not just about the Stop-Gap; it's about future requirements as well. And if we could turn, please, to page 15, electronic page 15, which is part of this section on the longer term assessment of BPL. Forgive me. It's electronic page 15 that I'm after. "Projected needs" there about halfway down the page.

Dr Lane wrote this:

"The 'Trends' Working Party fixed a level of 60 million international units Factor VIII as concentrate in production and use by the mid-'80s. However, annual returns from the Haemophilia Centres show first that current Factor VIII use is in a period of rapid growth. Second, the total use in 1977 was 48.5 million international units. Third, that the increase in use is wholly at the expense of

118

haemophiliacs with less than 2% of procoagulant activity. These patients numbered 1,787 in 1976 and would be the group most naturally placed on full prophylaxis.

"It must also be realised that, as with the regional transfusion services, haemophilia care varies between the supra-regions, financial policy obviously being an influence. Since prophylaxis is a desirable aim which is inhibited by commercial costs, a cheaper NHS equivalent is not only highly desirable but would inevitably stimulate increased use.

"For a new fractionation laboratory at Elstree, a production ceiling of 120 million international units Factor VIII has been set with an intermediate target of 90 million international units to be reached by the mid-1980s. In consultation, this is thought of as realistic. The plasma required would be 375,000 litres for 90 million international units, and 500,000 litres for 120 million international units Factor VIII per annum at current yield rates of 250 international units per kilogram of plasma.

"The above estimates assume that the existing linear growth in annual rate of use of Factor VIII continues only for a further two to three years, after which a plateau situation will develop."

120

1 The estimate, then, sir, is 90 million
2 international units by the mid 1980s, and thereafter
3 a ceiling of 120 million international units. That
4 ceiling is not necessarily an estimate that that will
5 be the actual demand, but it's put forward as a figure
6 for which -- which can be used for planning purposes
7 for the redeveloped BPL.

8 Dr Lane in paragraph 196 of his fifth draft
9 proof of evidence said in putting forward these
10 figures, he was, and I quote:

11 "Trying to avoid what seemed to have been the
12 pattern in the past of always aiming for the lowest
13 current usage as a target with the inevitable
14 consequences."

15 What we would perhaps now refer to as
16 "future-proofing".

17 That paper was discussed at a meeting of the
18 Scientific and Technical Committee on 7 June 1979, and
19 the same meeting considered a paper from Mr Smart.
20 And Mr Smart's paper focused on the financial aspects,
21 and he estimated a cost of £20 million for
22 redeveloping BPL, according to his calculations at
23 that time. I would note, sir, that this is really the
24 point at which Dr Walford's evidence picks things up.
25 She referred in her evidence both to Dr Lane's paper

121

1 "Mr Dunnhill thought that further papers would
2 not advance consideration of the problems facing BPL
3 which were already well identified, and the options
4 were, in his view, also quite apparent. He wondered
5 whether the better course might be for the Chairman to
6 seek to see the Secretary of State and to express the
7 committee's disquiet that nothing was being done to
8 put the defects at BPL right. Several members doubted
9 whether there could be a useful discussion with the
10 Secretary of State until the appraisal which Mr Harley
11 proposed to cover in his paper had been carried out.

12 "The Chairman suggested that members might wish
13 to hear what Dr Holgate had to say before making up
14 their minds on this question."

15 This is what Dr Holgate had to say about the
16 visits of the Medicines Inspectors to BPL, and
17 I quote:

18 "Dr Holgate explained the arrangements made
19 under the Therapeutic Substances Act to control the
20 quality of biological products based on the grant of
21 licences to manufacture or import. This Act had been
22 repealed in 1975, and the provisions of the Medicines
23 Act were substantially different. Although crown
24 privilege might have been claimed to exempt products
25 made in NHS units, it had been decided that they

123

1 and to Mr Smart's paper. Both of those are concerned
2 with the long-term redevelopment of BPL.

3 The discussion of those papers was overshadowed
4 at that meeting by a report on the provisional
5 findings of the Medicines Inspectorate, following
6 their visit to BPL in April.

7 If we could go, please, Paul, to CBLA0000952.

8 This is the set of minutes from the Scientific
9 and Technical Committee meeting on 7 June 1979. We
10 can see a similar list of attendees as before. If we
11 could turn, please, to page 3. "The development of
12 BPL". The two papers put forward -- the report by
13 Mr Smart and the memorandum by Dr Lane for discussion.

14 The minutes record this:

15 "The Chairman proposed that in view of the need
16 to consider these papers in relation to one another
17 and also in relation to what Dr Holgate had to say
18 about the visit of the Medicines Inspectors to BPL,
19 consideration should be deferred until the next
20 meeting. Mr Harley [of the DHSS] thought that it
21 might be helpful if this was what the committee
22 decided, if he were to prepare a paper containing the
23 Department's appraisal of the options which appeared
24 to be open to it, in light of these papers and the
25 Medicines Inspectors' report.

122

1 should comply with the same requirements as products
2 made in industry, both as regards manufacturing
3 environment and quality. The visits by the Medicines
4 Inspector were not yet complete, and several more days
5 would be needed at BPL. Dr Holgate had been present
6 for much of the time. Serious deficiencies had,
7 however, been found in practically all aspects of the
8 laboratory examined so far, eg in documentation,
9 quality control, environmental control, availability
10 of pharmaceutical advice, and in the schemes for
11 training staff.

12 "Although it might be some time before the
13 inspectors' report would be available, it was apparent
14 that changes were needed at BPL, and a decision might
15 shortly have to be taken about what changes should be
16 made in certain processes and whether some processes
17 should continue to be carried out in the existing BPL
18 premises. Many improvements could be achieved quite
19 quickly by the institution of improved training
20 programmes and the purchase of minor equipment and if
21 suitable senior staff could be recruited to exercise
22 closer control over manufacturing and quality control
23 processes, substantial improvements should ensue.
24 There was, however, a limit to the improvements which
25 could be effected, given the constraints of the

124

existing buildings and plants, much of which was now very old.

"Having identified the shortcomings, Medicines Division was now considering how they might be remedied because it was apparent that a licence would not be granted to a commercial company with similar shortcomings unless there was a commitment to improve the state of affairs.

"After further discussion, it was agreed that the Department should prepare a paper on the lines proposed by Mr Harley.

"Dr Dunnhill said that he still wished to reserve his position on the advisability of such a course since the need, as Dr Holgate had indicated, was for urgent action. Members felt, however, that it was unlikely that ministers would give their consent to expenditure of the order of magnitude which might be necessary until there had been a complete analysis of the situation. They would almost certainly want to see an examination of the alternatives and a recommended course of action. Insofar as there was some uncertainty about the future pattern of organisation of the NHS, there must equally be some doubt about the way in which the NBTS would be organised in the future. Dr Tovey drew attention to

125

concern which there would be amongst blood donors if they realised how much was currently being spent on commercial blood products. It was also necessary to decide to what extent there would be dependence on plasmapheresis in any future blood collection programme. Dr Tovey pointed out that this was only one aspect of the development which would be necessary in Regional Transfusion Centres.

"Dr Lane expressed the hope that there could be an early decision in principle on the development of BPL because this radically affected the way in which the laboratory would be run meanwhile."

From what we know, sir, of the future history, this hope in June 1979 for an early decision proved to be something of a forlorn one.

I note, sir, the reference to the uncertainty about the future pattern of organisation of the NHS might be a reference to the fact that this meeting took place relatively shortly after the election of the Thatcher Government in 1979.

We can see from the discussion at that meeting, then, that the proposals for the full redevelopment of BPL that had been put forward by Dr Lane and by Mr Smart were, in effect, put to one side whilst the DHSS prepared a series of papers and options for

127

the urgent need to let the regions know where they stand, both in regard to the capacity of BPL in the short term and in the long term. It was apparent that many regions would be unable to produce the plasma required to support even the 'Stop-Gap' proposals without significant additional investment.

"Mr Harley was invited to say what the alternatives were which could be put before ministers, since there seemed to be no other choice than to put money into BPL. He explained that one possibility was to make use of the fractionation capacity at the Protein Fractionation Centre, Edinburgh, but Dr Lane said that it had never been envisaged that this centre should process more than about 500 litres a week of plasma from England and Wales.

"After further discussion, it was unanimously agreed that it would be inadvisable to approach ministers until a complete appraisal of the possibilities open and their cost effectiveness had been prepared, which the Department undertook to do in time for consideration by the Committee in September. Meanwhile, it was agreed that ministers should be acquainted with the situation and told of the Committee's grave misgivings. Dr Tovey thought that it was important that ministers should understand the

126

ministers about what to do about BPL in light of the Medicines Inspectorate report, as well as the need for expansion of blood products.

The final conclusions and recommendations of the Medicines Division were presented under a cover of letter dated 10 September 1979. If we could go, please, to CBLA0000988.

That is the letter sent to Mr Harley of the DHSS, dated 10 September, about the inspection at Elstree and the dates in which it was carried out -- 23 to 27 April, and 16 to 19 July 1979:

"Shortcomings observed during the course of the inspection are summarised at various points in the enclosed copy of the inspection report."

Thank you. We can now turn to those conclusions. DHSC0001812, please.

Although, sir, these are sent on 10 September 1979, as we've seen from the previous documents, advance warning had been given about what was going to be found.

The conclusions are these:

"1. The Blood Products Laboratory was developed in stages over a number of years as new products were introduced and new buildings were erected to facilitate their manufacture.

128

"2. With the exception of the Large Fractionation Laboratory, the buildings were designed as laboratories for small scale manufacture and as production increased could not readily be adapted to a large scale manufacture.

"3. The three main manufacturing departments have operated as separate units; each developing in its own way, and this has resulted in the lack of an integrated manufacturing operation.

"4. The key personnel are scientists with research and development experience, but have not had the opportunity to gain experience of modern large-scale sterile production requirements in the pharmaceutical industry. This was no doubt the correct policy in a development situation when production was small and research and development was an important feature of the laboratory.

"5. Production is now on a scale which must be regarded as a large scale factory-type operation and has out-grown the premises in which it is undertaken.

"6. The Laboratory is so short of space for cold storage; quarantine of raw materials, in-process materials and finished products; receipt and despatch; packaging; and warehousing generally, that it is not practical or safe to increase throughput even if the

129

"Immediate upgrading of product procedures and control must include ..."

And then it gives a list.

At point (k) it recommends:

"Steps to be taken to establish the following key posts and appoint appropriate staff" --

SIR BRIAN LANGSTAFF: I think we're missing (k) on the page.

MR HILL: I'm sorry, sir, I've got ahead of Paul there.

"Steps to be taken to establish the following key posts and appoint appropriate staff ..."

Including a factory manager and a quality controller.

Then the additional comments at the bottom of the page, and I quote from this:

"The arrangements originally intended for increased production (known as 'Stop Gap Proposals') should be proceeded with as quickly as possible to provide additional cold storage space, warehousing, goods receipt and despatch, container washing and preparation, but only if such a development can be incorporated into a new manufacturing facility. However, in proceeding with 'STOP GAP' there should be no intention of increasing production in the present facility as it is already overloaded and seriously

131

necessary production facilities were available. For these reasons it is not practicable to consider a double-shift system of working if it were possible to employ the appropriate additional staff.

"7. If this were a commercial operation we would have no hesitation in recommending that manufacture should cease until the facility was upgraded to a minimum acceptable level."

"8. However, as blood products are essential to the health and well-being of the nation and as alternative sources of supply are severely restricted, production at Elstree may continue provided certain aspects of the standards of production and control are improved immediately and that the planning of certain other essential improvements in these standards commences immediately with a view to ... early implementation."

SIR BRIAN LANGSTAFF: "very early".

MR HILL: Yes, sir.

The recommendations follow. I won't go through all of those. But just to highlight a few, 9(a):

"Under no circumstances should production of any product be increased under the existing manufacturing conditions."

Recommendation 10:

130

deficient in standards."

The subsequent history of the protracted discussions that led to the decisions to redevelop BPL and to proceed with a version of the Stop-Gap programme-Gap programme, now renamed MARP01, were the subject of Dr Walford's evidence. And I'm not going to go through that in detail although I will, probably after the break, just highlight some of the relevant dates.

But just before we do that, and before the break, it might be helpful to consider a statement made by Dr Maycock in his last annual report to the advisory subcommittee of BPL, in which he gives a reflective comment about how the position that BPL found itself in, in 1977 and 1978, came to pass.

If we could go, please, to CBLA0000840.

We can see that this is a:

"Report to the Advisory Sub-committee on Blood Products and Blood Group Reference Laboratories of the Central Committee of National Blood Transfusion Services: year ending July 1978."

And we understand it to be Dr Maycock's report because his initials appear at the end. We'll see them shortly. The date next to them is 8 September 1978.

132

1 If we could turn, please, Paul, to electronic
2 page 11, which is the conclusion to this report, which
3 I am going to read in full. It may be seen as
4 something of a valedictory statement from Dr Maycock
5 as he leaves his post as director of BPL after many
6 decades.

7 He wrote this:

8 "There is perhaps a moral to be drawn from the
9 building history of the present BPL.

10 "1954 building: planned in 1949-1952 mainly as
11 a civil defence project to prepare freeze-dried large
12 pool UVL irradiated plasma" --

13 **SIR BRIAN LANGSTAFF:** UVL stands for ultraviolet light,
14 does it?

15 **MR HILL:** Yes, it does, sir.

16 "... a preparation of plasma that was abandoned
17 during erection of the building in favour of a return
18 to freeze-dried 10-donor small pool plasma. The
19 potential value of plasma fractions had not been
20 appreciated in any countries, and accommodation for
21 fractionation was included only as an afterthought.

22 "1962 extension: a make and mend operation
23 which, by moving the bacteriology and enlarging the
24 small-pool plasma laboratories, relieved some of the
25 pressures of the laboratory which were becoming

133

1 methods. I suggest two proposals for BPL which will
2 exceed 'Stop-Gap' and provide accommodation that meets
3 the requirements of the Medicines Act 1968:-

4 "firstly the redeveloped BPL should have
5 a capacity greater than that needed to provide for the
6 latest estimates for plasma fractions available during
7 the planning stage,

8 "secondly, DHSS should take a long term view and
9 consider a new BPL as a valuable investment which will
10 save the Department much money.

11 Point (2) in the conclusion:

12 "NBTS lacks a central research laboratory.
13 Certain transfusion services, in particular those in
14 France, the Netherlands, Switzerland and the American
15 Red Cross Transfusion Service all possess active
16 central research laboratories which embrace
17 a surprisingly broad scope of subjects but all of
18 which are related to transfusion. Work of outstanding
19 quality is performed in these laboratories. Some is
20 so-called basic research and some applied research.
21 Of two Medical Research Council laboratories concerned
22 with blood transfusion, one has closed and one is
23 likely to close within a year or so. How these gaps
24 are to be filled merits serious consideration, for
25 both laboratories for many years have made

135

1 intolerable.

2 "1972 extension: this enlargement originated
3 from the relatively immense need for normal
4 immunoglobulin to prevent rubella in exposed pregnant
5 women. Later it was decided that the plan should
6 include means for meeting the estimated needs of
7 factor VIII concentrate and, later still, that the
8 building should accommodate means for fractionating
9 all plasma and that freeze-dried small-pool plasma
10 should be replaced by albumin and PPF. It is now
11 known that the estimates for factor VIII concentrate
12 and albumin concentrate on which the plan was based
13 were totally inadequate.

14 "Planning, completed in 1965, was affected by
15 the severe constraints imposed by the site and, in
16 spite of these impediments, reductions in floor space
17 were nevertheless imposed by the Department.

18 "It takes at least 4 to 5 years to plan and
19 build accommodation for a plasma fractionation or any
20 other large laboratory. It is thus impossible for
21 a fractionation laboratory to respond quickly to a new
22 demand unless it has unused space at its command and
23 unless it has been designed in a manner and uses
24 techniques which allow flexibility in its
25 accommodation and in the adjustment of production

134

1 contributions of inestimable value to transfusion and
2 have played an outstanding role in maintaining the
3 reputation and quality of transfusion in this country.
4 DHSS, in order to be able to carry with confidence its
5 responsibility for providing the transfusion service
6 in England and Wales, should consider fostering
7 the development of a central transfusion research
8 laboratory. Without a basis of research and
9 development, a modern effective transfusion service
10 cannot be maintained. DHSS should, at least, ensure
11 that the production work of BPL and PF Lab are
12 supported by adequate research and development, for
13 without this, production will tend to stagnate and the
14 laboratories will find it difficult to keep up with
15 the 'field'. It should be an accepted principle that
16 research and development will not be sacrificed to
17 growing demands for products."

18 That, as we can see, is initialled with
19 Dr Maycock's initials, 8 September 1978.

20 I note the time, sir. I wonder if that might be
21 an opportune moment for a break.

22 **SIR BRIAN LANGSTAFF:** Yes. Certainly. We'll take a break
23 then until 3.45. 3.45.

24 (3.15 pm)

(A short break)

136

1 (3.47 pm)

2 **SIR BRIAN LANGSTAFF:** Yes.

3 **MR HILL:** In this last session, sir, I'm going to
4 hopefully finish the Stop-Gap redevelopments and also
5 look briefly at the pro rata mechanism of distribution
6 of blood products and the single plasma packs, and
7 then consider very briefly the full redevelopment of
8 BPL which followed in the '80s.

9 Before we turn to that, though, a word or two
10 about plasma supply in the late 1970s. We saw
11 yesterday how the £500,000 investment from central
12 funds in the mid 1970s led to an increase in plasma
13 dedicated to factor concentrates to meet the targets
14 of around 340,000 donations per annum by mid 1977.
15 However, as is set out in appendix 2, and in
16 particular paragraph 34 of appendix 2, supply began to
17 slow and to tail off after 1977.

18 The figure for 1977, expressed in kilograms
19 rather than donations, was 64,000 kilograms of fresh
20 frozen plasma provided to BPL and PFL.

21 In 1978 the figure was 78,000 kilograms, so an
22 increase of 14,000.

23 And in 1979, it was 77,000 kilograms. So
24 a slight decrease of 1,000 kilograms between '78 and
25 '79.

137

1 of 47 million units is given directly below that.
2 I'm afraid I can't account for the difference of
3 450,000 there.

4 **SIR BRIAN LANGSTAFF:** Well, it's rounding up.

5 **MR HILL:** I think it must simply be that.

6 NHS concentrate is around 15 million
7 international units. Commercial concentrates are
8 around 19.5 million international units.
9 Cryoprecipitate is around just over 12 million
10 international units, and 24,000 international units of
11 plasma. The percentage proportions are 32% NHS
12 concentrate, 41% commercial concentrate, 26%
13 cryoprecipitate, and 5% plasma. That is for 1978.

14 A couple of other points to pick out from
15 the meeting. There are 4,085 known haemophilia A
16 patients in the United Kingdom. So that is a higher
17 figure than some of the ones that we had seen in the
18 early 1970s. So a larger population than had been
19 thought.

20 The average usage of Factor VIII per patient at
21 that time was 22,000 international units per annum,
22 which correlates relatively closely to Dr Bidwell's
23 earlier estimate. That is, of course, for 1978.

24 We can see that at that time there were
25 976 patients on home therapy or about to start home

139

1 Those figures come from appendix 4 of Dr Lane's
2 draft proof of evidence, and we will discuss tomorrow
3 some of the caveats that apply to that source.

4 If we could turn, please, to DHSC0002195_065,
5 this is a document which was prepared by Dr Walford
6 following her attendance at a Haemophilia Centre
7 Directors meeting on 20-21 November 1979.

8 The front page says 1978, but that is an error.
9 We know this comes from 1979.

10 If we turn to the second page, please, Paul, we
11 can see in the bottom right-hand corner that the date
12 given there is -- for the note, is 23 November 1979.
13 And from the context, as we will see, it's talking
14 about, amongst other things, Factor VIII usage during
15 and at the end of 1978, and hence we know that this
16 must be from 1979.

17 Just on the first page, I'm going to come to the
18 section dealing with plasma supply in a second, but
19 just as a useful little snapshot of where things
20 stood, the meeting discussed, amongst other things,
21 the report received from the Haemophilia Centres for
22 1978, so the previous year. And that showed a total
23 of 46.5 million international units, as calculated
24 according to the table, had been used in the UK
25 for 1978. Slightly confusingly, the figure

138

1 therapy. A little further down:

2 "98 patients were receiving prophylactic
3 (alternate day) treatment ..."

4 So a relatively small number of patients
5 receiving prophylactic treatment. As that number
6 grows, you would expect the average usage per patient
7 to grow as well.

8 That is just a snapshot of where we were in
9 1978. I would also note there:

10 "Haemophilia B:

11 "101 patients were on [home treatment] in 1978
12 and 25 of those were on prophylaxis."

13 The second page, please, Paul.

14 This is a note of the talk by Dr Lane, and it is
15 Dr Walford's note of that talk. It is of interest in
16 particular in respect of this question of plasma
17 supply. What Dr Walford records Dr Lane as saying is
18 this:

19 "BPL achieved its peak FVIII output early in
20 1977. Since that time production has remained static.
21 If anything, in 1979 there has been a fall-off in
22 production because of a fall in the supply of plasma.

23 "The peak BPL annual production of FVIII
24 [equals] 17 million [international units]."

25 I'll come back to that figure.

140

1 "However, BPL has now run out of fresh frozen
2 plan from which the concentrates are produced and
3 December is a very poor month for blood donations.

4 "To ensure future production, Dr Lane said there
5 must be guaranteed plasma supplies and totally
6 accountable usage. This would require a common source
7 of funding for BPL and the RTCs. There should also be
8 a complete change in the arrangements for purchase and
9 distribution of FVIII. BPL could be responsible for
10 both production of FVIII and central purchase and
11 distribution of commercial concentrate. If BPL's
12 production rose, the purchase of commercial
13 concentrate could be correspondingly reduced and vice
14 versa.

15 "Dr Lane proposed a system whereby he returned
16 to a Region all the Factor VIII derived from that
17 Region's plasma. He proposed that BPL should charge
18 for concentrate returned to the Regions and said that
19 this would be an incentive to the Regions to produce
20 more plasma of high quality, since the higher the
21 quality of the plasma, the greater the yield of FVIII
22 per unit of plasma hence the lower unit cost of FVIII
23 to the Regions. If a Region produced too much plasma
24 for its own requirements for FVIII, it could sell the
25 excess FVIII to other Regions at an NHS price (well

141

1 we don't know who made the marginalia.

2 The last comment, the Directors "expressed great
3 concern about the situation and wished to know how
4 they could help to bring pressure to bear for the
5 requisite expenditure on BPL with the aim of NHS
6 self-sufficiency" is marked with two lines and an
7 exclamation mark. Presumably that is done by somebody
8 within the Department of Health because this is a DHSS
9 document.

10 A little higher up, please, as well, Paul.

11 We can see next to the sentence "Dr Lane
12 proposed a system whereby he returned to a Region all
13 the FVIII derived from that Region's plasma", next to
14 that is written:

15 "Not all directors seem in favour of this."

16 That, sir, is a nod towards the pro rata
17 distribution, which we'll come on to talk about in
18 a second.

19 The figure there given of 17 million
20 international units which is described as the peak BPL
21 annual production of Factor VIII, I'm afraid that
22 figure is a little bit of a mystery to us. BPL
23 production, according to the Inquiry legal team's
24 research, was around 15 million international units at
25 around this time. The NHS concentrate produced,

143

1 below commercial prices).

2 "The cost of commercial FVIII in the UK was
3 currently the lowest in Europe because of the effect
4 on the market of the free NHS concentrate. If BPL did
5 not exist, the cost of the commercial product would go
6 up considerably. In addition, evidence from the USA
7 indicated there had been a recent fall-off in the use
8 of albumin preparations (ie a decoupling of the
9 FVIII-albumin usage) and the commercial companies
10 would probably endeavour to recoup their losses on the
11 sale of albumin by increasing the unit cost of FVIII.

12 "Dr Lane pointed out that, in commercial terms,
13 FVIII production comprised only 20% of the total blood
14 product production by BPL. For a running cost of
15 £1.4 million [per annum], BPL was producing the
16 commercial equivalent of £9-10 million of blood
17 products.

18 "Dr Lane's talk was greeted with enthusiasm by
19 the Directors who felt they had been kept in the dark
20 by the previous Director of BPL. They expressed great
21 concern about the situation and wished to know how
22 they could help to bring pressure to bear for the
23 requisite expenditure on BPL with the aim of NHS
24 self-sufficiency."

25 A couple of notes from the marginalia on that;

142

1 according to the reports, was about 15 million
2 international units, and that would have been not just
3 BPL but also PFL and PFC as well. So I'm afraid we're
4 not entirely sure what that 17 million international
5 units refer to, whether it's a potential capacity of
6 certain works were done, or if it referred to
7 a certain stage of the Stop-Gap programme, where it
8 had got to to expand the capacity. It could be that,
9 it could simply be that Dr Walford has noted that down
10 incorrectly in the report. We don't know.

11 **SIR BRIAN LANGSTAFF:** I have a recollection. Whether it's
12 from reading this on an earlier occasion or not,
13 I can't say, but I have a recollection of having seen
14 17 or 17.5 somewhere else, so it may be that you just
15 need to double check that it hasn't been mentioned
16 somewhere else. If it matters.

17 **MR HILL:** We'll keep digging. It certainly could be an
18 indication of the fact that the Stop-Gap programme had
19 made some progress in expanding the capacity from
20 15 million to 17 million, but the short point is
21 15 million or 17 million, it is still well below the
22 estimates for future usage at that time. And as we
23 can see from the first page of that document, it is
24 well below the current usage of factor concentrates at
25 that time as well.

144

Dr Lane, in that talk, is stressing that the problem isn't just the capacity of BPL; it's the fact that there has been a plateauing off of plasma supply to BPL at that time. That is something which he sought to address in two ways. One is, as he hints at in the talk, the pro rata distribution method. And the second is the increased use of single plasma packs, both of which we'll discuss shortly.

We have now caught up with Dr Walford's evidence. I'm not going to repeat that evidence, and I'm not going to go through the next stage in anything like the detail of what we have gone through the past stage in.

It may help, though, just to provide a quick aide memoire in the form of the chronological tables which are in the written presentation.

And if we could have those onscreen, please, Paul. INQY0000333, page 79.

This is just a very brief overview chronology about the redevelopment of BPL from 1979 until 1982, and two strands operating at that time. One is what is happening with the Stop-Gap and MARP01 programmes, and the second is what is happening with the decision-making on the redevelopment of the BPL. I'm not going to look at the second now. It is there in

145

figure and said that, actually, he thought it would cost somewhere between £2 and £2.5 million over two to three years.

On 23 April 1980:

"Ministers asked for the Stop-Gap measures to be 're-examined to see if there might be scope for further savings'."

So it's looking like even that £750,000 is now in threat -- under threat.

On 8 May 1980, following further minutes and further meetings, Dr Harris, the Deputy Chief Medical Officer, wrote to Mr Wormald of the DHSS supporting a reappraisal of short-term works required at BPL, and he commented that, and I quote:

"If ministers do not like the results of our reappraisal, it is up to them to carry the responsibilities and the subsequent serious consequences."

I don't think we have to read between too many lines to see that there is some tension there.

On 22 May 1980, Dr Lane wrote to Mr Harley enclosing costings of a revised programme of works for BPL. This programme is now named MARP01, so that's the Medicines Act Rehabilitation Project, and Dr Lane said that it was renamed to distinguish it from

147

the table, and it was discussed at length with Dr Walford. But I am just going to trace through what happens to Stop-Gap and the outcome of Stop-Gap.

The first entry in that table is 13 June 1979, and that's the Joint Management Committee of BPL deciding that the Stop-Gap programme should go ahead. But then on 13 July 1979, Mr Harley of the DHSS advised the Joint Management Committee against incurring any more expenditure on the Stop-Gap scheme until the future of BPL was decided.

A submission about the future of BPL went in on 21 December 1979, and that went to ministers. On 7 January 1980, as we heard from Dr Walford, Dr Vaughan the Minister of State for Health, agreed to the proposals that there should be a short-term upgrade to BPL, and that there should be further exploration of options for rebuilding, including considering private sector involvement. But he did not commit to a decision in principle to rebuild BPL. But so far as Stop-Gap is concerned, there is agreement that a short-term programme should go ahead.

On 20 February 1980, Dr Lane was authorised to proceed with Stop-Gap but with the DHSS anticipating that the total spend would be somewhere in the region of £750,000. Dr Lane expressed concern about that

146

Stop-Gap, but it is still an interim programme for development at BPL.

On 11 June 1980, so the following month, Dr Lane was asked to put forward a new set of proposals based on the assumption that only £500,000 was going to be available to him. He did that despite expressing reservations about that figure.

29 July 1980, a submission was approved by Dr Vaughan, the minister, agreeing to capital expenditure of £1.3 million over two years, and rejecting options involving lesser expenditure.

So the programme can go ahead, and the capital spend will be £1.3 million over two years, rather than the lesser sums which had been floated in the months previously.

That is in July 1980, but it is not until 2 February 1981 that Dr Lane is given formal authority by the North West Thames Regional Health Authority to proceed to tender with the MARP01 programme.

SIR BRIAN LANGSTAFF: Can you help out precisely how that worked? You told me earlier that the purpose of North West Thames RHA having an involvement in BPL was to be the employer of the staff --

MR HILL: Yes.

SIR BRIAN LANGSTAFF: -- where an employer was necessary.

148

1 This isn't an employer's task; this is somebody who
 2 owns the site or who has oversight or control of the
 3 building, which I thought was DHSS's job.
 4 **MR HILL:** Well, the owning of the site -- I cannot tell
 5 you the exact conveyancing details. My understanding
 6 is that the North West Thames Regional Health
 7 Authority were the client for the project.
 8 **SIR BRIAN LANGSTAFF:** Well, I follow that but why were
 9 they, if their role in this, in BPL, was simply to
 10 employ the staff?
 11 **MR HILL:** I think I may have oversimplified it. I think
 12 it is beyond just employing the staff. I think it's
 13 to be the legal authority for the running of the site,
 14 which may include the -- a role as the manager of
 15 the building.
 16 **SIR BRIAN LANGSTAFF:** So DHSS ran it without having the
 17 legal authority to do so?
 18 **MR HILL:** Sir, I cannot assist, I'm afraid.
 19 **SIR BRIAN LANGSTAFF:** Yes, I'm sorry, I'm asking you
 20 questions you don't know the answer to, but it's -- it
 21 would be helpful just at some point to have that
 22 clarified.
 23 **MR HILL:** Yes.
 24 **SIR BRIAN LANGSTAFF:** I doubt it matters in the overall
 25 scheme of things very much but it would just be nice

149

1 **SIR BRIAN LANGSTAFF:** Yes.
 2 **MR HILL:** Back to Dr Lane:
 3 "281. In the event, for reasons which may be
 4 understandable but which gave rise to a further
 5 frustrating period of delay, [North West Thames]
 6 refused to take over the management of the project
 7 until their capital works personnel had re-checked the
 8 building estimate. Their view (not unreasonably) was
 9 that since they had not been consulted about these
 10 figures and had made no contribution to their
 11 formulation, they had a vested interest in checking
 12 them before becoming the responsible client body on
 13 behalf of the [Department of Health]."
 14 **SIR BRIAN LANGSTAFF:** Well, it now makes rather more sense
 15 to me that their role which they had agreed to do as
 16 project management, they already did project
 17 management presumably because of the various buildings
 18 within the region, and therefore had teams capable of
 19 doing that on the ground ready to go.
 20 **MR HILL:** Yes.
 21 **SIR BRIAN LANGSTAFF:** That makes very good sense. But
 22 it's not quite as you put it, I think.
 23 **MR HILL:** Yes, I think I may have overstated it by saying
 24 that their responsibility was restricted purely to
 25 the -- to being the employing body of the employers.

151

1 to bottom that one out.
 2 **MR HILL:** In Dr Lane's statement, at paragraphs 281 and
 3 284 there may be a degree of explanation.
 4 What he said at paragraph 281 -- Paul, perhaps
 5 we can have this onscreen, CBLA0000005_002.
 6 0000005_002. This is the fifth draft proof of
 7 evidence of Dr Lane, a document that we'll see more of
 8 in the coming days.
 9 If we could turn, please, Paul, to page 115, and
 10 then paragraph 281.
 11 Dr Lane wrote ... actually, perhaps we can go to
 12 the previous paragraph, 280, which might provide the
 13 context.
 14 **SIR BRIAN LANGSTAFF:** Ah.
 15 **MR HILL:** "At the meeting of the Scientific and Technical
 16 Committee which took place on the 17th September 1980
 17 ... there was once again reference in paragraph 7 of
 18 the Minutes to the Minister's approval of capital
 19 expenditure of £1.3m [that's as I've just mentioned]
 20 for the next two financial years and concurrent
 21 increase in revenue centre. It was stated, however:-
 22 "[North West Thames Regional Health Authority]
 23 had agreed to take on project management of the
 24 upgrading work although the precise arrangements had
 25 yet to be formalised'."

150

1 They did do other tasks as well.
 2 **SIR BRIAN LANGSTAFF:** Yes.
 3 **MR HILL:** The distinction, though, I think, out of
 4 fairness to North West Thames Regional Health
 5 Authority, is that questions of grand strategy, as it
 6 were, of long-term policy, they were not for the
 7 Regional Health Authority, those were for the DHSS to
 8 sort out.
 9 So that explains that period of delay which
 10 Dr Lane says was frustrating, although he can
 11 understand it from the point of view of the Regional
 12 Health Authority.
 13 Following that authorisation, the MARP01
 14 programme continues. Dr Lane said that it retained
 15 only some elements of the original Stop-Gap proposals,
 16 in view of the severe financial controls being
 17 exercised. So it was not quite as expansive as
 18 Stop-Gap would have been, although there was
 19 considerable overlap between the two programmes.
 20 The temporary or interim redevelopment did allow
 21 for an expansion of production at BPL, but it did so
 22 contrary to the recommendations of the original report
 23 of the Medicines Inspectorate, which had, as we have
 24 seen, advised that there should be no such expansion
 25 of production until the concerns identified in the

152

report had been addressed. That perhaps shows the leeway that was given to NHS facilities under the Medicines Act, under the waiver of Crown exemption. Dr Lane summarised the effect of Stop-Gap in the BPL annual report of 1982 to 1983.

And if we could go to that now, please, Paul. DHSC0002239_003.

We can see from the front page that this is a report. Although it's entitled an annual report, it actually covers the period from April 1982 to December 1983. It is dated 16 January 1984, and it goes in under the name of Dr Lane.

If we could turn to page 3, please. What Dr Lane wrote is this:

"This Report covers 21 months from April 1982 to December 1983 and its presentation to the Central Blood Laboratories Authority coincides with the completion of the Authority's first year of management. The Report incorporates activities of the Blood Products Laboratory, Elstree (BPL) and Plasma Fractionation Laboratory, Oxford.

"During this period, £2.5 [million] has been spent on modernisation and extension of the existing buildings to allow increased output of factor VIII and albumin solutions to occur with safety while a new

153

BPL, which by that time had been agreed and planned and work was commencing on that.

The earlier section I read was about the Stop-Gap/MARP programme, which had achieved its goal of doubling output to 30 million international units, and also doubling the intake of fresh frozen plasma to 150,000 kilograms per annum.

In a later report, Dr Lane would explain that the final cost of MARP was £2.8 million rather than the £2.5 million which had been reached by the time of that report. He said, and I quote:

"A significant part of this inflated figure was absorbed by repetitive design and interruptions in implementation."

And that is in a document, the reference for which is CBLA0002298.

If we could go back to the bar chart that we looked at earlier, Paul. It's INQY0000336, page 42, please. If we could just focus, please, on the period from 1977 to 1983 and 1984. Thank you.

We can see between '76 and '77 that increase that was the result of the £500,000 investment from Dr Owen. The output of -- sorry, this is referring to the blue section, the NHS Factor VIII output.

That then plateaus, perhaps slightly declines,

155

production building is completed. This project, called the Medicines Act Redevelopment Project (MARP) was finished by November 1982 and the post-MARP production targets met in 1983.

"Annual factor VIII output has doubled to 30M [international units] and units of Plasma Protein Fraction and Albumin have increased from 130,000 to 220,000. The shelf value of this extra production is about £3.5M which has already greatly offset the capital expenditure involved.

"To support the extra products, Regional Blood Transfusion Centres (RTCs) have doubled the input of fresh frozen plasma (FFP) taken from voluntarily donated whole blood: FFP intake is now 150,000 kg per annum."

We go down two paragraphs, please, Paul.

"The development of a new production building commenced on site at Elstree in April 1983 and will cost in excess of £21M."

Then a little later in that paragraph:

"Nominal capacity is 450,000 kg FFP throughput annually to provide 100M iu of factor VIII and 200 kg albumin per one million population deemed necessary to give self-sufficiency to the NHS in these products".

So that is talking about the fully redeveloped

154

into 1980. And then there is an increase to 1981, a smaller increase to 1982, and then increases into 1983 and 1984. And those increases of output of NHS factor concentrate are a result of the Stop-Gap/MARP01 programmes.

We can see in that time there is also a significant amount of commercial product purchased. As NHS output increases, the proportion of commercial to NHS seems to decline in '83 and '84, from a high point in 1981 and 1982. Possibly 1980 as well. The amount of cryoprecipitate being used is declining in this period. Those are the broad trends.

If we could take that down, please, Paul.

The plasma supply, which was also doubled, is related, it seems, to both the pro rata and single plasma pack initiatives. Those are discussed at appendix 4 and appendix 5. I'm not going to go through all of those, but I will provide a very quick summary.

Pro rata. The basic principle is that blood products manufactured at BPL and PFL would be distributed to the regions in proportion to the amount of fresh frozen plasma that they provided to BPL. As we have seen from Dr Lane's talk to the Haemophilia Centre Directors, the idea was that this would serve

156

as an incentive for the regions to invest in both the quantity and the quality of the plasma that they were providing to BPL. And the qualitative point is an important one for Dr Lane.

The thinking behind the pro rata scheme was that as well as that direct incentive, it would also encourage the sort of contractual relationship or semi-contractual relationship between BPL and the Regional Health Authorities that Dr Waiter and Mr Dutton had identified as being desirable in their earlier paper.

There is evidence to support the idea that this slightly more nebulous idea did play a role in increasing plasma supply, or at least in removing disincentives to plasma supply from the regions to BPL.

If we could go, please, Paul, to DHSC0002201_006. This is a letter which is sent by WJE McKee, a Regional Medical Officer for the Wessex Regional Health Authority, to Mr Shaw of the DHSS. And it is 8 October 1980, when Mr McKee and other regional medical officers had been asked for their thoughts about increasing plasma supply to BPL and about the pro rata scheme which Dr Lane was encouraging at that time.

157

region."

So Dr McKee's letter there perhaps providing some support for the idea that there had to be some degree of a relationship between BPL and each region in order to encourage the investment in that region in the plasma supply in the knowledge that it was actually going to produce a return, either nationally or for them.

There was also a point of equity in the pro rata scheme. There was a sense that some regions were in effect subsidising others by investing and providing larger amounts of plasma while others could obtain the Factor VIII without doing so.

In the written report, there is -- there are some bar charts which demonstrate how that may have operated. I won't take you to those.

We can see from the appendix that Dr Lane -- and it seems again very much as if it was his initiative -- began to lay the groundwork for the pro rata scheme from September 1977 while he was still the director designate. He won the support of Mr Dutton, perhaps unsurprisingly in light of the earlier paper which either he or Dr Waiter wrote, and he subsequently also won the backing of Dr Tovey, then the consultant adviser.

159

What Mr McKee said is this, in the second paragraph:

"We are very much in favour of any proposal to increase the capacity of BPL up to national self-sufficiency. I would point out, however, that our previous experiences with BPL have not been all that satisfactory. Our plans for the current year included a significant increase in plasma collection. These plans were based on information supplied to us by the Director of Blood Products Laboratory, Elstree, and, at considerable cost, had to be abandoned when we were informed that BPL were unable to meet their part of the arrangement. We are therefore reluctant to start planning again until we have definitive assurances from BPL that they can accept our plasma and protein fraction. Our own blood transfusion centre has, for a number of years, included in the long-term planning a move to self-sufficiency which has always been limited by the capacity at BPL.

"We fully support the proposal to supply products pro rata to plasma volume and quality, provided that the special position of Lord Mayor Treloar Hospital, Alton, which provides a national service to patients with haemophilia, is recognised and additional factor VIII a.h.f is allocated to this

158

The plan was discussed in 1979 at various meetings, and it seems to have been accepted by Regional Transfusion Directors by February 1980. Later that year, regional administrators were informed that it would be introduced from 1 April 1981.

When it was introduced, it wasn't a pure pro rata scheme. There were some special units identified who would in effect sit outside the scheme, and factor concentrates would be provided to them disproportionately compared to the amount of plasma that they provided because it was recognised that they were providing a national service. Lord Mayor Treloar School was one of those examples, and we can see Mr McKee making the point that he wanted that to be considered from an early stage. Also, the Army was the other, I think, main example.

The scheme first operated on the basis that it would be about 80% pro rata, and 20% would be used to create a national stockpile and to address the needs of those special units. Special provisions were made initially for Wessex and for Oxford regions, which continued to be supplied by PFL, as they had been historically.

Again, there is a bar chart in the written presentation which shows the effect of the 80%

160

1 pro rata distribution which leads to some regions
2 getting more blood products because they're producing
3 more plasma, and some regions getting less.

4 The pro rata scheme led to the end of the
5 arrangements whereby BPL had supplied Northern Ireland
6 with blood products. It was decided that
7 Northern Ireland would be treated pro rata. And as,
8 for logistical reasons, Northern Ireland did not
9 provide fresh frozen plasma to BPL, its pro rata
10 return was therefore nil. And Northern Ireland was
11 encouraged to think about further arrangements and the
12 future arrangements it would make, and ultimately that
13 led to it coming to an agreement with the PFC and
14 Liberton about the provision of plasma and the
15 provision of blood products.

16 You'll hear more about that next week.

17 The pro rata scheme did not apply to Factor IX
18 products. The reason was that at the time that it was
19 introduced, England and Wales were largely
20 self-sufficient in Factor IX, and hence it was
21 supplied on demand. A key to the pro rata
22 distribution scheme is that at that time, for Factor
23 VIII, demand universally exceeded supply, so all
24 regions had an incentive to increase their plasma
25 production in order to get more Factor VIII.

161

1 there was a need to consider what Regional Transfusion
2 Centres were going to do about this.

3 One possibility was to try to create sterile
4 areas in each of the 14 Regional Transfusion Centres,
5 which would have involved considerable capital cost.

6 Dr Lane's proposal was that instead of doing
7 that, there should be a new single plasma pack, and
8 that should be used to collect the plasma that was
9 being taken from the whole blood donation and to
10 collect it in a closed system so that that plasma was
11 not exposed to the elements at the Regional
12 Transfusion Centre, and it would not be pooled until
13 it arrived at BPL. When it did arrive at BPL it would
14 be pooled, eventually, in a sterile area. And Dr Lane
15 pointed out that it is better to spend the money
16 creating one such sterile area at BPL rather than
17 14 at all the Regional Transfusion Centres.

18 That, however, was not the only benefit that
19 Dr Lane foresaw.

20 If we could go, please, to CBLA0001153. This is
21 a paper that was produced by Dr Lane on
22 16 September 1980. It's not his first paper on this
23 topic, but it provides a helpful summary of what he
24 considered to be the benefits of single plasma packs.

25 If we could turn, please, to page 3.

163

1 By 1989 that was no longer the case for Factor
2 VIII, and we'll come to look at that tomorrow, and by
3 that time, plasma-rich regions could end up with more
4 Factor VIII than they were actually using. And that
5 led to a change of scheme and, in 1989, the
6 cross-charging scheme was introduced instead of pro
7 rata.

8 Sir, that is the pro rata scheme.

9 Single plasma packs. Again, this is an
10 initiative that seems to have come largely from
11 Dr Lane, and we saw earlier today the original raising
12 of the scheme from about 1977, I think, when he first
13 suggested it.

14 The background is that the collection by
15 glass bottles had given way to a system of 5-litre
16 pooling, whereby plasma from different donations would
17 be pooled at the Regional Transfusion Centres into one
18 5-litre bag that was then sent to BPL. That was done
19 in an open system, as we saw described in the
20 documents earlier. In other words, plasma product was
21 exposed during that pooling system.

22 That open system was contrary to the principles
23 of good manufacturing practice, unless it was done in
24 a sterile area. And because it would fall foul of the
25 Medicines Inspectorate once Crown immunity was waived,

162

1 The final paragraph, beginning "In summary",
2 Dr Lane says this:

3 "In summary, the SPP [single plasma pack]
4 allows: (i) Collection of blood and FFP in a 'closed
5 system' of packs at RTCs and sets aside the need to
6 meet Medicines Division requirements for handling
7 'open-systems' for FFP collection in 5L pools. (ii)
8 It eliminates time-consuming pooling of FFP into 5L
9 packs at regional centres. (iii) The SPP is not
10 a multi-purpose unit, thus its use establishes an
11 immediate commitment of plasma to fractionation,
12 encouraging a contractual approach to the support of
13 central fractionation and standardisation of FFP
14 quality.

15 "(iv) The SPP allows for more rapid freezing of
16 plasma.

17 "(v) there is positive identification of each
18 donation until immediately before fractionation. This
19 control requirement may become essential for
20 regulatory purposes.

21 "(vi) The SPP will incorporate the bar-code
22 system of pack and donor identification into control
23 procedures at BPL and into pre- and post-quarantine
24 cold storage.

25 "(vii) The SPP is designed for automated

164

opening at BPL allowing rapid accumulation of [fresh frozen plasma] in collecting systems with a high degree of environmental protection of both feedstock and operator."

I won't go on. Those are the key advantages that Dr Lane sees. So, in his view, it is going to be a product which meets the Medicines Division requirements. It's going to be more efficient in terms of the resource required at Regional Transfusion Centres. It is going to allow for the more rapid freezing of plasma and so a better quality of plasma. And it is also going to encourage the idea of a direct relationship between the Regional Transfusion Centre and the fractionation plant, which he considers to be important. And it will also allow for the identification of the donor for each plasma pack, and a barcode system to be introduced to that end, which he identifies as something that may become a regulatory requirement.

Elsewhere, there is also discussion of how a single plasma pack can be tested more accurately for hepatitis using the RIA test, because you are testing one donation rather than a pool of five donations.

And of course, if a donation tests positive, you don't have to throw away 5 litres of plasma; you only

165

that is due to single plasma packs and 50% is due to pro rata.

As we will see tomorrow, the impact of single pack plasma was subsequently eclipsed by the use of this SAG-M additive, but we will, as I say, come to that tomorrow.

That, sir, takes us to the end of the Stop-Gap programme. There is a little more to be said about the redevelopment of BPL. Again, not in detail, but just so that the chronology is presented. And then a short section on the chronology of heat treatment. Ms Richards will go into that in further detail later in the week.

And tomorrow also there will be an opportunity to look at some of the pictorial representations of the data showing both production and plasma supply to BPL in the relevant periods that we've been talking about.

I note the time, sir, and I've come to a stop.

SIR BRIAN LANGSTAFF: Thank you very much. So tomorrow morning, you kick off again at 10.00. 10.00.

(4.39 pm)

(Adjourned until 10.00 am the following day)

167

have to get rid of the single plasma pack.

Dr Lane put forward these proposals in September 1977, and we have seen how he tied them to the Stop-Gap programme as well. One of the stages was of -- the demarcation between the stages was in part determined by the move from 5-litre packs to single-pack plasma.

Dr Lane and BPL co-operated with Travenol on the design of a bag. That was not for exclusive use but it was the one that went forward for trials, which began in late 1980 and expanded in 1981.

In the meantime, BPL worked on capital projects that it required in order to get itself ready for single plasma packs, which included increasing cold storage and an automated process for opening the bags.

As is set out in the appendix, there appear to have been some delays in late 1981 and in 1982, but single plasma packs were being returned to BPL from around the turn of that year.

It does appear to have assisted in increasing the plasma supply, together with the pro rata scheme, but the Inquiry legal team haven't been able to quantify the effect that either of those individual approaches made. We do know, because we have seen, that plasma supply doubled, but we can't say 50% of

166

INDEX

Presentation by Counsel to the	1
Inquiry about self-sufficiency	
and domestic production of	
blood products in England and	
Wales	

168

MR HILL: [100] 1/7 2/16 3/6 3/13 4/25 5/24 6/2 41/5 48/10 50/24 51/11 51/15 51/19 52/3 52/7 52/11 52/14 52/16 53/10 53/12 53/18 54/4 54/6 56/11 56/14 56/18 56/24 62/13 67/5 68/3 68/6 68/11 68/14 68/18 68/22 69/2 69/6 69/11 69/13 69/20 69/23 72/12 72/16 72/20 72/24 73/1 73/14 73/17 78/6 78/17 79/9 79/14 79/19 79/25 80/4 80/11 80/25 81/2 81/8 81/10 81/14 81/17 81/20 81/23 81/25 82/20 84/6 84/8 84/11 86/25 87/3 87/5 87/9 87/13 87/21 87/25 88/24 89/8 89/11 89/25 90/9 91/3 91/15 130/19 131/9 133/15 137/3 139/5 144/17 148/24 149/4 149/11 149/18 149/23 150/2 150/15 151/2 151/20 151/23 152/3 SIR BRIAN LANGSTAFF: [104] 1/6 2/11 3/5 3/12 4/19 5/17 5/25 41/3 48/4 48/9 50/23 51/10 51/13 51/18 51/24 52/6 52/8 52/12 52/15 52/24 53/11 53/14 53/25 54/5 56/7 56/13 56/17 56/23 62/12 67/4 67/18 68/5 68/10 68/12 68/15 68/20 68/25 69/5 69/7 69/12 69/14 69/22 72/6 72/14 72/17 72/22 72/25 73/12 73/16 77/24 78/14 79/7 79/11 79/17 79/20 80/3 80/7 80/12 81/1 81/4 81/9 81/13 81/15 81/18 81/22 81/24 82/18 84/5 84/7 84/9 86/20 87/1 87/4 87/6 87/11 87/14 87/22 88/1 89/1 89/10 89/16 90/8 91/1 91/7 91/14 130/18 131/7 133/13 136/22 137/2 139/4 144/11 148/20 148/25	149/8 149/16 149/19 149/24 150/14 151/1 151/14 151/21 152/2 167/20 ' 40s [1] 84/17 ' 50s [1] 84/17 ' 54 [1] 78/4 ' 54 to [1] 78/4 ' 70s [2] 9/19 80/20 ' 74 [2] 7/15 9/16 ' 75 [1] 9/16 ' 76 [4] 9/17 51/25 52/1 155/21 ' 76 and [1] 155/21 ' 77 [3] 8/14 9/17 155/21 ' 77 to [1] 8/14 ' 78 [3] 8/14 88/12 137/24 ' 78 and [1] 137/24 ' 79 [1] 137/25 ' 80s [2] 118/20 137/8 ' 83 [1] 156/9 ' 83 and [1] 156/9 ' 84 [1] 156/9 ' closed [1] 164/4 ' field [1] 136/15 ' full [1] 58/3 ' open [1] 164/7 ' open-systems [1] 164/7 ' production [2] 55/21 58/18 ' raw [1] 94/8 ' re [1] 147/6 ' re-examined [1] 147/6 ' Stop [7] 105/22 106/16 115/12 126/5 131/17 131/23 135/2 ' Stop-Gap [2] 105/22 115/12 ' Stop-Gap [3] 106/16 126/5 135/2 ' stretched [2] 93/20 93/22 ' time [1] 1/24 ' Trends [2] 99/15 118/18 0 0000005 [1] 150/6 001 [1] 110/25 002 [3] 39/17 150/5 150/6 003 [1] 153/7 004 [1] 19/3 006 [1] 157/18 010 [1] 75/3 045 [1] 49/11	065 [1] 138/4 1 1 April 1981 [1] 160/5 1 million [2] 24/24 54/20 1,000 [12] 47/7 66/24 66/25 68/7 69/9 69/15 69/15 70/2 71/19 103/9 106/24 106/25 1,000 international [1] 68/7 1,000 kilograms [1] 137/24 1,000 population [2] 67/7 67/9 1,000 units [1] 69/9 1,164 [2] 29/13 29/18 1,200 litres [1] 107/17 1,200L/week [1] 107/15 1,213,650 [1] 24/23 1,300 [2] 67/7 70/1 1,787 [1] 120/2 1,800 litres [2] 107/17 107/18 1-1.5 million [1] 59/1 1-5 [1] 25/22 1.2 million [2] 24/24 119/8 1.3 million [2] 148/10 148/13 1.3m [1] 150/19 1.4 million [1] 142/15 1.8 million [1] 119/10 10 [4] 12/15 40/21 60/23 130/25 10 October [1] 63/9 10 September [1] 128/9 10 September 1979 [2] 128/6 128/18 10 years [3] 66/11 99/19 114/6 10-donor [1] 133/18 10-year [1] 74/15 10.00 [4] 1/2 167/21 167/21 167/23 100 [1] 21/15 100 milligrams [1] 66/13 100 million [7] 74/13 113/8 113/16 114/19 114/20 115/1 115/23 100M [1] 154/22 101 [1] 140/11 10p [1] 112/18 11 [2] 61/19 133/2 11 June 1980 [1] 148/3 11 March 1976 [2] 19/12 22/9	11.19 [1] 48/6 11.49 [1] 48/8 11.5 million [1] 9/4 11.50 [2] 48/5 48/5 110,000 kilograms [1] 25/18 115 [1] 150/9 12 [3] 31/8 31/25 61/19 12 million [1] 139/9 12,000 [2] 23/23 24/5 12.35 million [1] 25/11 12.55 [1] 91/4 12.56 [1] 91/11 120 million [3] 120/13 120/19 121/3 123 [1] 39/16 124 [1] 10/10 125 [1] 10/17 13 [1] 61/23 13 December 1978 [1] 83/22 13 January 1977 [1] 40/6 13 July 1979 [1] 146/7 13 June 1979 [1] 146/4 13 million [2] 112/14 114/13 130,000 [1] 154/7 134 [1] 19/4 14 [3] 41/16 45/1 90/17 14 at [1] 163/17 14 million [1] 112/23 14 Regional [1] 163/4 14,000 [1] 137/22 14-15 [1] 44/6 14.1 [1] 9/14 14.1 million [1] 9/8 145 [2] 34/12 35/4 15 [4] 44/6 118/13 118/13 118/15 15 April 1977 [1] 84/24 15 million [19] 9/6 9/14 31/8 31/9 31/25 37/20 38/5 38/12 39/8 39/11 39/19 76/15 106/5 108/21 139/6 143/24 144/1 144/20 144/21 15,000 [2] 23/23 24/6 150 [1] 62/10 150,000 kg [1] 154/14 150,000 kilograms [1] 155/7 16 [2] 4/12 128/11 16 January 1984 [1] 153/11	16 March 2022 [1] 1/1 16 September 1980 [1] 163/22 160 [1] 67/16 163 [1] 73/24 164th regional [1] 75/4 167 [1] 77/14 17 [1] 144/14 17 million [7] 112/15 114/14 140/24 143/19 144/4 144/20 144/21 17.5 [1] 144/14 178 [1] 77/9 17th September 1980 [1] 150/16 18 June 1976 [1] 34/11 18,000 [1] 29/11 180,000 kilograms [1] 24/17 180ml [1] 30/16 19 July 1979 [1] 128/11 19.5 million international [1] 139/8 190 [1] 109/6 192 [1] 117/3 1943 [3] 77/18 77/22 78/9 1946 [1] 79/1 1949-1952 [1] 133/10 1952 [1] 133/10 1954 [7] 77/23 78/8 80/4 80/24 81/19 81/21 133/10 196 [1] 121/8 1960s [1] 85/8 1962 [1] 133/22 1965 [1] 134/14 1968 [2] 91/20 135/3 1969 [2] 6/22 6/24 1970s [3] 137/10 137/12 139/18 1971 [3] 7/5 7/12 17/14 1972 [4] 7/6 7/14 82/10 134/2 1973 [6] 7/15 7/20 7/22 8/25 22/14 103/17 1974 [5] 8/13 16/16 43/4 46/24 103/17 1975 [19] 7/16 7/24 9/2 10/13 11/13 11/14 12/14 12/18 15/11 17/11 17/20 17/23 18/2 18/4 18/4 22/19 57/9 82/12 123/22 1976 [39] 9/3 12/14 12/18 17/21 18/2	18/11 18/11 18/15 19/5 19/12 19/13 22/7 22/9 22/19 23/7 28/3 34/7 34/11 35/8 37/9 39/25 45/1 45/3 48/12 49/14 51/16 52/5 75/5 75/22 76/17 92/5 92/7 92/11 92/12 93/4 93/8 119/8 119/23 120/2 1977 [42] 3/20 7/24 8/4 8/14 9/4 9/15 25/5 25/21 31/5 37/24 40/6 41/15 42/18 62/19 63/9 63/12 63/25 68/22 73/21 84/24 84/25 93/4 93/8 93/9 93/24 97/22 97/23 105/14 110/22 115/6 118/23 119/10 119/23 132/15 137/14 137/17 137/18 140/20 155/20 159/20 162/12 166/3 1978 [34] 3/24 6/22 9/5 19/23 73/22 74/10 74/12 76/14 83/6 83/22 84/19 85/2 85/13 86/24 88/8 106/8 109/8 109/23 109/24 110/5 119/10 132/15 132/21 132/25 136/19 137/21 138/8 138/15 138/22 138/25 139/13 139/23 140/9 140/11 1978-1982 [1] 105/23 1979 [26] 19/23 111/1 114/7 115/7 116/10 117/19 117/19 118/2 121/18 122/9 127/14 127/20 128/6 128/11 128/18 137/23 138/7 138/9 138/12 138/16 140/21 145/20 146/4 146/7 146/12 160/1 1980 [17] 8/15 86/17 146/13 146/22 147/4 147/10 147/21 148/3 148/8 148/16 150/16 156/1 156/10 157/21 160/3 163/22 166/11 1980s [3] 85/15 120/16 121/2 1981 [7] 85/22 148/17 156/1 156/10 160/5 166/11 166/17 1982 [11] 86/10 106/8 112/24 145/20 153/5 153/10 153/15 154/3 156/2 156/10 166/17 1982 [1] 105/23 1983 [7] 153/5 153/11 153/16 154/4 154/18
---	---	---	--	--	--

1 1983... [2] 155/20 156/3 1984 [3] 153/11 155/20 156/3 1989 [2] 162/1 162/5 1990 [2] 4/6 26/7 2 2 February 1981 [1] 148/17 2,400 litres [1] 107/18 2,400L/week [1] 107/15 2.00 [2] 91/9 91/10 2.01 [1] 91/13 2.2 million [1] 9/2 2.5 [1] 153/22 2.5 million [2] 147/2 155/10 2.7 million [1] 8/25 2.8 million [1] 155/9 20 [2] 142/13 160/18 20 December 1977 [1] 105/14 20 February 1976 [1] 18/11 20 February 1980 [1] 146/22 20 million [2] 38/8 121/21 20 October [1] 50/13 20-21 November 1979 [1] 138/7 200 [4] 24/13 67/3 67/6 103/9 200 g [1] 106/25 200 grams [1] 71/19 200 kg [1] 154/22 200 milligrams [1] 66/14 200-220ml [1] 30/15 2022 [1] 1/1 21 [1] 153/15 21 December 1979 [1] 146/12 21 million [2] 29/13 29/23 211 [1] 1/21 21M [1] 154/19 22 June [1] 35/15 22 June 1976 [1] 35/8 22 May 1980 [1] 147/21 22,000 international [1] 139/21 220,000 [1] 154/8 220ml [1] 30/15 225,000 kilograms [1] 24/19 23 [2] 93/16 128/11	23 April 1980 [1] 147/4 23 November 1979 [1] 138/12 24 million [1] 112/23 24,000 international [1] 139/10 240 financial [1] 24/14 25 [1] 140/12 25 October 1977 [3] 97/23 110/22 115/6 25,000 [2] 23/25 44/21 25,000 international [1] 27/7 250 [1] 120/20 26 [2] 23/13 139/12 26 July 1976 [2] 37/9 76/17 26 March 1979 [1] 111/1 27 April [1] 128/11 27 January 1976 [1] 23/7 275,000 [1] 46/25 28.72 [1] 15/12 280 [1] 150/12 281 [4] 150/2 150/4 150/10 151/3 284 [1] 150/3 29 July 1980 [1] 148/8 29 March 1979 [1] 115/7 3 3 January 1977 [1] 73/21 3 January 1978 [1] 73/22 3 million [1] 112/18 3 phases [1] 100/18 3,000 [7] 23/20 24/5 24/5 27/23 30/11 34/24 54/18 3.15 [1] 136/24 3.45 [2] 136/23 136/23 3.47 [1] 137/1 3.5M [1] 154/9 30 [2] 25/12 58/7 30 acres [1] 112/6 30 million [4] 106/6 108/21 112/13 155/5 30M [1] 154/5 31 [2] 31/7 118/2 32 [1] 139/11 34 [2] 15/1 137/16 34 million [1] 31/7 340,000 [2] 47/2 137/14 343,000 [1] 25/9 343,100 [2] 25/4 25/20	35 [1] 38/3 35 million [3] 33/19 37/25 38/10 36 [2] 24/6 27/13 36 million [1] 24/16 375,000 litres [1] 120/18 4 4 May 1976 [1] 28/3 4 million [1] 31/10 4,085 [1] 139/15 4.39 [1] 167/22 40 [2] 47/11 74/25 40 million [3] 30/8 30/17 38/3 40,000 [1] 27/8 40,000,000 [1] 42/7 40-50 million [2] 43/3 43/18 400 [1] 14/7 400,000 [1] 36/1 400,000 donations [1] 36/15 41 [1] 139/12 42 [2] 4/1 155/18 45 million [3] 24/6 24/18 27/13 450,000 [2] 139/3 154/21 46 [1] 45/3 48.5 million [1] 118/24 5 5 litres [1] 165/25 5 years [2] 29/15 36/6 5-litre [3] 162/15 162/18 166/6 5.3 [1] 75/9 50 [4] 42/25 76/21 166/25 167/1 50 milligrams [1] 66/16 50 million [12] 47/11 68/18 74/18 74/25 75/12 75/23 76/5 76/7 103/8 103/14 110/22 115/4 50 per cent [1] 25/21 50,000 international [1] 27/9 500 litres [1] 126/14 500,000 [10] 3/16 17/7 25/1 39/25 46/21 94/18 97/1 137/11 148/5 155/22 500,000 litres [1] 120/19 55 million [1] 7/8 56 million [2] 69/18 69/19	593,340 [1] 25/18 5L [4] 107/22 107/23 164/7 164/8 6 6.1 million [1] 9/3 60 [1] 34/21 60 million [13] 44/20 45/17 68/17 68/23 70/9 74/11 76/4 76/7 112/11 114/3 114/10 115/3 118/19 60 million international [1] 68/9 61,000 kilos [1] 25/10 64,000 kilograms [1] 137/19 68 [1] 77/6 69-page [1] 118/5 7 7 January 1980 [1] 146/13 7 June 1979 [2] 121/18 122/9 7 million [1] 7/7 74 million [1] 69/24 75 [2] 1/21 23/13 750,000 [2] 146/25 147/8 750,000 donations [1] 25/2 77,000 kilograms [1] 137/23 78,000 kilograms [1] 137/21 79 [1] 145/18 8 8 December 1976 [1] 75/5 8 May 1980 [1] 147/10 8 October 1980 [1] 157/21 8 September 1978 [2] 132/25 136/19 80 [2] 160/18 160/25 9 9-10 million [1] 142/16 90 million [3] 120/15 120/18 121/1 90,000 [1] 14/6 970,920 donations [1] 24/22 976 patients [1] 139/25 98 patients [1] 140/2 A a.h.f [1] 158/25	abandoned [2] 133/16 158/11 ability [1] 55/9 able [7] 26/20 55/14 56/8 63/6 115/23 136/4 166/22 about [133] 1/3 1/9 1/17 2/21 2/25 3/3 5/2 5/4 5/9 5/16 6/10 8/5 8/7 9/8 9/13 10/2 10/2 10/23 13/22 14/21 15/16 16/14 17/23 18/5 22/17 23/20 24/13 24/14 25/10 25/12 25/21 26/3 29/8 30/5 34/4 36/15 40/23 41/17 44/3 44/10 44/21 46/19 47/7 48/16 48/18 53/15 53/20 56/14 59/7 59/12 60/2 60/14 60/19 60/22 61/10 62/20 64/8 64/9 66/13 66/16 66/19 66/24 67/23 70/14 74/3 80/14 84/1 87/10 89/8 91/3 93/23 94/2 95/16 96/6 96/8 96/19 97/10 97/11 97/15 101/18 105/5 110/4 112/11 112/12 112/13 112/18 112/18 114/10 114/12 114/17 114/19 116/1 118/11 118/11 118/16 122/18 123/15 124/15 125/22 125/24 126/14 127/17 128/1 128/1 128/9 128/19 132/14 137/10 138/14 139/25 142/21 143/3 143/17 144/1 145/20 146/11 146/25 148/7 151/9 154/9 154/25 155/3 157/23 157/24 160/18 161/11 161/14 161/16 162/12 163/2 167/8 167/18 168/3 above [4] 7/8 41/5 103/7 120/22 abroad [1] 29/22 absolutely [2] 4/25 73/1 absorbed [1] 155/13 accept [4] 21/24 33/16 66/22 158/15 acceptable [1] 130/8 acceptance [2] 65/22 74/1 accepted [8] 21/15 32/2 33/3 74/5 102/6 102/19 136/15 160/2 accommodate [1]	134/8 accommodating [1] 107/21 accommodation [6] 71/20 92/13 133/20 134/19 134/25 135/2 accompanied [1] 4/7 accompanies [1] 20/25 accompanying [1] 21/19 according [10] 3/23 9/5 10/8 55/25 56/22 88/11 121/22 138/24 143/23 144/1 account [4] 34/6 64/7 82/8 139/2 accountability' [1] 58/3 accountable [1] 141/6 accruing [1] 101/4 accumulation [1] 165/1 accurate [1] 5/20 accurately [1] 165/21 accustomed [1] 54/17 achieve [9] 46/22 53/13 60/22 65/1 67/13 71/13 72/9 90/15 104/24 achieved [17] 3/20 3/20 13/19 31/6 37/24 47/1 57/21 61/6 70/1 70/3 70/11 70/12 102/12 114/7 124/18 140/19 155/4 achieving [4] 34/5 49/3 57/5 109/3 acquaint [1] 58/14 acquainted [1] 126/23 acquiring [2] 20/11 20/24 acres [1] 112/6 across [2] 78/15 114/10 Act [16] 91/20 91/23 91/24 91/25 92/17 92/20 99/20 100/11 101/19 123/19 123/21 123/23 135/3 147/24 153/3 154/2 acting [1] 82/11 action [7] 12/4 18/7 93/4 103/3 106/15 125/15 125/21 active [5] 14/14 43/24 67/22 75/17 135/15 activities [7] 41/19 61/10 61/20 88/2 88/20 102/7 153/19 activity [5] 4/22 20/5 26/19 69/4 120/2
--	--	--	--	--	---

A	advocating [2] 3/7 75/20 affairs [3] 83/19 84/25 125/8 affected [6] 22/2 23/24 24/1 27/6 127/11 134/14 affirmed [1] 102/22 afraid [11] 3/2 5/3 6/15 63/5 77/4 80/6 82/23 139/2 143/21 144/3 149/18 after [20] 2/14 3/13 7/22 34/5 44/9 74/12 79/18 85/22 96/10 108/17 110/5 113/12 118/15 120/24 125/9 126/16 127/19 132/8 133/5 137/17 after 1977 [1] 137/17 afterthought [1] 133/21 again [15] 6/18 11/25 19/23 33/22 35/2 48/20 52/6 61/22 150/17 158/14 159/18 160/24 162/9 167/9 167/21 against [1] 146/8 agent [1] 14/4 agents [1] 20/16 aggressive [1] 60/12 ago [1] 115/6 agreed [21] 31/20 32/9 33/15 33/21 39/20 42/20 55/25 75/11 85/10 102/10 103/1 103/5 113/13 116/5 125/9 126/17 126/22 146/14 150/23 151/15 155/1 agreeing [2] 72/7 148/9 agreement [4] 45/14 114/21 146/21 161/13 Ah [1] 150/14 ahead [6] 36/11 70/18 131/9 146/6 146/21 148/12 AHG [1] 56/6 aide [2] 77/11 145/15 aim [6] 18/24 64/24 70/20 120/9 142/23 143/5 aimed [2] 41/10 113/3 aiming [1] 121/12 aims [3] 106/13 106/17 106/23 aired [1] 60/20 albeit [2] 21/17 76/3 albumin [33] 1/9 1/14 2/2 2/8 33/13 65/5	65/15 65/24 66/6 66/7 66/12 66/19 67/3 67/6 67/13 70/11 71/3 71/19 99/18 100/23 103/10 106/22 106/25 107/9 112/8 134/10 134/12 142/8 142/9 142/11 153/25 154/7 154/23 alighted [1] 34/9 all [52] 1/15 5/6 5/6 5/17 5/20 6/11 6/19 7/20 10/20 12/20 12/25 13/24 19/9 20/8 21/16 21/23 30/9 32/4 35/2 45/1 45/3 45/20 53/8 57/17 58/1 58/3 61/18 62/17 66/5 67/9 75/12 75/23 79/18 94/10 106/9 109/21 109/25 113/6 115/11 119/20 124/7 130/21 134/9 135/15 135/17 141/16 143/12 143/15 156/18 158/6 161/23 163/17 allied [3] 28/2 28/10 47/19 allocated [1] 158/25 allocation [2] 34/2 57/9 allocations [1] 57/3 allow [7] 38/21 109/15 134/24 152/20 153/24 165/10 165/15 allowances [1] 32/23 allowed [2] 27/9 109/11 allowing [2] 71/23 165/1 allows [2] 164/4 164/15 almost [3] 61/1 99/9 125/19 alone [3] 32/18 54/18 100/8 along [3] 6/6 13/2 117/16 already [10] 18/2 45/14 59/17 88/22 112/19 114/6 123/3 131/25 151/16 154/9 also [60] 3/18 6/11 8/12 8/16 10/2 10/14 18/4 20/5 27/2 28/9 28/19 34/18 35/5 47/22 48/18 49/25 51/4 63/6 65/25 67/8 71/3 71/22 72/2 73/9 73/19 76/12 76/18 80/21 81/8 81/10 81/11 84/1 84/20	85/24 85/25 86/8 87/2 95/10 103/25 111/12 117/22 120/5 122/17 123/4 127/3 137/4 140/9 141/7 144/3 155/6 156/6 156/14 157/6 159/9 159/24 160/15 165/12 165/15 165/20 167/14 alter [1] 109/19 alternate [1] 140/3 alternate day [1] 140/3 alternative [2] 18/25 130/11 alternatives [2] 125/20 126/8 although [15] 20/25 33/2 48/22 73/7 94/9 102/5 108/19 123/23 124/12 128/17 132/7 150/24 152/10 152/18 153/9 Alton [2] 40/17 158/23 always [6] 6/7 6/15 55/10 108/15 121/12 158/19 am [10] 1/2 11/3 11/7 30/1 37/5 48/6 48/8 133/3 146/2 167/23 amended [1] 109/23 America [1] 65/22 American [1] 135/14 among [4] 28/7 92/8 102/7 111/6 amongst [3] 127/1 138/14 138/20 amount [35] 2/19 6/3 7/3 9/18 12/2 25/6 25/25 29/3 35/22 36/5 43/20 43/24 44/3 44/7 44/17 50/3 55/7 59/10 59/12 59/14 59/16 62/7 62/8 66/12 66/23 67/9 76/24 101/13 104/17 108/25 110/10 156/7 156/11 156/22 160/10 amounts [3] 78/20 113/20 159/12 ample [1] 54/23 anaesthetist [1] 63/19 analysis [1] 125/18 Anglia [1] 63/17 Angry [1] 10/19 ankylosing [2] 13/11 14/3 Annex [1] 103/11 announcement [2] 17/6 17/11 annual [18] 4/5 4/6 5/19 12/17 29/12	66/12 66/15 67/20 92/11 97/22 118/21 120/23 132/12 140/23 143/21 153/5 153/9 154/5 annually [7] 14/8 36/1 54/20 103/9 103/10 112/19 154/22 annum [22] 29/23 32/1 37/20 37/25 38/8 38/10 42/8 46/25 47/12 59/1 66/25 68/8 69/16 71/19 113/9 113/17 120/20 137/14 139/21 142/15 154/15 155/7 another [5] 6/12 58/21 65/25 75/19 122/16 answer [7] 3/23 8/6 9/12 11/2 11/8 89/16 149/20 answers [3] 11/23 17/8 17/20 anticipate [1] 36/16 anticipated [2] 32/18 71/4 anticipates [1] 25/4 anticipating [2] 72/17 146/23 antigen [1] 21/20 any [24] 5/22 9/14 17/25 20/21 34/1 39/22 50/2 51/14 56/4 57/12 58/4 68/2 73/5 87/16 88/17 89/20 94/11 113/22 127/5 130/22 133/20 134/19 146/9 158/3 anybody [1] 22/10 anything [3] 11/11 140/21 145/11 anyway [2] 52/15 87/2 anywhere [1] 115/23 apart [3] 18/25 54/11 94/12 Apologies [1] 37/14 apparent [5] 49/21 123/4 124/13 125/5 126/3 appear [5] 55/1 70/4 132/23 166/16 166/20 appeared [3] 10/14 113/1 122/23 appears [6] 11/15 36/10 55/20 58/14 78/15 89/22 appendix [16] 3/9 14/24 15/1 22/20 48/21 62/16 74/9 97/15 97/19 137/15 137/16 138/1 156/17 156/17 159/17 166/16	appendix 1 [4] 14/24 22/20 62/16 74/9 appendix 2 [3] 48/21 137/15 137/16 appendix 5 [3] 3/9 97/19 156/17 application [1] 99/20 Applications [1] 92/4 applied [2] 92/1 135/20 applies [1] 21/12 apply [3] 91/23 138/3 161/17 appoint [2] 131/6 131/11 appointed [2] 63/12 84/23 apportioning [1] 58/6 appraisal [3] 122/23 123/10 126/18 appreciated [1] 133/20 appreciation [1] 65/10 approach [3] 113/16 126/17 164/12 approaches [1] 166/24 approaching [1] 54/19 appropriate [4] 114/5 130/4 131/6 131/11 approval [3] 82/4 109/7 150/18 approved [1] 148/8 approximately [10] 7/7 8/7 8/9 9/11 24/24 25/6 30/11 34/21 67/7 119/8 April [10] 84/24 84/25 117/19 122/6 128/11 147/4 153/10 153/15 154/18 160/5 are [88] 2/18 2/25 3/2 5/16 6/10 6/16 8/2 13/21 14/6 20/14 20/18 20/19 21/5 24/22 27/1 27/13 27/14 28/11 28/19 29/19 34/12 51/3 51/22 54/15 54/16 55/8 58/13 59/6 59/13 61/3 61/24 63/12 63/14 63/23 63/25 64/3 64/4 67/12 68/13 70/5 70/6 71/2 72/12 74/9 77/13 84/15 87/10 94/3 96/15 98/15 100/2 101/16 103/23 104/15 104/17 105/10 108/20 109/6 109/10 110/3 110/12
----------	--	---	--	--	---

A	47/3 47/12 74/14 118/8 118/14 assist [1] 149/18 assisted [3] 82/21 83/23 166/20 associated [4] 46/20 78/19 107/23 119/17 assume [1] 120/22 assumed [1] 85/23 assumption [8] 5/11 23/20 24/11 30/15 65/15 65/21 68/3 148/5 assumptions [7] 4/20 14/11 23/12 23/17 27/17 27/17 74/8 assurances [1] 158/15 asterisk [2] 21/11 63/24 atmosphere [1] 94/2 attached [2] 50/22 50/25 attain [1] 60/24 attained [1] 33/23 attempt [1] 4/14 attempting [1] 61/7 attempts [1] 57/24 attendance [2] 28/19 138/6 attendees [3] 40/8 40/12 122/10 attention [5] 14/25 29/4 32/11 33/24 125/25 attributed [1] 34/13 author [2] 14/10 28/12 authorisation [1] 152/13 authorised [1] 146/22 authorities [10] 11/17 12/4 17/10 64/18 98/7 102/3 104/5 104/23 105/1 157/9 authority [18] 83/11 83/13 83/16 83/21 84/13 86/9 86/11 148/17 148/18 149/7 149/13 149/17 150/22 152/5 152/7 152/12 153/17 157/20 Authority's [1] 153/18 authors [1] 47/9 automated [2] 164/25 166/15 availability [5] 20/7 54/21 59/22 94/5 124/9 available [27] 11/5 12/3 12/20 19/6 20/23 32/13 33/10 33/17 39/24 45/18 49/21	50/1 50/15 59/18 60/1 61/3 67/1 67/8 78/16 80/23 112/6 117/9 119/11 124/13 130/1 135/6 148/6 average [4] 23/24 24/3 139/20 140/6 avoid [2] 22/6 121/11 avoided [2] 32/21 54/14 awaited [1] 116/13 aware [4] 37/25 47/24 58/11 87/9 awareness [1] 110/1 away [2] 104/17 165/25	B back [26] 6/6 8/20 27/10 52/24 62/13 67/18 69/12 74/21 77/18 78/9 84/16 88/5 91/8 96/3 97/1 97/20 100/1 100/16 103/2 103/20 105/2 114/15 116/9 140/25 151/2 155/17 background [7] 51/2 79/22 85/5 88/11 109/25 118/6 162/14 backing [1] 159/24 bacteriology [2] 101/1 133/23 Badman [1] 38/22 bag [2] 162/18 166/9 bags [2] 107/23 166/15 balanced [1] 54/8 bar [13] 4/1 4/3 4/10 5/13 6/12 6/19 7/14 7/18 9/19 155/17 159/15 160/24 164/21 bar-code [1] 164/21 barcode [1] 165/17 Barkhan [1] 43/9 BART0000686 [2] 68/11 69/21 based [17] 4/4 15/20 16/8 23/12 26/12 30/10 47/12 47/15 57/3 62/5 65/15 102/25 107/20 123/20 134/12 148/4 158/9 bases [1] 15/17 basic [4] 66/13 83/9 135/20 156/20 basis [15] 7/21 30/14 45/9 49/25 57/21 66/2 67/1 70/23 75/25 83/12 91/16 102/17 104/12 136/8 160/17 batch [2] 21/3 21/9	be [301] bear [3] 55/6 142/22 143/4 bearing [1] 103/6 beast [1] 88/23 beasts [1] 88/24 became [4] 33/10 49/20 88/13 113/19 because [34] 2/12 5/18 16/2 48/25 49/7 51/25 52/8 53/6 54/15 57/23 73/18 73/19 80/19 84/12 85/9 96/9 96/19 109/18 109/19 109/20 114/9 119/4 125/5 127/11 132/23 140/22 142/3 143/8 151/17 160/11 161/2 162/24 165/22 166/24 become [6] 11/5 43/17 75/20 94/19 164/19 165/18 becomes [4] 7/21 8/18 96/11 111/9 becoming [3] 32/13 133/25 151/12 been [99] 2/6 2/24 5/21 7/20 9/16 12/1 12/25 13/2 15/25 20/13 22/23 30/3 31/18 33/5 33/23 34/3 36/13 37/2 37/4 38/1 38/5 38/9 41/25 44/17 45/10 45/14 46/22 47/10 48/16 50/8 61/1 63/6 74/4 75/6 78/8 81/11 84/23 87/2 87/3 87/18 88/10 88/22 90/11 92/17 93/2 94/11 95/6 95/9 95/16 95/24 96/24 102/22 103/18 106/15 106/24 107/10 110/6 110/16 113/21 114/7 117/22 120/14 121/11 123/11 123/21 123/24 123/25 124/5 124/7 125/18 126/13 126/20 127/23 128/19 133/19 134/23 138/24 139/18 140/21 142/7 142/19 144/2 144/15 145/3 148/14 151/9 152/18 153/1 153/22 155/1 155/10 157/22 158/6 158/19 160/2 160/22 166/17 166/22 167/17 before [29] 1/7 4/20 7/20 9/15 15/15 36/23 49/9 52/2 64/22 75/5 77/1 92/17 96/6 103/14 105/3 106/4	107/3 108/12 115/7 115/8 122/10 123/13 124/12 126/8 132/10 132/10 137/9 151/12 164/18 began [4] 57/6 137/16 159/19 166/11 begin [2] 5/3 91/5 beginning [4] 7/18 18/9 93/20 164/1 begins [2] 81/2 98/18 begun [1] 79/2 behalf [9] 78/24 82/3 82/13 83/13 85/11 85/14 92/4 98/2 151/13 behind [5] 15/4 19/16 101/15 116/23 157/5 being [56] 6/13 6/25 10/5 10/6 13/12 22/22 26/21 29/3 29/6 30/12 30/16 32/7 33/22 35/20 36/25 41/14 42/19 47/17 49/18 55/1 56/8 62/2 63/1 67/21 70/14 74/19 75/24 85/16 85/24 89/20 96/19 98/17 99/23 100/10 101/11 102/18 102/21 110/14 112/14 112/15 112/19 113/20 114/11 115/16 116/10 119/3 120/8 123/7 127/2 130/10 151/25 152/16 156/11 157/10 163/9 166/18 believe [8] 36/2 59/10 59/15 66/3 67/2 70/16 70/20 71/1 believed [1] 33/1 Bell [1] 63/25 below [6] 7/7 29/22 139/1 142/1 144/21 144/24 beneficial [1] 41/9 benefit [1] 163/18 benefits [2] 21/25 163/24 Benner [2] 63/13 73/8 beside [1] 54/22 best [4] 4/9 10/7 50/15 67/1 better [8] 5/22 5/25 32/7 45/22 91/7 123/5 163/15 165/11 between [42] 1/12 2/20 7/24 8/13 8/14 9/13 9/16 12/6 15/5 17/5 20/3 24/6 25/1 27/8 27/13 36/25 45/15 45/17 55/21 58/4 58/18 74/25	85/10 95/8 97/24 102/2 104/4 104/21 105/5 106/21 112/23 117/15 120/7 137/24 147/2 147/19 152/19 155/21 157/8 159/4 165/13 166/5 beyond [1] 149/12 Bidwell [13] 23/4 23/16 25/7 25/8 26/2 26/21 27/6 28/12 46/8 72/4 76/13 76/23 85/20 Bidwell's [4] 26/10 26/23 27/12 139/22 big [3] 9/16 45/17 110/18 bigger [1] 109/15 Biggs [10] 10/17 23/12 30/7 38/11 38/19 43/1 43/4 43/13 47/8 74/23 biological [1] 123/20 bit [5] 53/1 53/3 53/8 111/2 143/22 bits [1] 53/8 Blackburn [5] 10/18 28/17 41/25 42/10 45/5 blaming [1] 56/8 bleed [1] 11/8 bleeding [2] 13/6 30/25 blood [161] 1/4 2/4 11/3 12/13 12/20 15/13 15/13 15/16 15/20 15/25 16/8 16/9 16/11 16/11 16/18 17/24 18/7 21/1 21/2 33/13 34/22 35/3 35/7 35/13 35/21 36/1 36/20 36/20 42/5 44/14 45/24 48/1 48/1 48/11 48/11 48/19 49/16 49/17 49/18 50/16 50/16 50/18 52/17 52/19 53/7 53/14 53/23 54/16 54/20 54/22 54/25 55/5 55/13 55/14 55/23 55/25 57/11 57/13 57/20 58/2 58/5 58/8 58/12 58/15 58/19 58/23 58/25 59/4 59/9 59/16 60/4 60/14 60/24 61/3 61/4 61/8 61/11 61/13 61/22 61/24 62/4 63/3 63/15 63/16 64/6 64/9 64/17 64/19 65/2 65/4 65/8 65/11 65/23 65/24 67/2 68/2 71/1
----------	---	---	---	--	--	--

(46) are... - blood

B	112/21 BPL's [4] 39/23 77/18 98/20 141/11 BPLL0001508 [1] 117/25 BPLL0008430 [1] 110/25 break [10] 48/3 48/4 48/7 103/15 106/5 132/8 132/11 136/21 136/22 136/25 breakdown [2] 2/6 119/22 Bridge [2] 80/9 80/10 brief [1] 145/19 briefing [1] 36/11 briefly [2] 137/5 137/7 bring [3] 35/9 142/22 143/4 bringing [1] 59/3 brings [1] 105/2 British [3] 11/3 11/5 11/10 broad [8] 24/3 36/14 64/16 64/24 69/1 98/22 135/17 156/12 broadened [1] 98/12 brought [1] 117/21 BTS [1] 13/16 budgetary [1] 82/4 build [3] 57/7 72/18 134/19 building [16] 44/15 46/12 55/21 82/4 100/22 100/24 117/7 133/9 133/10 133/17 134/8 149/3 149/15 151/8 154/1 154/17 buildings [6] 44/8 125/1 128/24 129/2 151/17 153/24 built [2] 82/10 107/4 bulk [1] 107/21 bulky [1] 13/13 but [145] 1/15 1/25 2/9 3/2 3/20 5/10 5/14 5/25 6/4 6/9 6/19 7/16 7/21 8/2 8/21 9/15 10/2 14/3 16/25 17/15 17/18 18/1 22/11 23/8 24/14 25/21 26/1 26/9 27/5 27/11 29/18 30/11 31/3 31/17 32/5 32/9 33/21 33/22 34/9 36/14 38/7 40/9 40/23 47/3 51/11 51/13 51/17 52/1 52/6 52/7 56/19 59/7 60/15 61/2 62/18 63/10 66/4 67/22 67/25 68/18 68/24 69/7 69/13 71/5 71/19 72/7 72/22 73/5	73/19 73/21 75/25 76/6 76/22 77/11 78/4 78/9 79/20 79/20 80/22 80/25 81/15 82/19 82/22 84/15 84/25 87/19 88/8 90/4 90/9 90/12 90/24 91/21 93/4 96/15 96/18 97/20 99/3 103/3 103/16 103/25 106/10 107/2 107/22 108/15 109/8 109/18 112/13 114/23 115/22 116/12 119/11 120/10 121/5 126/12 129/11 130/21 131/21 132/10 135/17 138/8 138/18 144/3 144/13 144/20 146/2 146/7 146/18 146/20 146/23 148/1 148/16 149/8 149/20 149/25 151/4 151/21 152/21 156/18 163/23 166/9 166/17 166/22 166/25 167/5 167/9 buy [2] 38/20 46/3 buying [1] 18/25 by [141] 1/3 2/7 2/17 3/20 3/23 4/7 7/13 7/17 9/5 9/14 13/5 14/6 14/11 18/12 18/12 21/3 21/7 21/10 22/13 22/15 22/23 23/3 23/22 24/4 25/5 27/14 27/14 27/22 28/12 28/25 31/4 31/24 32/23 33/6 34/10 36/13 36/22 37/16 39/23 39/24 43/18 44/13 46/25 47/2 47/3 48/2 48/12 48/13 51/1 56/20 60/18 63/7 63/25 67/14 72/4 72/12 73/8 76/11 76/12 76/15 76/16 78/3 78/17 82/22 83/15 83/23 85/11 88/11 91/19 94/5 94/10 94/14 95/10 99/23 100/12 101/3 101/23 102/12 102/15 102/19 102/24 103/18 105/18 107/13 111/11 112/15 112/16 112/23 113/10 113/24 114/7 115/15 118/20 120/9 120/16 121/2 122/4 122/12 122/13 124/3 124/19 125/11 126/21 127/23 127/23 132/12 133/23 134/10 134/14 134/15 134/17	136/12 137/14 138/5 140/14 142/11 142/14 142/18 142/20 143/7 148/8 148/18 151/23 154/3 155/1 155/10 155/13 157/18 158/10 158/19 159/11 160/2 160/3 160/22 162/1 162/2 162/14 163/21 166/6 167/4 168/2 by RIA [1] 21/10	C calculated [2] 26/2 138/23 calculates [1] 27/1 calculation [4] 24/5 24/16 67/15 68/4 calculations [4] 26/10 26/23 27/12 121/22 call [1] 87/18 called [3] 1/24 135/20 154/2 Cambridge [13] 77/24 77/25 78/4 78/22 79/6 79/8 79/9 79/12 79/16 80/1 81/5 81/6 81/23 came [3] 27/20 92/20 132/15 campaigns [2] 10/12 47/23 can [91] 1/14 1/15 2/15 4/9 5/8 6/6 6/22 6/23 7/3 7/11 7/17 7/22 8/6 8/12 8/16 9/18 9/23 13/19 14/5 18/1 18/9 19/8 19/10 19/19 20/2 21/12 23/5 23/6 23/9 25/17 28/11 29/25 35/12 36/8 37/11 40/10 40/12 46/16 49/12 51/16 52/4 58/11 60/14 60/16 61/14 63/8 63/10 66/12 67/12 67/17 75/22 86/14 89/12 93/14 93/15 98/4 101/15 105/17 105/20 107/3 107/5 111/6 111/16 115/10 115/21 115/22 117/25 118/3 121/6 122/10 127/21 128/15 131/21 132/17 136/18 138/11 139/24 143/11 144/23 148/12 148/20 150/5 150/11 152/10 153/8 155/21 156/6 158/15 159/17 160/13 165/21 can't [4] 90/9 139/2 144/13 166/25 cannot [5] 18/17	18/22 136/10 149/4 149/18 capabilities [1] 25/14 capability [2] 71/25 76/8 capable [2] 115/16 151/18 capacity [37] 9/6 25/22 25/24 25/25 26/3 39/7 39/12 39/23 42/23 42/24 44/19 45/6 46/12 71/6 71/22 72/25 76/14 77/3 92/24 93/22 99/10 108/20 110/19 112/9 113/23 115/14 115/18 126/2 126/11 135/5 144/5 144/8 144/19 145/2 154/21 158/4 158/19 capital [9] 44/22 83/7 148/9 148/12 150/18 151/7 154/10 163/5 166/12 care [3] 32/23 119/20 120/6 careful [2] 75/13 76/1 carefully [1] 60/25 Carlshalon [1] 81/11 carried [6] 36/22 57/13 104/17 123/11 124/17 128/10 carry [3] 20/24 136/4 147/16 carrying [1] 94/22 Carshalton [4] 77/20 78/12 79/10 79/25 case [1] 162/1 cases [1] 59/20 cash [2] 39/25 63/14 caught [2] 91/4 145/9 causative [1] 20/16 cause [1] 11/21 caused [1] 89/21 caveat [2] 1/16 3/10 caveats [2] 5/4 138/3 CBL [1] 86/6 CBLA [2] 86/11 111/9 CBLA000000 [1] 39/17 CBLA0000005 [1] 150/5 CBLA0000336 [1] 23/3 CBLA0000343 [1] 22/10 CBLA0000391 [1] 37/10 CBLA0000664 [1] 93/14 CBLA0000672 [1] 62/23	CBLA0000682 [1] 98/3 CBLA0000701 [1] 105/16 CBLA0000801 [1] 110/11 CBLA0000840 [1] 132/16 CBLA0000952 [1] 122/7 CBLA0000988 [1] 128/7 CBLA0001153 [1] 163/20 CBLA0002298 [1] 155/16 CBLA0007964 [1] 28/4 CBLA0008747 [1] 19/8 cease [1] 130/7 ceased [1] 83/6 ceases [1] 84/20 ceiling [3] 120/13 121/3 121/4 cell [1] 71/15 cells [3] 2/6 53/16 53/16 cent [1] 25/21 central [37] 3/16 12/2 35/6 35/13 36/18 48/12 55/23 58/19 58/23 59/8 60/21 61/12 62/4 83/1 83/2 83/4 86/5 86/6 86/10 86/19 88/20 89/4 89/12 94/15 94/15 102/8 105/6 105/6 111/3 132/20 135/12 135/16 136/7 137/11 141/10 153/16 164/13 centrally [3] 33/8 94/23 100/10 centre [28] 4/6 4/18 5/19 28/17 37/6 37/8 38/11 40/4 41/19 42/1 42/3 43/9 43/19 44/15 44/21 67/24 85/9 87/20 90/23 97/8 126/12 126/13 138/6 150/21 156/25 158/17 163/12 165/13 centres [42] 1/23 5/22 18/8 29/22 37/17 38/20 42/25 43/10 45/13 55/14 55/22 57/14 58/19 58/23 61/21 70/24 71/14 71/21 75/17 89/14 90/6 90/17 96/17 96/22 98/8 99/11 99/22 100/8 104/22
----------	---	--	--	--	---	---

(47) blood... - centres

C	126/9 chosen [2] 56/10 56/12 chromatographic [1] 100/21 chromatography [1] 93/6 chronological [1] 145/15 chronology [5] 1/7 3/13 145/19 167/10 167/11 circumstances [1] 130/22 cites [1] 43/4 civil [2] 64/1 133/11 civilian [1] 78/22 claimed [1] 123/24 claiming [1] 21/25 clarified [1] 149/22 clear [6] 47/10 47/14 59/1 74/20 101/25 103/25 clearer [1] 60/21 clearly [1] 61/5 client [3] 82/11 149/7 151/12 clinical [8] 36/19 37/16 48/1 48/11 48/19 49/16 65/14 79/3 clinicians [20] 11/18 12/6 14/11 19/17 21/24 32/16 33/15 37/1 54/16 58/11 59/2 59/5 59/6 59/9 59/14 60/7 60/14 60/19 113/10 113/13 clinicians' [1] 59/21 close [2] 100/8 135/23 closed [2] 135/22 163/10 closely [6] 6/14 100/6 107/10 110/19 113/12 139/22 closer [2] 26/12 124/22 closes [1] 81/23 closure [1] 79/6 co [9] 86/18 94/16 96/25 101/7 104/21 105/6 106/21 107/11 166/8 co-operated [1] 166/8 co-ordinated [1] 107/11 co-ordination [7] 86/18 94/16 96/25 101/7 104/21 105/6 106/21 coagulation [3] 2/10	87/18 108/8 code [1] 164/21 cohesive [1] 88/7 coincides [2] 109/8 153/17 cold [4] 129/22 131/19 164/24 166/14 collaboration [1] 76/10 collect [2] 163/8 163/10 collected [7] 34/22 44/1 59/16 65/23 67/3 94/5 97/16 collecting [4] 58/8 71/11 71/20 165/2 collection [10] 55/12 67/20 67/25 70/14 71/15 127/5 158/8 162/14 164/4 164/7 collectively [1] 76/23 come [32] 8/12 8/20 18/14 19/24 23/17 27/12 28/25 36/20 43/7 43/7 45/20 50/19 74/4 74/21 78/15 80/21 91/8 97/20 100/1 100/16 103/2 111/2 114/15 116/9 138/1 138/17 140/25 143/17 162/2 162/10 167/5 167/19 comes [11] 4/18 6/9 35/1 66/10 69/8 73/7 77/8 101/22 103/4 103/16 138/9 coming [4] 26/1 84/9 150/8 161/13 command [1] 134/22 commenced [1] 154/18 commences [1] 130/16 commencing [2] 9/21 155/2 comment [3] 72/3 132/14 143/2 commented [7] 26/5 33/11 39/14 42/12 45/16 92/11 147/14 comments [2] 27/7 131/14 commercial [56] 4/23 4/24 7/17 7/19 8/3 8/8 8/17 10/4 10/8 11/18 13/20 17/13 17/24 18/7 18/8 19/1 19/19 20/14 20/23 21/1 21/19 32/3 32/7 32/12 33/7 38/20 39/2 39/5 43/11 44/25 45/2 46/3 57/22 61/4 65/3	112/17 112/19 113/20 117/16 119/9 120/9 125/6 127/3 130/5 139/7 139/12 141/11 141/12 142/1 142/2 142/5 142/9 142/12 142/16 156/7 156/8 commercially [1] 19/14 commercially-produc ed [1] 19/14 Commission [1] 110/8 commissioned [2] 48/23 93/7 commit [1] 146/19 commitment [2] 125/7 164/11 committed [1] 38/6 committee [33] 33/9 35/6 35/13 36/18 48/12 60/21 61/13 73/19 83/1 83/3 83/4 83/18 83/23 83/25 84/2 84/3 84/4 86/16 111/3 111/5 111/16 113/11 116/11 117/21 121/18 122/9 122/21 126/21 132/18 132/20 146/5 146/8 150/16 committee's [3] 51/3 123/7 126/24 committing [1] 3/16 common [1] 141/6 communicated [1] 73/14 communication [4] 95/8 95/12 96/9 96/13 companies [1] 142/9 company [1] 125/6 comparative [1] 17/4 compared [1] 160/10 comparing [2] 6/8 19/6 comparisons [1] 20/3 competing [1] 33/24 competition [2] 1/12 57/22 compiled [1] 5/21 complete [9] 58/9 59/25 70/21 117/12 119/22 124/4 125/18 126/18 141/8 completed [4] 44/10 82/9 134/14 154/1 completely [2] 31/19 60/9 completion [1] 153/18 complex [2] 82/2 101/11 complicated [1] 82/7 complication [1] 55/2	complications [1] 14/3 comply [1] 124/1 component [10] 52/20 52/21 53/4 53/13 55/5 55/7 55/19 58/16 60/15 71/5 components [22] 52/19 53/15 53/17 54/10 54/13 54/15 54/22 54/25 57/18 58/2 58/5 58/8 58/25 60/2 60/4 60/15 60/18 61/3 61/22 64/17 66/1 66/5 comprehensive [1] 33/14 comprised [2] 83/19 142/13 concentrate [56] 3/22 4/24 4/24 10/8 11/9 12/8 14/14 20/21 23/10 23/18 25/13 29/12 31/8 31/14 31/17 31/24 32/3 32/7 32/9 32/12 32/13 33/8 33/10 33/20 42/4 42/14 44/11 45/4 46/25 56/6 57/6 65/5 70/22 94/14 95/18 98/10 99/9 106/25 107/12 108/13 112/15 112/22 118/20 119/1 134/7 134/11 134/12 139/6 139/12 139/12 141/11 141/13 141/18 142/4 143/25 156/4 concentrates [30] 3/14 7/2 7/13 9/22 10/3 10/4 10/22 11/18 12/11 17/3 19/6 19/15 19/20 20/13 30/23 34/14 34/17 43/11 46/3 47/22 71/16 76/9 106/3 112/20 119/11 137/13 139/7 141/2 144/24 160/9 concentrating [1] 102/13 concentrations [1] 4/23 concern [12] 6/7 15/15 15/17 15/22 22/22 60/23 61/19 95/16 127/1 142/21 143/3 146/25 concerned [5] 43/20 58/4 122/1 135/21 146/20 concerns [6] 16/5 16/14 17/23 18/1 92/8 152/25	conclude [1] 71/10 concludes [1] 25/16 conclusion [4] 39/19 66/9 133/2 135/11 conclusions [3] 128/4 128/16 128/21 concomitant [1] 119/18 concurrent [1] 150/20 conditions [4] 28/2 28/10 47/19 130/24 conductive [4] 56/3 56/21 102/3 104/6 conducted [3] 48/2 48/13 80/12 confidence [1] 136/4 confident [1] 5/9 confines [1] 14/17 confirmation [1] 76/3 confirmatory [2] 75/13 76/1 confirmed [2] 75/14 103/18 conformity [1] 64/25 confused [1] 5/15 confusingly [1] 138/25 conjunction [1] 64/18 connection [1] 62/2 consensus [2] 46/18 114/18 consent [1] 125/16 consequences [3] 16/3 121/14 147/18 consider [17] 11/16 26/13 34/3 50/14 60/25 64/5 64/20 66/4 98/12 100/7 122/16 130/2 132/11 135/9 136/6 137/7 163/1 considerable [9] 14/3 32/5 71/11 72/12 116/21 119/13 152/19 158/11 163/5 considerably [3] 21/18 22/16 142/6 consideration [6] 71/7 110/14 122/19 123/2 126/21 135/24 considered [27] 3/14 3/18 15/14 16/23 16/25 22/15 25/7 26/10 29/3 29/19 33/12 37/4 40/16 42/3 61/16 73/17 85/18 107/9 107/16 113/14 116/7 116/19 117/4 119/15 121/19 160/15 163/24 considering [5] 34/19 36/7 101/20 125/4 146/18
----------	--	--	---	--	---

C	130/13 131/2 149/2 164/19 164/22 controller [1] 131/13 controlling [1] 94/8 controls [1] 152/16 convenience [1] 13/11 convenient [1] 48/3 conversation [2] 96/5 97/2 conversations [1] 116/16 conversion [1] 24/20 conveyancing [1] 149/5 convince [1] 60/7 convinced [1] 11/7 coordinate [1] 88/19 coordinated [2] 94/23 102/7 cope [1] 25/25 copy [1] 128/14 core [1] 56/19 corner [6] 23/6 49/13 49/14 52/5 63/9 138/11 correct [3] 1/15 66/3 129/15 correlate [2] 6/14 6/15 correlates [1] 139/22 correspondingly [1] 141/13 cost [25] 20/8 32/5 32/18 32/22 34/5 39/1 39/3 101/3 102/18 104/12 104/18 110/9 112/22 121/21 126/19 141/22 142/2 142/5 142/11 142/14 147/2 154/19 155/9 158/11 163/5 costed [1] 58/2 costing [2] 58/9 58/25 costings [1] 147/22 costly [1] 19/2 costs [5] 32/20 44/15 44/23 58/7 120/9 cottage [1] 117/15 could [106] 1/19 1/21 2/7 3/25 4/1 8/23 10/7 11/21 12/12 20/1 23/1 28/4 28/22 31/13 32/4 32/16 32/21 32/25 35/20 37/10 38/14 38/25 40/7 40/9 40/13 40/20 41/16 42/5 42/20 42/25 43/16 43/17 44/4 51/8 52/11 52/24 57/15 57/21 58/2 58/3 62/23 64/22 65/25 66/2 66/8 66/18 71/3 75/2 75/8 77/7	90/7 90/20 90/23 90/24 93/17 93/19 95/19 96/3 98/3 100/11 103/3 103/20 105/15 106/10 110/9 110/10 110/24 111/22 113/22 115/8 117/24 118/12 119/6 122/7 122/11 123/9 124/18 124/21 124/25 126/8 127/9 128/6 129/4 132/16 133/1 138/4 141/9 141/13 141/24 142/22 143/4 144/8 144/9 144/17 145/17 150/9 153/6 153/13 155/17 155/19 156/13 157/17 159/12 162/3 163/20 163/25 couldn't [2] 90/21 90/24 Council [5] 77/19 77/20 78/10 78/11 135/21 Counsel [2] 1/3 168/2 countries [2] 44/1 133/20 country [3] 69/17 69/19 136/3 County [1] 78/11 couple [6] 40/9 40/11 96/2 114/1 139/14 142/25 coupled [1] 30/13 course [15] 8/20 49/20 56/25 80/17 83/25 89/9 96/9 101/19 103/22 123/5 125/14 125/21 128/12 139/23 165/24 cover [6] 30/24 43/22 93/15 105/14 123/11 128/5 covered [2] 3/8 43/10 covering [4] 49/10 50/21 51/21 63/1 covers [2] 153/10 153/15 Craske's [1] 18/5 create [2] 160/19 163/3 created [1] 4/4 creates [1] 59/8 creating [2] 30/5 163/16 crippling [2] 32/20 43/23 critical [2] 92/10 116/17 criticised [1] 92/15 criticism [3] 9/25 10/1 10/4	criticisms [1] 74/8 cross [3] 6/11 135/15 162/6 cross-charging [1] 162/6 cross-refer [1] 6/11 crown [5] 91/20 116/23 123/23 153/3 162/25 cryo [2] 7/11 8/8 cryoprecipitate [25] 4/22 7/1 8/17 13/13 13/17 30/24 31/10 31/13 31/16 31/19 31/23 33/21 37/21 42/14 43/11 44/2 44/12 61/19 70/21 75/24 114/14 119/3 139/9 139/13 156/11 cryoprecipitates [1] 112/16 crystallise [1] 98/21 culminating [1] 3/16 current [17] 26/3 31/5 36/3 44/9 49/22 50/5 66/15 98/21 102/1 112/12 112/20 114/3 118/22 120/20 121/13 144/24 158/7 currently [3] 55/1 127/2 142/3 customary [1] 56/2	41/22 48/15 48/18 decade [1] 106/23 decades [2] 87/5 133/6 December [11] 75/5 75/22 83/22 86/10 86/17 105/14 109/24 141/3 146/12 153/11 153/16 December 1976 [1] 75/22 December 1978 [1] 109/24 December 1980 [1] 86/17 December 1982 [1] 86/10 December 1983 [2] 153/11 153/16 decide [2] 46/6 127/4 decided [8] 38/5 66/4 98/10 122/22 123/25 134/5 146/10 161/6 deciding [1] 146/6 decision [9] 90/14 91/18 91/19 97/12 124/14 127/10 127/14 145/24 146/19 decision-making [2] 90/14 145/24 decisions [1] 132/3 declared [1] 42/16 decline [1] 156/9 declines [1] 155/25 declining [1] 156/11 decoupling [1] 142/8 decrease [1] 137/24 dedicated [2] 53/6 137/13 dedicating [1] 46/25 deemed [1] 154/23 deep [1] 13/14 defects [1] 123/8 defence [1] 133/11 deferred [1] 122/19 deficiencies [4] 116/22 117/4 117/6 124/6 deficiency [3] 117/10 117/10 117/13 deficient [1] 132/1 defined [1] 39/23 definitive [1] 158/14 degree [6] 5/8 84/25 101/7 150/3 159/4 165/3 Delamore [1] 28/15 delay [4] 56/5 56/8 151/5 152/9 delays [1] 166/17 demand [37] 3/14 3/15 9/21 10/1 13/3	27/14 28/8 28/23 30/19 31/2 31/4 32/5 34/14 41/18 43/22 47/13 47/21 50/11 50/16 50/18 60/6 62/14 62/21 63/3 64/5 65/8 65/12 92/25 93/2 94/6 99/14 110/20 114/18 121/5 134/22 161/21 161/23 demand [1] 99/23 demands [6] 13/1 13/16 26/2 41/17 49/3 136/17 demarcation [1] 166/5 demonstrate [2] 27/19 159/15 demonstrated [1] 46/18 demonstrates [1] 35/2 department [28] 28/21 34/3 36/7 45/16 46/6 58/24 60/21 60/25 63/22 64/2 64/14 72/8 98/19 99/8 102/2 102/5 102/19 102/23 104/1 104/5 104/16 112/4 125/10 126/20 134/17 135/10 143/8 151/13 Department's [2] 101/24 122/23 Departmental [1] 51/2 departments [4] 50/14 64/18 64/24 129/6 depended [1] 5/20 dependence [1] 127/4 depending [1] 9/10 Deputy [1] 147/11 derived [2] 141/16 143/13 described [4] 87/18 106/16 143/20 162/19 describes [3] 1/22 87/22 106/1 design [2] 155/13 166/9 designate [5] 84/24 85/6 95/14 99/2 159/21 designed [5] 92/17 115/13 129/2 134/23 164/25 designs [1] 92/18 desirability [1] 102/6 desirable [4] 33/14 120/8 120/10 157/10 desire [1] 16/17 despatch [3] 55/13
----------	---	--	--	---	--

(49) considers - despatch

D	63/14 63/23 73/7 73/8 73/15 73/17 82/3 82/14 83/13 83/21 84/6 84/15 85/14 86/17 95/4 95/9 95/11 97/6 97/25 98/2 101/22 104/22 105/14 109/5 116/18 117/20 122/20 127/25 128/9 135/8 136/4 136/10 143/8 146/7 146/23 147/12 149/16 152/7 157/20 DHSS's [2] 97/7 149/3 diagnosed [1] 119/16 dictating [1] 112/8 did [19] 17/5 17/7 17/17 17/18 39/7 43/6 88/17 89/3 142/4 146/18 148/6 151/16 152/1 152/20 152/21 157/13 161/8 161/17 163/13 didn't [3] 17/8 87/16 90/13 difference [5] 45/17 88/18 89/21 90/2 139/2 differences [1] 27/23 different [21] 6/3 6/16 20/4 20/8 27/21 48/24 52/21 69/23 70/4 70/5 70/6 77/10 78/14 87/19 88/9 88/12 89/2 89/13 90/17 123/23 162/16 differing [1] 59/13 difficult [7] 33/1 43/15 49/25 75/16 94/20 94/25 136/14 difficulties [5] 27/19 49/1 53/22 54/25 80/19 difficulty [6] 54/13 58/21 62/15 71/17 113/6 114/9 dig [1] 51/16 digging [1] 144/17 dilution [1] 20/6 diminish [2] 20/21 65/17 diminishes [1] 82/8 direct [6] 90/5 90/24 96/17 97/1 157/6 165/12 directly [3] 11/22 84/7 139/1 director [20] 63/16 63/21 84/16 84/23 85/5 85/24 87/2 87/3 87/23 95/10 96/7 96/21 99/2 99/3	105/18 111/11 133/5 142/20 158/10 159/21 Directorate [1] 95/14 directors [26] 4/6 4/18 5/19 19/12 23/15 25/4 37/7 37/8 38/12 40/4 41/20 42/1 42/3 42/13 43/9 43/19 60/13 67/24 75/5 90/23 138/7 142/19 143/2 143/15 156/25 160/3 directorship [5] 85/21 87/8 87/15 90/18 90/19 disability [2] 13/24 32/23 discern [1] 16/21 discernible [1] 66/3 disclosed [1] 95/6 discontinue [1] 65/2 discuss [8] 5/1 53/19 66/6 77/10 116/6 119/2 138/2 145/8 discussed [17] 1/11 7/25 14/24 22/9 28/24 29/16 41/14 42/20 74/9 103/14 105/3 112/9 121/17 138/20 146/1 156/16 160/1 discusses [2] 25/14 52/20 discussing [4] 12/1 48/16 77/4 114/11 discussion [21] 1/8 3/11 22/17 28/25 30/1 35/5 41/17 46/15 70/13 113/12 114/17 115/11 115/25 116/5 122/3 122/13 123/9 125/9 126/16 127/21 165/20 discussions [4] 17/6 32/25 93/4 132/3 disease [1] 32/21 diseases [2] 15/24 20/19 disincentives [1] 157/15 dispel [1] 95/3 disproportionately [1] 160/10 disquiet [1] 123/7 distinction [2] 9/13 152/3 distinguish [1] 147/25 distributed [1] 156/22 distribution [11] 54/9 62/1 62/3 62/5 137/5 141/9 141/11 143/17 145/6 161/1 161/22 divergence [1] 51/20	divert [1] 45/10 division [6] 58/15 107/20 125/4 128/5 164/6 165/7 do [22] 7/23 14/22 36/23 49/15 60/13 64/22 77/5 80/15 90/21 90/23 91/9 115/21 115/22 126/20 128/1 132/10 147/15 149/17 151/15 152/1 163/2 166/24 doctor [1] 43/14 doctors [1] 10/19 document [31] 15/7 15/14 19/11 20/2 21/14 23/1 23/3 23/8 26/8 27/25 36/21 36/23 37/11 37/13 39/14 48/25 49/7 49/9 52/3 57/1 63/10 66/9 100/4 115/8 115/9 118/5 138/5 143/9 144/23 150/7 155/15 documentary [2] 16/22 18/7 documentation [1] 124/8 documents [12] 2/18 6/13 16/13 16/16 16/24 18/10 39/15 62/19 78/16 114/25 128/19 162/20 Dodsworth [1] 63/17 does [15] 6/20 24/20 27/2 27/11 51/13 65/8 65/13 68/1 79/24 81/16 96/8 99/3 133/14 133/15 166/20 does it [4] 51/13 79/24 81/16 133/14 doesn't [7] 2/13 51/25 53/18 68/25 72/20 80/5 86/2 doing [6] 34/5 55/6 99/1 151/19 159/13 163/6 domestic [8] 1/4 7/2 10/2 13/14 17/5 19/19 49/4 168/4 domestically [1] 3/23 dominant [1] 7/11 don't [13] 6/15 9/12 68/22 73/4 80/22 81/17 91/4 96/16 143/1 144/10 147/19 149/20 165/25 donated [2] 49/18 154/14 donating [1] 68/2 donation [10] 2/14 16/9 16/19 21/7 24/21	30/16 163/9 164/18 165/23 165/24 donations [30] 1/13 2/4 14/6 15/21 16/4 21/2 21/23 24/20 24/22 24/23 24/24 25/2 25/4 25/9 25/18 25/20 26/24 31/22 34/22 36/1 36/15 46/25 47/2 54/20 107/24 137/14 137/19 141/3 162/16 165/23 done [10] 101/11 102/13 102/17 104/12 109/17 123/7 143/7 144/6 162/18 162/23 donor [7] 21/21 67/20 75/16 97/17 133/18 164/22 165/16 donors [11] 16/1 16/3 20/18 20/18 21/6 45/24 61/11 67/22 71/18 113/21 127/1 dosage [1] 29/21 doses [2] 24/2 43/16 double [4] 72/25 106/2 130/3 144/15 doubled [6] 46/11 75/16 154/5 154/12 156/14 166/25 doubling [3] 106/6 155/5 155/6 doubt [3] 125/24 129/14 149/24 doubted [1] 123/8 doubtful [2] 57/20 60/15 doubts [1] 60/1 down [14] 9/23 29/8 66/18 81/23 96/11 106/14 111/25 115/10 118/16 119/7 140/1 144/9 154/16 156/13 Dr [307] Dr Badman [1] 38/22 Dr Barkhan [1] 43/9 Dr Bell [1] 63/25 Dr Bidwell [12] 23/16 25/7 25/8 26/2 26/21 27/6 28/12 46/8 72/4 76/13 76/23 85/20 Dr Bidwell's [4] 26/10 26/23 27/12 139/22 Dr Biggs [9] 10/17 23/12 30/7 38/11 38/19 43/1 43/13 47/8 74/23 Dr Cash [1] 63/14 Dr Craske's [1] 18/5 Dr Darnborough [1] 63/16 Dr Davies [1] 33/11	Dr Delamore [1] 28/15 Dr Dunnhill [1] 125/12 Dr Dunnill [1] 111/12 Dr Ellis [1] 44/6 Dr Ethel [1] 23/4 Dr Gillies [1] 63/19 Dr Gunson [5] 28/15 88/14 96/12 111/7 116/3 Dr Harris [1] 147/11 Dr Helen [1] 63/17 Dr Holgate [6] 122/17 123/13 123/15 123/18 124/5 125/14 Dr Holman [2] 42/12 46/3 Dr Ingram [1] 10/18 Dr Jenkins [1] 33/6 Dr John Watt [1] 15/2 Dr Jones [7] 10/18 10/23 11/19 28/15 29/17 29/21 42/16 Dr Jones's [3] 11/12 29/2 29/10 Dr Kirk [1] 40/18 Dr Lane [96] 2/17 3/6 26/5 26/9 26/17 27/7 39/14 39/18 56/24 63/7 68/8 69/20 74/10 77/17 77/18 78/6 78/17 79/14 81/14 81/20 84/21 84/23 85/3 85/21 85/23 89/23 89/25 90/9 93/1 95/14 95/24 95/25 96/9 96/18 97/8 97/25 98/16 98/24 99/1 99/4 99/6 101/9 101/20 102/15 104/14 104/20 105/9 109/11 111/11 111/11 112/1 115/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Dr Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1
----------	--	---	---	--	---

D	Dr Walford [9] 19/22 19/22 69/23 84/1 138/5 140/17 144/9 146/2 146/13 Dr Walford's [5] 77/17 12/124 132/6 140/15 145/9 Dr Watt's [1] 15/6 draft [13] 26/6 39/15 63/4 63/8 73/19 73/22 77/16 78/6 85/3 93/1 121/8 138/2 150/6 draw [3] 14/25 29/4 103/5 drawn [1] 133/8 draws [1] 77/15 drew [3] 32/11 33/24 125/25 dried [13] 25/13 29/11 31/14 31/16 33/20 37/22 45/4 57/6 70/22 79/4 133/11 133/18 134/9 drive [1] 16/21 driven [1] 39/19 driving [2] 92/23 101/15 dropping [1] 82/17 drops [1] 7/14 drying [1] 78/21 due [10] 8/20 49/24 56/25 65/10 83/25 89/9 112/2 117/11 167/1 167/1 duly [1] 105/13 Dunhill [2] 123/1 125/12 Dunnill [1] 111/12 during [15] 8/2 8/16 17/23 85/15 96/25 106/23 107/2 109/23 116/16 128/12 133/17 135/6 138/14 153/22 162/21 Dutton [32] 18/12 19/24 28/19 34/10 34/13 34/18 36/22 48/2 48/13 48/23 49/2 49/4 49/12 51/5 51/11 51/17 51/20 62/14 63/24 72/6 73/4 73/20 73/24 74/7 98/1 109/5 110/6 111/14 116/18 117/2 157/10 159/22 Dutton's [2] 18/14 62/25	129/7 159/4 163/4 164/17 165/16 earlier [16] 4/20 35/24 51/24 72/4 76/18 78/2 99/16 139/23 144/12 148/21 155/3 155/18 157/11 159/23 162/11 162/20 early [15] 5/10 10/13 13/10 16/16 16/24 34/17 37/24 80/20 127/10 127/14 130/16 130/18 139/18 140/19 160/15 early 1970s [1] 139/18 East [2] 63/15 63/17 East Anglia [1] 63/17 easy [1] 23/8 echo [2] 16/15 72/3 eclipsed [1] 167/4 economic [3] 80/19 104/16 113/2 economically [1] 58/13 Edinburgh [5] 25/16 63/14 97/8 97/11 126/12 educate [2] 60/14 60/19 effect [13] 3/18 12/3 47/19 77/1 87/14 97/9 127/24 142/3 153/4 159/11 160/8 160/25 166/23 effected [1] 124/25 effective [4] 53/5 53/23 101/6 136/9 effectively [2] 54/8 72/7 effectiveness [1] 126/19 effects [3] 32/20 88/8 100/11 efficient [3] 15/20 53/23 165/8 effort [1] 60/19 efforts [5] 15/19 17/9 18/13 57/17 60/17 eg [2] 33/13 124/8 eight [1] 73/8 either [10] 15/7 17/9 43/7 47/5 51/11 72/19 76/10 159/7 159/23 166/23 election [1] 127/19 electronic [10] 37/13 37/15 40/13 40/21 52/4 66/9 115/9 118/13 118/15 133/1 electronically [1] 12/15	element [2] 5/5 7/13 elements [3] 89/13 152/15 163/11 eliminates [1] 164/8 Ellis [1] 44/6 else [3] 72/19 144/14 144/16 elsewhere [3] 52/13 78/15 165/20 Elstree [32] 21/13 25/16 42/23 44/7 72/19 77/23 78/8 79/5 80/3 80/4 80/21 81/2 81/6 81/12 81/13 81/19 81/23 82/6 82/10 83/7 89/5 101/11 101/14 103/11 112/5 114/12 120/12 128/10 130/12 153/20 154/18 158/10 embarrassment [1] 113/18 embrace [1] 135/16 emerged [3] 46/23 74/16 76/6 emergencies [1] 43/22 emergency [2] 55/16 119/5 emerging [1] 110/25 emotive [1] 12/21 employ [4] 82/6 83/14 130/4 149/10 employees [1] 83/14 employer [3] 84/12 148/23 148/25 employer's [1] 149/1 employers [1] 151/25 employing [4] 83/13 109/21 149/12 151/25 employment [1] 109/20 enable [2] 64/17 100/13 Enabling [1] 106/19 enclose [1] 105/22 enclosed [1] 128/14 enclosing [1] 147/22 encountered [3] 55/1 62/2 71/17 encourage [3] 157/7 159/5 165/12 encouraged [2] 14/13 161/11 Encouragement [1] 13/25 encouraging [2] 157/25 164/12 end [16] 6/16 18/6 42/17 47/1 62/9 66/8 79/12 80/9 93/24 103/16 132/23 138/15	161/4 162/3 165/17 167/7 endeavour [2] 13/16 142/10 ending [1] 132/21 England [25] 1/5 1/23 3/15 3/21 3/22 4/17 25/5 31/9 39/7 45/21 45/23 45/25 66/16 68/21 76/8 76/21 86/5 89/5 94/24 102/20 114/11 126/15 136/6 161/19 168/5 enhanced [1] 39/24 enlarge [1] 36/8 enlargement [1] 134/2 enlarges [1] 40/3 enlarging [1] 133/23 enough [5] 43/21 56/8 65/23 67/14 76/24 ensue [1] 124/23 ensure [2] 136/10 141/4 ensuring [2] 90/11 95/25 entered [2] 41/1 41/7 enthusiasm [1] 142/18 entirely [4] 61/2 74/20 103/15 144/4 entitled [5] 10/19 23/9 52/16 117/25 153/9 entry [2] 111/17 146/4 environment [1] 124/3 environmental [2] 124/9 165/3 envisaged [4] 25/22 107/2 108/13 126/13 envisaging [1] 72/22 episode [1] 13/6 equal [1] 59/11 equally [2] 60/12 125/23 equals [1] 140/24 equates [1] 69/16 equipment [5] 44/22 71/21 108/5 108/7 124/20 equipped [1] 101/1 equitable [1] 61/25 equity [1] 159/9 equivalent [5] 35/25 90/22 112/12 120/10 142/16 erected [1] 128/24 erection [1] 133/17 error [2] 73/21 138/8 especially [3] 20/17 57/21 67/10 essential [4] 72/1	130/9 130/15 164/19 essentially [7] 53/3 53/25 72/11 74/2 78/3 79/21 115/14 establish [4] 15/19 96/13 131/5 131/10 established [6] 42/5 63/2 78/3 78/8 80/13 86/10 establishes [1] 164/10 estimate [19] 25/1 29/10 30/7 30/14 30/17 36/15 38/7 43/2 43/18 50/2 65/14 66/11 66/22 74/11 114/6 121/1 121/4 139/23 151/8 estimated [4] 38/9 54/17 121/21 134/6 estimates [16] 22/18 26/22 27/14 27/20 27/21 36/25 41/17 62/13 64/16 67/1 110/20 113/11 120/22 134/11 135/6 144/22 estimating [1] 49/2 etc [1] 36/3 Ethel [1] 23/4 Europe [2] 65/22 142/3 even [10] 4/17 9/20 32/12 71/23 90/6 92/7 96/20 126/5 129/25 147/8 event [1] 151/3 eventual [2] 113/9 113/15 eventually [4] 27/13 31/3 59/15 163/14 ever [1] 86/23 every [2] 54/2 113/2 everything [3] 40/22 54/2 97/10 evidence [31] 1/17 6/4 16/22 26/6 39/16 41/8 54/23 63/8 67/24 69/24 77/16 77/16 77/17 80/25 84/1 85/3 87/9 89/9 90/10 93/1 95/24 121/9 121/24 121/25 132/6 138/2 142/6 145/10 145/10 150/7 157/12 evident [2] 12/5 92/8 evolved [1] 56/19 exact [1] 149/5 exactly [1] 69/18 examination [4] 75/13 76/1 102/16 125/20 examine [2] 49/17 113/11
----------	--	---	--	---	---

(51) Dr Lane's... - examine

E	118/25 expensive [4] 54/12 58/9 102/4 104/7 experience [6] 15/4 54/24 93/25 113/18 129/11 129/12 experienced [1] 65/16 experiences [1] 158/6 expert [16] 16/22 22/13 22/25 28/1 28/6 34/7 34/11 34/19 35/5 35/22 36/2 36/13 43/8 47/18 73/13 73/14 experts [2] 73/11 74/3 expired [4] 1/18 2/3 2/21 3/4 expired [1] 1/24 expiry [1] 2/5 explain [3] 27/12 53/21 155/8 explained [5] 64/13 78/17 101/24 123/18 126/10 explains [3] 15/3 86/8 152/9 explanation [1] 150/3 explicitly [1] 17/19 exploration [1] 146/17 exposed [3] 134/4 162/21 163/11 express [1] 123/6 expressed [11] 10/20 15/3 15/15 34/4 66/20 108/19 127/9 137/18 142/20 143/2 146/25 expresses [1] 15/2 expressing [1] 148/6 extending [1] 46/13 extension [5] 36/2 82/9 133/22 134/2 153/23 extensively [1] 49/8 extent [8] 55/2 60/11 61/16 65/12 65/13 65/18 119/24 127/4 external [1] 73/11 extra [4] 44/22 57/3 154/8 154/11	facility's [1] 91/18 facing [4] 9/25 52/17 54/11 123/2 fact [22] 1/11 9/13 9/19 14/6 30/13 32/11 33/24 58/22 75/14 94/7 95/10 96/20 97/5 101/4 104/3 104/10 108/15 109/10 117/14 127/18 144/18 145/2 factor [175] Factor IX [4] 71/4 71/8 161/17 161/20 factor VIII [138] 1/9 1/15 2/9 2/12 2/25 7/17 7/20 7/23 8/3 8/8 8/15 8/17 12/16 12/19 12/23 13/4 13/12 13/19 14/5 14/7 14/14 19/6 19/15 20/13 22/13 23/10 23/17 25/11 25/12 26/19 26/25 29/3 29/6 30/9 31/6 31/11 32/18 33/11 33/17 33/20 35/18 35/25 36/5 37/20 37/22 38/3 38/4 38/7 38/13 38/18 38/21 39/1 39/2 39/5 39/8 41/20 42/4 42/7 42/21 43/15 43/16 43/21 44/11 44/20 44/25 45/1 45/2 45/3 45/6 45/9 45/12 46/24 47/21 54/22 56/6 56/9 56/21 59/11 59/22 61/2 62/3 64/9 65/5 65/25 66/24 67/8 67/11 69/4 70/14 74/3 75/19 75/24 76/25 94/14 95/17 98/10 99/8 99/18 100/19 101/18 103/9 106/3 106/22 106/24 107/4 107/8 107/12 108/12 108/14 110/20 112/7 112/10 112/17 112/19 112/22 113/3 113/20 118/19 118/22 119/1 119/9 120/14 120/20 120/23 134/7 134/11 138/14 139/20 141/16 143/21 153/24 154/5 154/22 155/24 158/25 159/13 161/25 162/4 factors [5] 2/10 20/8 34/6 101/15 117/5 factory [2] 129/19 131/12 factory-type [1] 129/19 failing [1] 10/1	fairness [1] 152/4 fall [5] 21/20 140/21 140/22 142/7 162/24 fall-off [1] 142/7 fallback [1] 119/5 falls [1] 21/21 false [1] 5/16 falsely [1] 119/4 far [5] 26/12 61/1 66/1 124/8 146/20 fashion [1] 65/12 fault [1] 92/22 favour [3] 133/17 143/15 158/3 feasibility [1] 93/5 feature [7] 7/18 17/5 17/7 17/9 22/11 86/2 129/17 February [7] 18/11 18/15 42/18 110/5 146/22 148/17 160/3 February 1976 [1] 18/15 February 1978 [1] 110/5 February 1980 [1] 160/3 federation [2] 17/21 87/17 feedstock [1] 165/3 feel [1] 11/25 feeling [2] 5/12 95/3 felt [7] 40/25 41/6 76/2 90/14 103/18 125/15 142/19 few [4] 24/2 61/9 87/1 130/21 FFP [9] 107/21 107/21 154/13 154/14 154/21 164/4 164/7 164/8 164/13 FFP collection [1] 164/7 field [3] 99/8 102/3 104/5 fifth [8] 26/5 39/15 63/8 77/16 93/1 111/25 121/8 150/6 figure [54] 9/5 9/8 23/17 23/22 23/24 24/22 24/23 25/9 27/2 27/5 29/16 29/23 33/23 36/13 39/11 44/9 47/6 66/20 68/6 69/1 69/20 69/23 70/9 70/10 74/21 74/24 75/11 75/22 76/4 76/6 76/16 76/19 76/21 103/13 103/15 110/21 110/25 114/2 114/4 114/5 114/12 114/20 115/1 121/5 137/18	137/21 138/25 139/17 140/25 143/19 143/22 147/1 148/7 155/12 figures [31] 4/8 4/15 5/7 5/14 5/16 6/4 6/10 6/16 8/24 22/23 24/21 24/25 27/21 28/14 30/3 30/5 37/3 39/3 43/9 44/16 49/23 68/22 70/5 70/11 110/10 114/15 119/10 119/23 121/10 138/1 151/10 filled [1] 135/24 filtration [6] 77/20 78/10 78/25 79/10 81/10 81/21 final [10] 21/3 21/9 44/9 52/3 61/23 63/5 97/13 128/4 155/9 164/1 finance [2] 56/10 58/15 financial [8] 24/14 57/16 64/20 83/19 120/7 121/20 150/20 152/16 financing [5] 9/20 55/3 56/2 57/10 58/17 87/17 find [2] 92/22 136/14 findings [2] 110/4 122/5 finish [1] 137/4 finished [4] 55/11 62/7 129/23 154/3 firms [1] 21/2 first [35] 7/11 14/19 15/17 19/9 23/1 29/2 37/5 43/2 52/20 52/25 62/23 63/11 63/13 64/4 64/13 69/14 82/15 83/22 84/16 98/4 111/9 111/15 111/16 114/2 114/23 115/1 117/6 118/22 138/17 144/23 146/4 153/18 160/17 162/12 163/22 firstly [1] 135/4 five [5] 36/17 64/6 67/20 91/5 165/23 five years [1] 36/17 fix [2] 33/19 33/21 fixed [2] 106/24 118/18 flexibility [1] 134/24 flick [1] 40/9 floated [1] 148/14 floats [1] 116/3 floor [1] 134/16 floundering [1] 18/20 focus [2] 90/20	155/19 focused [1] 121/20 follow [3] 23/8 130/20 149/8 followed [4] 17/8 28/24 30/2 137/8 following [17] 20/12 21/22 22/3 39/13 74/16 79/6 111/22 114/6 116/12 122/5 131/5 131/10 138/6 147/10 148/3 152/13 167/23 follows [2] 106/16 114/22 footnote [1] 10/10 force [1] 92/23 forcefully [2] 47/8 74/24 forecast [3] 43/15 59/11 64/15 foresaw [1] 163/19 foreseeable [2] 50/3 66/23 Forgive [1] 118/15 forlorn [1] 127/15 form [5] 7/12 31/10 50/14 96/13 145/15 format [4] 87/7 90/4 93/4 148/17 formalise [1] 87/16 formalised [1] 150/25 formed [2] 83/18 86/4 forms [6] 30/9 33/20 51/2 75/12 75/23 97/18 formulate [1] 95/12 formulation [1] 151/11 forward [16] 51/22 77/2 101/9 101/18 101/21 101/21 102/15 105/10 111/2 121/5 121/9 122/12 127/23 148/4 166/2 166/10 fostering [1] 136/6 foul [1] 162/24 found [5] 16/15 92/15 124/7 128/20 132/15 foundations [1] 56/15 four [4] 106/2 106/13 107/15 108/15 four years [2] 106/2 108/15 fraction [3] 23/4 154/7 158/16 fractionate [2] 25/17 46/7 fractionated [3] 24/12 34/23 70/21 fractionating [2] 42/12 134/8
----------	---	---	---	--	---

(52) examined - fractionating

<p>F</p> <p>fractionation [36] 25/15 25/24 38/22 39/7 42/6 42/10 44/5 44/15 44/18 45/20 45/23 46/1 54/19 71/5 71/22 76/8 85/16 94/4 94/20 95/1 95/7 97/8 106/20 107/9 120/12 126/11 126/12 129/2 133/21 134/19 134/21 153/21 164/11 164/13 164/18 165/14</p> <p>fractionator [1] 26/17</p> <p>fractionators [1] 37/1</p> <p>fractions [4] 65/17 79/3 133/19 135/6</p> <p>fragmented [1] 90/16</p> <p>France [1] 135/14</p> <p>free [2] 88/4 142/4</p> <p>freedom [1] 113/13</p> <p>freeing [1] 101/12</p> <p>freeze [13] 13/14 29/11 31/14 31/16 33/20 37/22 45/4 57/6 70/22 78/21 133/11 133/18 134/9</p> <p>freeze-dried [10] 29/11 31/14 31/16 33/20 37/22 45/4 57/6 133/11 133/18 134/9</p> <p>freezing [2] 164/15 165/11</p> <p>frequent [2] 16/4 22/4</p> <p>fresh [18] 2/14 2/20 3/1 3/4 20/15 24/9 39/24 94/13 95/17 107/6 107/14 137/19 141/1 154/13 155/6 156/23 161/9 165/1</p> <p>from [199]</p> <p>from April 1977 [1] 84/25</p> <p>from April 1982 [2] 153/10 153/15</p> <p>front [3] 93/15 138/8 153/8</p> <p>frozen [16] 2/14 2/14 2/20 3/1 3/4 24/10 39/24 107/6 107/14 137/20 141/1 154/13 155/6 156/23 161/9 165/2</p> <p>frustrating [2] 151/5 152/10</p> <p>frustration [2] 10/20 89/11</p> <p>full [13] 40/8 49/19 54/25 59/18 82/12 91/22 91/22 102/6 117/23 120/3 127/22</p>	<p>133/3 137/7</p> <p>fullest [1] 61/7</p> <p>fully [4] 46/4 87/9 154/25 158/20</p> <p>function [2] 55/15 118/1</p> <p>fundamental [2] 60/3 108/16</p> <p>funded [1] 100/10</p> <p>funding [7] 3/17 17/7 46/21 57/9 82/14 84/15 141/7</p> <p>funds [2] 38/23 137/12</p> <p>further [28] 6/18 14/24 18/10 30/21 31/20 32/8 36/24 71/11 71/15 72/13 85/18 91/17 102/23 108/9 113/23 116/6 120/24 123/1 125/9 126/16 140/1 146/16 147/7 147/10 147/11 151/4 161/11 167/12</p> <p>Furthermore [2] 57/10 59/3</p> <p>future [46] 26/2 28/7 41/11 47/5 49/3 50/3 50/15 64/15 66/1 66/23 75/10 91/18 92/25 93/2 93/3 94/2 94/4 94/25 95/22 96/8 97/4 98/12 98/22 101/25 102/15 103/6 105/11 108/17 109/13 110/20 112/6 113/11 114/18 118/12 119/14 121/16 125/22 125/25 127/5 127/13 127/17 141/4 144/22 146/10 146/11 161/12</p> <p>future-proofing [1] 121/16</p> <p>FVIII [13] 140/19 140/23 141/9 141/10 141/21 141/22 141/24 141/25 142/2 142/9 142/11 142/13 143/13</p> <p>FVIII-albumin [1] 142/9</p> <p>G</p> <p>gain [2] 114/21 129/12</p> <p>gained [2] 65/21 80/16</p> <p>Gap [48] 91/2 91/3 91/8 91/15 91/15 92/3 92/23 98/17 99/5 105/12 105/20 105/22 106/13 106/17 108/11 108/18 108/24 109/22</p>	<p>110/13 115/12 115/21 117/22 118/1 118/6 118/7 118/11 131/17 132/4 132/5 137/4 144/7 144/18 145/22 146/3 146/3 146/6 146/9 146/20 146/23 147/5 148/1 152/15 152/18 153/4 155/4 156/4 166/4 167/7</p> <p>Gap [4] 106/16 126/5 131/23 135/2</p> <p>gaps [1] 135/23</p> <p>gauged [1] 14/6</p> <p>gave [3] 44/10 84/1 151/4</p> <p>general [17] 5/12 5/14 6/9 6/20 7/3 7/10 12/20 13/5 28/25 48/24 50/22 50/23 50/24 50/25 53/20 74/6 97/3</p> <p>generally [10] 2/20 10/3 12/8 32/9 51/7 64/9 74/5 98/13 113/19 129/24</p> <p>geographical [1] 20/19</p> <p>geographically [1] 100/7</p> <p>Germany [1] 29/5</p> <p>get [14] 7/23 7/24 8/4 19/13 24/21 26/20 27/23 49/9 87/15 104/17 115/23 161/25 166/1 166/13</p> <p>gets [2] 24/4 69/20</p> <p>getting [4] 8/2 19/18 161/2 161/3</p> <p>Gift [2] 17/14 17/18</p> <p>Gillies [1] 63/19</p> <p>give [12] 5/7 8/24 39/1 39/12 41/22 43/22 51/25 53/3 115/13 118/4 125/16 154/24</p> <p>given [35] 3/23 5/16 5/18 11/12 15/5 30/11 30/24 36/25 43/2 47/17 49/13 61/14 67/24 68/6 71/7 71/16 73/22 76/16 77/16 86/21 93/2 101/22 110/14 110/21 114/2 114/12 116/10 124/25 128/19 138/12 139/1 143/19 148/17 153/2 162/15</p> <p>gives [6] 27/6 69/23 105/11 118/6 131/3 132/13</p> <p>giving [2] 9/11 109/10</p>	<p>Glasgow [1] 44/13</p> <p>glass [1] 162/15</p> <p>glass bottles [1] 162/15</p> <p>gm [1] 103/9</p> <p>gm/1,000 [1] 103/9</p> <p>go [70] 1/19 1/21 3/25 12/12 17/25 19/8 19/9 23/1 26/8 29/25 35/16 36/23 37/10 37/11 37/13 38/14 40/7 40/8 40/20 52/24 53/18 54/6 62/17 62/23 64/10 64/22 66/8 66/18 67/18 69/12 71/9 75/2 75/8 77/11 91/5 93/14 93/15 95/2 96/3 98/3 103/3 103/20 105/15 110/24 111/22 115/10 116/1 117/24 118/3 119/6 122/7 128/6 130/20 132/7 132/16 142/5 145/11 146/6 146/21 148/12 150/11 151/19 153/6 154/16 155/17 156/17 157/17 163/20 165/5 167/12</p> <p>goal [4] 46/20 46/23 47/1 155/5</p> <p>goes [12] 5/10 5/11 25/8 66/6 70/25 78/9 81/12 81/13 81/15 108/2 119/2 153/12</p> <p>going [59] 2/18 9/9 18/2 19/24 23/2 23/19 27/18 30/1 37/5 40/11 41/21 47/25 48/10 49/8 52/21 53/15 62/17 62/24 67/14 72/9 83/24 90/20 90/21 91/1 96/10 97/7 98/15 101/13 101/18 104/1 104/2 104/15 104/18 104/24 106/9 108/25 109/21 109/25 110/3 111/25 114/21 115/22 128/20 132/6 133/3 137/3 138/17 145/10 145/11 145/25 146/2 148/5 156/17 159/7 163/2 165/6 165/8 165/10 165/12</p> <p>gone [3] 6/2 70/17 145/12</p> <p>good [3] 116/20 151/21 162/23</p> <p>goods [1] 131/20</p> <p>got [2] 131/9 144/8</p> <p>govern [1] 59/15</p> <p>Government [5] 11/14 56/10 56/11 91/19</p>	<p>127/20</p> <p>gradual [2] 13/18 107/13</p> <p>Gradually [1] 119/15</p> <p>grams [3] 67/4 67/6 71/19</p> <p>grand [1] 152/5</p> <p>grant [1] 123/20</p> <p>granted [1] 125/6</p> <p>graph [10] 4/4 4/7 4/9 4/10 4/13 4/16 4/18 5/13 6/13 8/7</p> <p>graphs [1] 5/6</p> <p>grave [1] 126/24</p> <p>great [7] 51/20 53/19 54/21 73/5 110/9 142/20 143/2</p> <p>greater [11] 12/7 12/7 12/8 30/12 34/16 60/10 98/9 101/10 109/16 135/5 141/21</p> <p>greatly [3] 25/20 55/18 154/9</p> <p>greeted [1] 142/18</p> <p>grew [1] 17/24</p> <p>ground [1] 151/19</p> <p>grounds [2] 112/3 113/2</p> <p>groundwork [1] 159/19</p> <p>group [41] 16/22 22/14 22/25 28/1 28/6 34/7 34/11 34/19 35/5 35/22 36/2 36/13 43/8 47/18 50/18 50/19 63/1 63/3 63/11 66/10 70/7 71/10 73/4 73/7 73/10 76/3 82/25 83/5 86/1 86/7 86/12 93/11 99/14 99/15 99/16 101/17 103/19 114/4 115/4 120/3 132/19</p> <p>groups [4] 13/1 14/12 90/4 90/12</p> <p>grow [2] 66/13 140/7</p> <p>growing [3] 9/21 11/6 136/17</p> <p>grown [1] 129/20</p> <p>grows [3] 65/17 94/20 140/6</p> <p>growth [6] 94/22 118/23 119/14 119/20 119/24 120/23</p> <p>guaranteed [1] 141/5</p> <p>guidance [1] 70/22</p> <p>Gunson [6] 28/15 88/14 88/14 96/12 111/7 116/3</p> <p>H</p> <p>had [133] 1/8 2/4 2/5 9/16 10/24 15/25</p>	<p>16/17 17/13 22/23 22/25 31/18 33/5 33/23 34/3 34/7 34/9 34/20 37/2 37/3 37/19 38/1 38/2 38/5 38/9 38/12 38/19 41/25 42/13 42/22 42/22 43/1 43/6 43/7 43/14 44/17 45/6 45/9 45/14 46/22 47/9 48/16 50/4 56/10 56/12 56/19 56/20 62/14 74/24 75/16 76/3 77/2 78/8 79/2 80/18 80/19 80/21 81/11 82/23 84/23 85/8 85/20 87/2 87/3 87/14 88/1 88/9 88/10 89/17 90/7 92/16 93/2 94/8 96/6 96/16 97/2 99/9 102/22 103/18 109/23 110/5 112/4 113/21 114/5 114/6 115/19 117/9 117/22 118/7 122/17 123/11 123/13 123/15 123/21 123/25 124/5 124/6 125/14 125/18 126/13 126/19 127/23 128/19 129/11 133/19 138/24 139/17 139/18 142/7 142/19 144/8 144/18 148/14 150/23 150/24 151/7 151/9 151/10 151/11 151/15 151/18 152/23 153/1 155/1 155/4 155/10 157/10 157/22 158/11 159/3 160/22 161/5 161/24 162/15</p> <p>haematology [1] 63/18</p> <p>haemoglutination [1] 21/8</p> <p>haemolysis [1] 2/6</p> <p>haemophilia [36] 4/5 4/18 5/18 12/24 13/7 13/23 14/13 14/16 14/22 17/21 22/14 28/2 28/10 35/18 35/23 37/8 37/17 38/11 38/20 40/4 43/8 43/8 43/19 47/19 48/17 54/18 62/6 85/9 118/21 120/6 138/6 138/21 139/15 140/10 156/24 158/24</p> <p>haemophilia A [1] 139/15</p> <p>haemophiliacs [11] 29/14 29/17 30/12 32/15 33/5 41/1 41/7 56/9 66/23 119/16</p>
---	---	--	--	--	---

H	12/1 12/25 13/23 15/8 15/14 16/17 28/4 28/13 30/3 30/24 33/16 34/22 37/4 39/3 45/20 46/17 47/9 49/9 50/5 50/8 51/13 51/15 51/19 53/8 58/24 63/4 63/6 66/24 67/24 68/22 69/17 69/17 70/11 70/17 71/3 73/19 74/4 74/23 75/6 76/12 76/19 77/6 79/12 82/15 87/16 89/23 89/25 90/11 91/7 95/23 96/18 96/22 98/2 99/11 101/13 104/15 105/3 106/23 110/9 110/21 113/24 114/25 116/25 121/11 123/24 124/15 129/7 129/11 130/6 135/4 135/25 136/2 144/2 144/11 144/13 145/9 145/12 145/17 147/19 149/11 149/21 150/5 151/23 152/18 152/23 154/7 154/12 156/24 158/6 158/14 159/15 160/2 162/10 163/5 165/25 166/1 166/3 166/17 166/20 166/24 haven't [2] 51/19 166/22 having [12] 3/13 6/19 56/11 89/3 102/6 110/16 111/12 114/24 125/3 144/13 148/22 149/16 hazards [1] 14/1 HBsAG [5] 21/3 21/7 21/10 21/23 21/23 he [109] 2/21 9/6 10/24 14/12 14/16 15/2 15/6 17/17 17/18 17/22 18/15 18/19 22/12 26/6 26/9 26/14 26/21 27/2 27/3 27/4 27/5 34/15 37/19 37/24 38/2 38/4 38/25 39/3 39/18 42/16 42/18 42/20 53/4 69/6 74/10 79/7 84/18 84/24 84/25 85/5 86/23 87/2 87/3 87/11 87/14 87/16 87/16 87/19 87/23 90/7 90/14 90/19 90/21 90/23 90/24 90/24 92/16 95/15 95/25 96/7 96/17 96/17 96/19 99/2 100/5	101/21 103/25 104/24 113/18 113/22 115/19 116/5 116/17 116/19 116/19 116/23 117/14 119/2 121/10 121/21 122/22 123/4 125/12 126/10 132/13 133/5 133/7 141/15 141/17 143/12 145/4 145/5 146/18 147/1 147/14 148/6 150/4 152/10 155/11 159/20 159/21 159/23 159/24 160/14 162/12 163/23 165/14 165/18 166/3 he's [1] 81/6 head [1] 69/3 heading [3] 28/23 35/12 108/12 heads [1] 89/3 health [39] 6/9 11/17 12/4 15/11 16/3 16/5 17/10 18/3 28/20 45/16 46/6 50/14 63/22 64/2 64/17 64/18 64/24 64/25 78/25 83/11 83/16 83/20 84/13 86/9 98/7 104/23 105/1 130/10 143/8 146/14 148/18 149/6 150/22 151/13 152/4 152/7 152/12 157/9 157/20 hear [4] 56/25 89/8 123/13 161/16 heard [4] 67/23 78/2 110/9 146/13 heat [1] 167/11 heavily [1] 77/15 held [1] 83/21 Helen [1] 63/17 help [7] 6/20 27/11 90/13 142/22 143/4 145/14 148/20 helpful [12] 5/14 6/9 6/11 8/21 36/23 39/10 77/6 90/11 122/21 132/11 149/21 163/23 helps [1] 53/20 Hemofil [1] 21/25 hence [4] 13/10 138/15 141/22 161/20 hepatitis [13] 16/23 16/25 18/5 19/1 20/9 20/11 20/12 20/16 20/22 20/24 21/18 22/2 165/22 hepatitis B [3] 16/25 20/12 21/18 her [6] 23/5 27/2 30/7 69/23 121/25 138/6 here [12] 15/3 17/25	23/22 26/21 27/12 30/1 62/18 77/15 93/13 98/24 99/2 114/9 hesitation [1] 130/6 hide [1] 116/21 hiding [1] 116/23 high [11] 21/25 29/5 29/5 54/11 67/22 68/23 101/7 119/4 141/20 156/9 165/2 higher [11] 15/24 19/1 22/16 24/23 27/15 47/10 70/10 76/4 139/16 141/20 143/10 highlight [5] 41/4 67/19 106/12 130/21 132/8 highlighted [2] 20/14 62/15 highly [2] 116/17 120/10 Hill [1] 1/6 him [5] 27/10 88/11 90/2 111/10 148/6 hints [1] 145/5 his [41] 8/6 9/12 10/23 15/3 15/4 17/14 17/17 17/19 17/20 18/24 26/5 27/3 29/9 31/15 39/15 42/16 63/7 69/20 78/6 84/21 85/3 87/23 90/10 93/1 95/12 95/24 104/2 111/13 116/23 117/2 121/8 121/22 123/4 123/11 125/13 132/12 132/23 133/5 159/18 163/22 165/6 historically [1] 160/23 history [8] 77/18 78/9 79/22 80/22 86/21 127/13 132/2 133/9 Hitherto [1] 95/8 HIV [1] 26/7 HIV Litigation [1] 26/7 hold [1] 42/9 holds [1] 13/9 Holgate [6] 122/17 123/13 123/15 123/18 124/5 125/14 Holman [2] 42/12 46/3 home [27] 11/7 12/7 13/3 13/5 13/9 23/25 28/20 29/10 29/14 29/19 32/19 33/6 34/14 36/3 43/23 45/15 46/5 47/7 59/24 63/22 64/1 119/19 119/24 119/25 139/25 139/25 140/11 hope [2] 127/9 127/14	hopefully [1] 137/4 hospital [3] 32/20 63/18 158/23 hour [1] 44/24 how [35] 4/21 5/2 6/10 6/14 7/22 9/10 10/23 23/21 26/18 27/18 38/4 43/15 50/14 70/1 92/25 97/6 101/18 102/9 104/1 104/24 105/1 106/1 110/18 114/11 125/4 127/2 132/14 135/23 137/11 142/21 143/3 148/20 159/15 165/20 166/3 however [25] 13/17 21/18 27/2 47/16 55/18 57/19 58/6 58/12 69/16 70/22 76/6 87/22 102/10 109/7 118/21 124/7 124/24 125/15 130/9 131/23 137/15 141/1 150/21 158/5 163/18 HSOC0000596 [1] 4/12 human [5] 2/2 14/5 15/13 20/15 78/20 hundred [1] 67/21 Hyland [1] 42/17 I I am [6] 11/3 11/7 30/1 37/5 133/3 146/2 I can [1] 2/15 I can't [3] 90/9 139/2 144/13 I cannot [2] 149/4 149/18 I caught [1] 91/4 I consider [1] 26/13 I do [2] 36/23 77/5 I don't [6] 68/22 73/4 80/22 81/17 91/4 147/19 I doubt [1] 149/24 I draw [1] 29/4 I enclose [1] 105/22 I follow [1] 149/8 I give [1] 8/24 I had [1] 89/17 I have [5] 51/15 51/19 110/9 144/11 144/13 I just [1] 40/15 I leave [1] 41/13 I make [1] 10/16 I may [2] 149/11 151/23 I mention [1] 86/3 I mentioned [2] 8/24 62/24 I misunderstood [1]	79/13 I note [3] 127/16 136/20 167/19 I pause [9] 29/16 30/21 50/17 93/24 94/17 96/2 100/1 101/8 114/1 I quote [33] 11/1 11/21 15/18 15/23 16/6 18/16 18/21 22/16 25/19 26/11 26/15 29/8 30/6 34/15 34/20 39/18 40/24 41/24 64/12 66/10 70/15 71/10 73/25 85/4 92/12 100/4 101/23 110/6 121/10 123/17 131/15 147/14 155/11 I read [1] 155/3 I say [1] 167/5 I see [5] 11/6 73/12 81/18 81/22 88/18 I should [1] 36/10 I stress [1] 27/10 I suggest [1] 135/1 I suppose [1] 68/16 I suspect [2] 88/7 90/10 I take [2] 103/22 104/19 I think [27] 52/12 68/18 68/20 70/17 77/5 77/24 78/17 79/14 80/7 81/20 82/19 85/23 89/8 90/23 91/2 91/7 91/9 131/7 139/5 149/11 149/11 149/12 151/22 151/23 152/3 160/16 162/12 I thought [1] 149/3 I understand [2] 78/9 87/14 I understand it [1] 2/16 I was [1] 91/3 I will [7] 5/3 28/25 36/20 39/17 61/22 132/7 156/18 I won't [17] 10/24 14/9 15/13 17/15 22/8 26/8 39/17 40/8 40/22 61/18 73/23 77/15 95/21 115/10 116/1 130/20 165/5 I wonder [1] 48/2 I would [7] 14/24 27/25 40/2 97/13 121/23 140/9 158/5 I'd [1] 12/14 I'll [6] 10/25 24/25
----------	--	--	--	---	--

(54) haemophiliacs... - I'll

I	95/4 95/19 98/3 103/3 103/20 105/15 105/24 106/10 106/12 110/24 111/22 112/20 112/21 113/5 113/13 113/18 115/8 117/24 118/3 118/12 119/6 122/7 122/10 122/21 122/22 124/20 127/1 128/6 129/25 130/3 130/5 131/21 132/16 133/1 136/20 138/4 138/10 140/21 141/11 141/23 142/4 144/6 144/16 145/17 147/6 147/15 149/9 150/9 153/6 153/13 155/17 155/19 156/13 157/17 159/18 163/20 163/25 165/24 If anything [1] 140/21 ii [6] 100/23 107/18 107/23 108/6 108/6 164/7 iii [4] 100/25 107/19 108/7 164/9 illness [1] 119/18 illustrate [1] 32/24 illustrating [1] 44/16 immediate [7] 13/3 41/12 58/14 106/15 107/7 131/1 164/11 immediately [3] 130/14 130/16 164/18 immense [1] 134/3 immunity [1] 162/25 immunoglobulin [2] 2/9 134/4 immunoglobulins [3] 2/3 59/13 65/6 impact [1] 167/3 impediments [1] 134/16 implementation [7] 13/3 41/12 101/6 102/4 104/6 130/17 155/14 implication [1] 36/7 implications [3] 34/19 64/21 99/13 implied [1] 115/20 implying [1] 116/24 import [1] 123/21 importance [6] 14/5 42/2 66/20 102/19 104/21 112/7 important [10] 3/6 5/5 64/8 66/19 92/2 96/19 126/25 129/17 157/4 165/15 importantly [1] 118/8 imported [1] 17/5 importing [1] 3/21	imports [1] 17/14 imposed [3] 115/15 134/15 134/17 impossible [1] 134/20 improve [2] 67/10 125/7 improved [2] 124/19 130/14 improvements [4] 124/18 124/23 124/24 130/15 improving [1] 107/5 inability [1] 117/11 inadequate [2] 92/15 134/13 inadvisable [1] 126/17 incentive [5] 113/2 141/19 157/1 157/6 161/24 incidence [1] 119/18 include [8] 37/21 44/23 86/7 101/1 108/7 131/2 134/6 149/14 included [6] 44/1 44/8 133/21 158/8 158/17 166/14 including [11] 10/3 45/21 47/18 61/15 92/1 97/9 97/24 98/1 100/20 131/12 146/17 inconvenience [1] 22/5 incorporate [1] 164/21 incorporated [1] 131/22 incorporates [1] 153/19 incorrectly [1] 144/10 increase [27] 7/24 8/3 9/15 9/16 18/13 30/19 31/2 32/8 38/17 71/14 77/3 99/11 108/14 109/2 112/20 118/25 119/17 129/25 137/12 137/22 150/21 155/21 156/1 156/2 158/4 158/8 161/24 increased [17] 8/1 14/1 31/14 31/17 34/14 43/17 71/20 107/5 107/13 119/18 120/11 129/4 130/23 131/17 145/7 153/24 154/7 increases [6] 14/2 39/9 106/19 156/2 156/3 156/8 increasing [14] 9/18 18/1 31/24 45/3 46/24	107/8 114/21 119/16 131/24 142/11 157/14 157/23 166/14 166/20 incur [2] 55/6 57/4 incurred [1] 113/1 incurring [1] 146/9 indeed [7] 8/21 47/2 92/9 99/4 109/16 110/2 115/20 independent [3] 43/25 55/15 55/17 index [1] 118/4 indicate [1] 119/24 indicated [3] 38/8 125/14 142/7 indicating [1] 80/23 indication [2] 36/14 144/18 indications [1] 59/4 indicative [2] 5/23 5/25 individual [6] 21/2 55/22 57/13 90/3 90/11 166/23 individuals [3] 21/21 21/24 73/18 industry [5] 60/10 61/8 117/15 124/2 129/14 inestimable [1] 136/1 inevitable [2] 35/1 121/13 inevitably [2] 9/9 120/11 infection [1] 16/23 infective [1] 21/16 Infirmity [1] 44/13 inflate [1] 65/12 inflated [1] 155/12 influence [7] 16/17 16/20 54/21 87/20 88/15 102/11 120/8 influencing [2] 59/5 94/11 influential [3] 15/7 89/20 95/25 informal [1] 92/6 information [4] 41/11 49/21 50/1 158/9 informed [3] 34/10 158/12 160/4 infrequent [1] 61/6 infusion [2] 20/12 20/25 Ingram [1] 10/18 inherent [1] 58/15 inhibit [1] 17/3 inhibited [1] 120/9 inimical [1] 57/12 initial [2] 16/20 110/5 initialled [1] 136/18 initially [3] 31/2 80/15	160/21 initials [4] 23/5 51/13 132/23 136/19 initiation [1] 93/5 initiative [2] 159/19 162/10 initiatives [1] 156/16 injection [1] 39/25 input [2] 24/9 154/12 Inquiry [10] 1/3 4/3 4/8 9/7 76/19 78/16 114/24 143/23 166/22 168/3 Inquiry's [2] 74/20 86/3 INQY0000333 [2] 77/6 145/18 INQY0000336 [2] 3/25 155/18 INQY1000136 [1] 69/25 insight [1] 49/1 insisted [1] 97/9 Insofar [1] 125/21 inspection [4] 116/14 128/9 128/13 128/14 Inspector [1] 124/4 Inspectorate [12] 92/6 92/10 92/21 99/24 110/3 110/13 116/14 117/1 122/5 128/2 152/23 162/25 Inspectors [2] 122/18 123/16 inspectors' [2] 122/25 124/13 inspired [1] 91/19 instances [2] 50/4 59/2 instead [5] 11/22 14/15 42/14 162/6 163/6 Institute [14] 77/21 78/12 78/24 81/3 82/5 82/10 82/12 82/18 83/6 84/20 85/12 109/10 109/20 112/4 Institute's [1] 109/9 institution [1] 124/19 institutions [1] 86/4 instruct [2] 102/9 105/1 intake [2] 154/14 155/6 integrated [2] 100/6 129/9 intended [3] 53/13 91/16 131/16 intends [2] 95/5 97/6 intention [3] 31/18 41/11 131/24 interact [1] 97/7	interest [7] 42/16 48/25 60/9 98/25 119/23 140/15 151/11 interested [1] 26/18 interested in [1] 26/18 interesting [2] 79/22 96/15 interfere [1] 15/19 interference [1] 16/14 interim [5] 83/12 91/16 115/22 148/1 152/20 intermediate [5] 13/12 13/19 37/21 45/4 120/14 internal [4] 23/13 37/12 37/15 40/21 international [88] 4/21 6/25 7/4 7/7 7/8 8/25 15/16 23/21 23/23 24/1 24/6 24/13 24/16 24/18 25/11 26/19 27/7 27/9 29/13 30/8 30/17 31/8 31/9 31/11 31/25 33/19 39/11 39/20 47/11 66/25 67/7 68/7 68/9 69/3 69/15 69/24 70/2 70/9 74/11 74/14 74/18 74/25 75/12 75/23 76/16 103/8 103/14 106/6 106/7 106/24 108/21 108/22 108/25 110/22 112/11 112/13 112/14 113/8 113/17 114/3 114/13 114/14 114/19 114/20 115/2 115/23 118/19 118/24 120/13 120/15 120/18 120/19 120/21 121/2 121/3 138/23 139/7 139/8 139/10 139/10 139/21 140/24 143/20 143/24 144/2 144/4 154/6 155/5 international units [1] 6/25 interpretation [1] 37/2 interpretations [1] 103/23 interpreted [1] 91/25 interruptions [1] 155/13 interval [1] 107/3 into [31] 2/8 4/10 5/11 5/15 7/16 17/25 18/2 26/8 31/21 41/1 41/7 42/11 45/22 49/1 64/7 69/3 76/7 80/15 91/3 98/9 100/7 116/1 126/10 131/22 156/1
---	--	---	--	---	---

I	79/21 81/9 82/23 83/2 88/22 96/11 97/19 114/22 118/11 118/11 118/15 119/3 121/5 138/13 139/4 144/5 144/11 145/2 147/8 149/12 149/20 151/22 153/9 155/18 163/22 165/8 item [5] 35/17 38/16 41/19 42/16 111/20 Item 3 [1] 41/19 item 7 [1] 35/17 items [2] 40/16 42/2 iterations [1] 108/22 its [45] 12/23 19/1 28/8 55/8 55/10 61/7 61/9 63/12 63/14 65/24 74/17 77/22 78/9 80/13 80/17 81/2 83/7 83/22 83/22 84/16 85/10 88/5 94/8 94/11 95/5 95/7 96/20 96/21 97/21 98/19 99/9 100/12 108/23 110/18 112/2 129/8 134/22 134/24 136/4 140/19 141/24 153/16 155/4 161/9 164/10 its pro rata [1] 161/9 itself [7] 49/9 51/9 53/18 63/11 75/15 132/15 166/13 iu [1] 154/22 iv [1] 164/15 IX [4] 71/4 71/8 161/17 161/20	July [8] 37/9 63/25 76/17 128/11 132/21 146/7 148/8 148/16 July 1977 [1] 63/25 July 1978 [1] 132/21 July 1980 [1] 148/16 June [12] 25/5 25/21 34/11 35/8 35/15 76/14 109/8 121/18 122/9 127/14 146/4 148/3 June 1977 [2] 25/5 25/21 June 1978 [2] 76/14 109/8 June 1979 [1] 127/14 just [57] 1/7 6/6 8/21 8/23 10/2 10/25 15/8 28/13 40/9 40/15 40/23 41/5 41/13 46/16 47/9 52/24 56/7 64/9 64/22 66/8 67/18 67/18 73/17 75/6 78/15 86/20 86/21 88/18 88/21 95/19 96/2 97/13 98/15 104/14 106/10 115/8 118/4 118/11 130/21 132/8 132/10 138/17 138/19 139/9 140/8 144/2 144/14 145/2 145/14 145/19 146/2 149/12 149/21 149/25 150/19 155/19 167/10 justified [1] 47/16	116/16 know [18] 43/6 73/5 73/17 80/22 81/17 91/4 97/5 98/15 126/1 127/13 138/9 138/15 142/21 143/1 143/3 144/10 149/20 166/24 knowledge [3] 54/24 80/6 159/6 known [11] 17/25 17/25 20/21 27/4 30/10 59/21 76/22 113/19 131/17 134/11 139/15	115/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1 142/18 150/2 156/24 163/6 large [18] 2/19 6/3 20/15 24/12 32/22 39/8 41/2 41/8 55/19 56/21 78/20 113/19 129/1 129/5 129/13 129/19 133/11 134/20 large-scale [1] 129/13 largely [6] 33/6 55/16 57/23 60/17 161/19 162/10 larger [2] 139/18 159/12 largest [1] 45/24 last [8] 2/13 75/17 86/14 87/1 97/13 132/12 137/3 143/2 late [4] 9/19 137/10 166/11 166/17 later [26] 2/18 3/8 26/8 36/21 44/13 50/20 84/17 85/21 88/13 92/19 95/21 97/20 104/9 108/22 109/12 111/9 111/10 111/13 114/16 115/25 134/5 134/7 154/20 155/8 160/4 167/12 latest [3] 23/12 119/22 135/6 latter [1] 13/15 launch [1] 91/3 lay [4] 13/2 14/12 117/4 159/19 lazily [1] 3/2 LDOW0000343 [1] 17/16 lead [6] 13/7 13/25 26/23 32/19 98/2 99/5 leading [3] 17/6 18/13 102/24 leads [1] 161/1 learn [1] 14/16	lease [1] 82/6 leasehold [2] 109/11 117/8 least [14] 12/9 17/19 25/17 31/2 34/13 34/17 47/14 84/11 89/23 95/3 114/25 134/18 136/10 157/14 leave [4] 8/23 41/13 46/15 115/8 leaves [1] 133/5 lecturer [1] 63/18 led [6] 56/5 132/3 137/12 161/4 161/13 162/5 leeway [2] 91/24 153/2 left [5] 3/13 49/14 52/4 52/9 83/10 left-hand [2] 49/14 52/4 legal [10] 4/3 4/8 74/20 76/19 83/12 114/24 143/23 149/13 149/17 166/22 length [1] 146/1 lengthy [3] 5/4 40/12 41/21 less [13] 11/9 12/22 13/12 21/18 22/3 23/20 36/6 36/17 68/17 71/25 101/4 120/1 161/3 lessening [1] 13/10 lesser [2] 148/11 148/14 let [1] 126/1 let's [1] 37/13 letter [9] 11/20 15/1 105/14 105/17 117/2 128/6 128/8 157/18 159/2 letters [1] 98/6 level [9] 6/25 24/21 27/8 54/11 76/9 106/5 118/18 119/4 130/8 levels [3] 26/25 27/14 29/6 levers [1] 12/2 Liberton [11] 42/23 44/16 44/17 44/19 45/6 45/11 45/20 46/4 71/24 102/22 161/14 licence [1] 125/5 licences [2] 92/5 123/21 lie [1] 97/21 lies [3] 11/2 15/4 60/3 life [6] 2/12 13/8 14/1 14/14 14/23 43/24 lifespan [1] 119/17 light [4] 122/24 128/1				
into... [6] 156/2 162/17 164/8 164/22 164/23 167/12 into 1980 [1] 156/1 intolerable [1] 134/1 intrinsic [1] 117/6 introduce [1] 58/10 introduced [6] 128/24 160/5 160/6 161/19 162/6 165/17 introduction [6] 7/12 21/22 30/18 31/1 55/19 94/13 invest [1] 157/1 investing [1] 159/11 investment [13] 71/11 72/1 72/10 72/13 72/23 95/5 97/1 113/3 126/6 135/9 137/11 155/22 159/5 invited [4] 51/4 105/10 111/18 126/7 involve [1] 4/19 involved [9] 30/5 34/16 49/6 60/25 77/10 84/20 84/24 154/10 163/5 involvement [5] 109/9 116/2 117/1 146/18 148/22 involves [2] 4/19 14/3 involving [5] 14/1 98/8 101/9 103/10 148/11 Ireland [4] 161/5 161/7 161/8 161/10 irradiated [1] 133/12 irrelevant [1] 33/3 irritation [1] 11/21 is: [1] 67/12 is: if [1] 67/12 isn't [7] 1/11 4/14 23/8 69/2 72/15 145/2 149/1 isolation [1] 33/12 issue [4] 9/12 17/4 62/16 73/2 issued [1] 112/16 issues [1] 53/20 it's [64] 2/14 6/8 6/11 8/21 11/10 17/24 19/4 19/11 27/4 36/23 41/3 51/15 52/1 52/1 53/6 66/19 67/21 67/22 67/23 67/25 68/12 68/15 68/18 68/25 69/7 69/8 69/18 70/19 72/22 73/12 74/19 75/5 77/3 77/11 79/17 79/20 79/20 79/20	January [9] 11/13 23/7 40/6 41/15 63/12 73/21 73/22 146/13 153/11 January 1975 [1] 11/13 January 1977 [2] 41/15 63/12 Jenkins [1] 33/6 job [1] 149/3 John [1] 15/2 joint [11] 36/3 51/1 78/23 83/17 84/2 84/4 111/5 111/14 117/20 146/5 146/8 jointly [1] 51/23 joints [1] 13/11 Jones [7] 10/18 10/23 11/19 28/15 29/17 29/21 42/16 Jones's [3] 11/12 29/2 29/10 judged [1] 66/2	Kingdom [8] 12/22 30/9 32/3 45/7 49/4 112/10 114/10 139/16 Kirk [1] 40/18 knee [2] 30/19 31/1 knew [3] 32/16 90/12	111/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1 142/18 150/2 156/24 163/6 large [18] 2/19 6/3 20/15 24/12 32/22 39/8 41/2 41/8 55/19 56/21 78/20 113/19 129/1 129/5 129/13 129/19 133/11 134/20 large-scale [1] 129/13 largely [6] 33/6 55/16 57/23 60/17 161/19 162/10 larger [2] 139/18 159/12 largest [1] 45/24 last [8] 2/13 75/17 86/14 87/1 97/13 132/12 137/3 143/2 late [4] 9/19 137/10 166/11 166/17 later [26] 2/18 3/8 26/8 36/21 44/13 50/20 84/17 85/21 88/13 92/19 95/21 97/20 104/9 108/22 109/12 111/9 111/10 111/13 114/16 115/25 134/5 134/7 154/20 155/8 160/4 167/12 latest [3] 23/12 119/22 135/6 latter [1] 13/15 launch [1] 91/3 lay [4] 13/2 14/12 117/4 159/19 lazily [1] 3/2 LDOW0000343 [1] 17/16 lead [6] 13/7 13/25 26/23 32/19 98/2 99/5 leading [3] 17/6 18/13 102/24 leads [1] 161/1 learn [1] 14/16	115/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1 142/18 150/2 156/24 163/6 large [18] 2/19 6/3 20/15 24/12 32/22 39/8 41/2 41/8 55/19 56/21 78/20 113/19 129/1 129/5 129/13 129/19 133/11 134/20 large-scale [1] 129/13 largely [6] 33/6 55/16 57/23 60/17 161/19 162/10 larger [2] 139/18 159/12 largest [1] 45/24 last [8] 2/13 75/17 86/14 87/1 97/13 132/12 137/3 143/2 late [4] 9/19 137/10 166/11 166/17 later [26] 2/18 3/8 26/8 36/21 44/13 50/20 84/17 85/21 88/13 92/19 95/21 97/20 104/9 108/22 109/12 111/9 111/10 111/13 114/16 115/25 134/5 134/7 154/20 155/8 160/4 167/12 latest [3] 23/12 119/22 135/6 latter [1] 13/15 launch [1] 91/3 lay [4] 13/2 14/12 117/4 159/19 lazily [1] 3/2 LDOW0000343 [1] 17/16 lead [6] 13/7 13/25 26/23 32/19 98/2 99/5 leading [3] 17/6 18/13 102/24 leads [1] 161/1 learn [1] 14/16	115/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1 142/18 150/2 156/24 163/6 large [18] 2/19 6/3 20/15 24/12 32/22 39/8 41/2 41/8 55/19 56/21 78/20 113/19 129/1 129/5 129/13 129/19 133/11 134/20 large-scale [1] 129/13 largely [6] 33/6 55/16 57/23 60/17 161/19 162/10 larger [2] 139/18 159/12 largest [1] 45/24 last [8] 2/13 75/17 86/14 87/1 97/13 132/12 137/3 143/2 late [4] 9/19 137/10 166/11 166/17 later [26] 2/18 3/8 26/8 36/21 44/13 50/20 84/17 85/21 88/13 92/19 95/21 97/20 104/9 108/22 109/12 111/9 111/10 111/13 114/16 115/25 134/5 134/7 154/20 155/8 160/4 167/12 latest [3] 23/12 119/22 135/6 latter [1] 13/15 launch [1] 91/3 lay [4] 13/2 14/12 117/4 159/19 lazily [1] 3/2 LDOW0000343 [1] 17/16 lead [6] 13/7 13/25 26/23 32/19 98/2 99/5 leading [3] 17/6 18/13 102/24 leads [1] 161/1 learn [1] 14/16	115/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1 142/18 150/2 156/24 163/6 large [18] 2/19 6/3 20/15 24/12 32/22 39/8 41/2 41/8 55/19 56/21 78/20 113/19 129/1 129/5 129/13 129/19 133/11 134/20 large-scale [1] 129/13 largely [6] 33/6 55/16 57/23 60/17 161/19 162/10 larger [2] 139/18 159/12 largest [1] 45/24 last [8] 2/13 75/17 86/14 87/1 97/13 132/12 137/3 143/2 late [4] 9/19 137/10 166/11 166/17 later [26] 2/18 3/8 26/8 36/21 44/13 50/20 84/17 85/21 88/13 92/19 95/21 97/20 104/9 108/22 109/12 111/9 111/10 111/13 114/16 115/25 134/5 134/7 154/20 155/8 160/4 167/12 latest [3] 23/12 119/22 135/6 latter [1] 13/15 launch [1] 91/3 lay [4] 13/2 14/12 117/4 159/19 lazily [1] 3/2 LDOW0000343 [1] 17/16 lead [6] 13/7 13/25 26/23 32/19 98/2 99/5 leading [3] 17/6 18/13 102/24 leads [1] 161/1 learn [1] 14/16	115/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1 142/18 150/2 156/24 163/6 large [18] 2/19 6/3 20/15 24/12 32/22 39/8 41/2 41/8 55/19 56/21 78/20 113/19 129/1 129/5 129/13 129/19 133/11 134/20 large-scale [1] 129/13 largely [6] 33/6 55/16 57/23 60/17 161/19 162/10 larger [2] 139/18 159/12 largest [1] 45/24 last [8] 2/13 75/17 86/14 87/1 97/13 132/12 137/3 143/2 late [4] 9/19 137/10 166/11 166/17 later [26] 2/18 3/8 26/8 36/21 44/13 50/20 84/17 85/21 88/13 92/19 95/21 97/20 104/9 108/22 109/12 111/9 111/10 111/13 114/16 115/25 134/5 134/7 154/20 155/8 160/4 167/12 latest [3] 23/12 119/22 135/6 latter [1] 13/15 launch [1] 91/3 lay [4] 13/2 14/12 117/4 159/19 lazily [1] 3/2 LDOW0000343 [1] 17/16 lead [6] 13/7 13/25 26/23 32/19 98/2 99/5 leading [3] 17/6 18/13 102/24 leads [1] 161/1 learn [1] 14/16	115/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1 142/18 150/2 156/24 163/6 large [18] 2/19 6/3 20/15 24/12 32/22 39/8 41/2 41/8 55/19 56/21 78/20 113/19 129/1 129/5 129/13 129/19 133/11 134/20 large-scale [1] 129/13 largely [6] 33/6 55/16 57/23 60/17 161/19 162/10 larger [2] 139/18 159/12 largest [1] 45/24 last [8] 2/13 75/17 86/14 87/1 97/13 132/12 137/3 143/2 late [4] 9/19 137/10 166/11 166/17 later [26] 2/18 3/8 26/8 36/21 44/13 50/20 84/17 85/21 88/13 92/19 95/21 97/20 104/9 108/22 109/12 111/9 111/10 111/13 114/16 115/25 134/5 134/7 154/20 155/8 160/4 167/12 latest [3] 23/12 119/22 135/6 latter [1] 13/15 launch [1] 91/3 lay [4] 13/2 14/12 117/4 159/19 lazily [1] 3/2 LDOW0000343 [1] 17/16 lead [6] 13/7 13/25 26/23 32/19 98/2 99/5 leading [3] 17/6 18/13 102/24 leads [1] 161/1 learn [1] 14/16	115/12 116/6 116/16 117/3 117/13 117/19 118/17 121/8 122/13 126/12 127/9 127/23 140/14 140/17 141/4 141/15 142/12 143/11 145/1 146/22 146/25 147/21 147/24 148/3 148/17 150/7 150/11 151/2 152/10 152/14 153/4 153/12 153/14 155/8 157/4 157/24 159/17 162/11 163/14 163/19 163/21 164/2 165/6 166/2 166/8 Lane's [15] 40/1 69/2 80/25 82/1 82/8 85/18 89/9 97/15 103/24 121/25 138/1 142/18 150/2 156/24 163/6 large [18] 2/19 6/3 20/15 24/12 32/22 39/8 41/2 41/8 55/19 56/21 78/20 113/19 129/1 129/5 129/13 129/19 133/11 134/20 large-scale [1] 129/13 largely [6] 33/6 55/16 57/23 60/17 161/19 162/10 larger [2] 139/18 159/12 largest [1] 45/24 last [8] 2/13 75/17 86/14 87/1 97/13 132/12 137/3 143/2 late [4] 9/19 137/10 166/11 166/17 later [26] 2/18 3/8 26/8 36/21 44/13 50/20 84/17 85/21 88/13 92

L	70/20 75/14 75/25 89/17 91/18 116/12 116/13 122/2 126/3 135/8 152/6 158/18 long-awaited [1] 116/13 long-term [7] 75/14 75/25 91/18 116/12 122/2 152/6 158/18 longer [5] 109/21 110/15 118/8 118/14 162/1 longer-term [1] 110/15 look [22] 6/21 9/8 23/2 27/25 28/7 31/20 36/24 42/11 45/22 63/2 68/1 69/14 77/1 77/11 83/24 92/2 100/2 105/24 137/5 145/25 162/2 167/15 looked [17] 5/22 11/24 16/23 18/3 20/6 28/6 28/13 30/4 46/18 46/22 47/9 72/4 76/18 99/16 114/24 115/5 155/18 looked at [17] 5/22 11/24 16/23 18/3 20/6 28/6 28/13 30/4 46/18 46/22 47/9 72/4 76/18 99/16 114/24 115/5 155/18 looking [8] 27/4 27/10 28/9 75/6 89/2 100/7 108/20 147/8 looks [1] 5/12 loose [1] 87/17 Lord [3] 40/18 158/22 160/12 Lord Mayor Treloar [1] 40/18 losing [1] 89/19 losses [1] 142/10 lost [1] 70/14 lot [3] 5/11 80/12 88/6 low [5] 22/15 27/3 30/18 102/18 104/12 low-cost [2] 102/18 104/12 lower [4] 24/22 43/6 70/8 141/22 lowest [2] 121/12 142/3 lunch [1] 96/6 Luncheon [1] 91/12	25/2 25/3 32/5 43/18 44/4 44/8 44/12 45/10 45/12 49/18 50/9 59/18 68/3 74/8 76/11 76/12 88/6 89/20 90/16 93/12 94/14 95/23 103/23 108/22 109/6 112/4 115/19 123/18 123/25 124/2 124/16 132/12 135/25 143/1 144/19 151/10 160/20 166/24 magnitude [2] 95/5 125/17 main [5] 3/9 13/2 117/5 129/6 160/16 mainly [3] 13/1 83/19 133/10 maintain [2] 59/17 68/1 maintained [4] 31/13 74/24 119/4 136/10 maintaining [3] 102/20 106/18 136/2 major [12] 42/2 58/5 58/21 59/8 64/17 66/1 66/5 71/13 72/1 72/10 72/22 117/16 make [20] 1/14 1/15 9/12 10/16 11/23 27/19 44/20 53/23 55/3 68/1 88/17 101/14 104/15 109/14 110/3 110/18 114/1 126/11 133/22 161/12 makes [4] 24/11 90/2 151/14 151/21 making [10] 17/12 20/3 24/4 42/15 54/2 90/14 103/25 123/13 145/24 160/14 manage [1] 85/13 managed [2] 85/11 85/20 management [20] 77/4 78/23 82/2 82/21 83/17 83/17 84/2 84/4 85/23 86/12 111/5 117/21 119/15 146/5 146/8 150/23 151/6 151/16 151/17 153/19 manager [2] 131/12 149/14 managing [1] 54/8 manifest [1] 60/5 manner [1] 134/23 manufacture [8] 2/1 2/8 88/4 123/21 128/25 129/3 129/5 130/7 manufactured [1] 156/21	manufacturer's [1] 92/5 manufacturers [1] 65/3 manufacturing [8] 116/20 124/2 124/22 129/6 129/9 130/23 131/22 162/23 many [11] 23/21 50/4 55/8 59/2 68/12 69/17 124/18 126/4 133/5 135/25 147/19 March [12] 1/1 11/14 19/5 19/12 19/13 22/7 22/9 22/14 92/5 111/1 115/7 116/10 March 1973 [1] 22/14 March 1975 [1] 11/14 March 1976 [4] 19/5 19/13 22/7 92/5 March 1979 [1] 116/10 margin [1] 21/12 marginalia [2] 142/25 143/1 mark [2] 113/17 143/7 marked [1] 143/6 market [1] 142/4 MARP [4] 154/2 154/3 155/4 155/9 MARP01 [7] 108/23 132/5 145/22 147/23 148/19 152/13 156/4 Mary's [1] 63/18 match [3] 19/19 55/10 57/19 matched [2] 60/18 113/24 matching [1] 94/3 material [5] 20/18 21/16 39/4 44/4 49/18 material' [1] 94/8 materials [4] 37/18 96/21 129/22 129/23 matter [4] 39/22 51/18 68/25 79/17 matters [2] 144/16 149/24 maximum [5] 44/3 44/7 55/24 76/14 115/13 may [64] 7/20 11/25 15/6 15/11 15/19 18/4 20/15 23/25 24/2 28/3 29/14 29/23 34/7 34/22 36/4 36/5 36/16 48/22 50/5 51/18 51/18 52/8 55/6 55/10 59/25 62/6 62/7 65/9 65/12 70/17 73/21 74/7 74/21 76/1 78/5 78/17 79/17 89/16	89/23 89/23 90/11 93/12 96/18 98/25 103/17 103/23 114/19 116/25 117/19 118/2 130/12 133/3 144/14 145/14 147/10 147/21 149/11 149/14 150/3 151/3 151/23 159/15 164/19 165/18 May 1975 [2] 15/11 18/4 May 1976 [1] 34/7 May 1979 [1] 117/19 May 31 [1] 118/2 maybe [4] 68/17 71/6 80/15 81/18 Maycock [40] 22/11 28/16 37/19 37/24 38/25 39/3 39/6 63/21 73/6 75/7 76/17 84/17 84/18 84/20 85/4 85/21 86/21 88/11 90/1 90/6 90/12 90/18 90/19 92/11 93/12 93/21 95/22 96/6 96/10 96/16 96/20 96/23 97/24 99/2 105/18 111/12 116/24 116/25 132/12 133/4 Maycock's [2] 132/22 136/19 Mayor [3] 40/18 158/22 160/12 McIntyre [3] 28/20 63/21 63/24 McKee [4] 157/19 157/21 158/1 160/14 McKee's [1] 159/2 me [7] 70/18 85/4 89/23 91/5 118/15 148/21 151/15 mean [3] 61/7 61/14 62/6 means [7] 58/17 72/14 94/3 94/8 94/11 134/6 134/8 meant [3] 33/25 43/10 109/22 meantime [1] 166/12 meanwhile [2] 126/22 127/12 measure [4] 9/10 32/17 38/21 108/14 measures [3] 2/22 70/6 147/5 mechanism [1] 137/5 medical [8] 63/20 64/1 77/19 78/10 135/21 147/11 157/19 157/22 Medicine [2] 77/21 78/13	Medicines [33] 77/19 91/20 92/6 92/9 92/17 92/20 92/21 99/20 99/24 100/11 101/19 110/3 110/8 110/13 116/14 117/1 122/5 122/18 122/25 123/16 123/22 124/3 125/3 128/2 128/5 135/3 147/24 152/23 153/3 154/2 162/25 164/6 165/7 Medicines Inspectorate [1] 99/24 meet [18] 10/1 13/16 14/7 26/1 26/25 32/4 54/24 61/25 66/1 66/22 71/4 99/23 107/2 108/17 110/7 137/13 158/12 164/6 meeting [55] 19/11 22/8 22/11 28/1 28/24 33/1 35/7 35/15 36/11 36/18 37/6 40/2 40/4 41/14 42/11 42/19 50/13 51/2 54/20 64/13 71/2 75/4 75/11 76/17 83/22 97/23 98/5 98/11 98/12 98/14 98/16 98/23 103/4 105/9 110/22 111/1 111/2 111/6 111/15 114/25 115/5 115/7 116/8 121/17 121/19 122/4 122/9 122/20 127/18 127/21 134/6 138/7 138/20 139/15 150/15 meetings [5] 36/24 37/5 42/1 147/11 160/2 meets [2] 135/2 165/7 member [4] 16/6 16/10 73/3 73/9 Member States [2] 16/6 16/10 members [11] 31/17 32/14 33/15 63/12 63/14 63/23 73/8 111/18 123/8 123/12 125/15 memo [1] 51/25 memoire [2] 77/11 145/15 memorandum [2] 19/11 122/13 mend [1] 133/22 mention [2] 86/3 86/15 mentioned [6] 8/24 29/7 30/3 62/24
----------	---	--	---	--	---

(57) light... - mentioned

M	112/14 112/15 112/18 112/23 112/23 113/8 113/16 114/3 114/10 114/13 114/14 114/19 114/20 115/1 115/3 115/4 115/23 118/19 118/24 119/8 119/10 120/13 120/15 120/18 120/19 121/1 121/3 121/21 138/23 139/1 139/6 139/8 139/9 140/24 142/15 142/16 143/19 143/24 144/1 144/4 144/20 144/20 144/21 144/21 147/2 148/10 148/13 153/22 154/23 155/5 155/9 155/10	32/6 32/10 44/22 57/3 72/10 84/9 94/15 101/13 126/10 135/10 163/15 month [6] 51/24 52/1 116/13 116/13 141/3 148/3 months [4] 10/13 34/17 148/14 153/15 moral [1] 133/8 more [60] 1/14 1/15 5/1 5/9 5/17 6/17 7/13 7/22 7/23 19/2 20/19 21/22 26/16 26/22 28/9 32/13 33/10 36/4 38/20 38/21 40/11 48/20 48/24 50/22 50/23 50/24 50/25 51/5 51/7 53/5 53/20 53/23 54/1 56/4 67/14 74/3 74/14 94/20 99/8 101/11 108/16 113/12 113/21 124/4 126/14 141/20 146/9 150/7 151/14 157/13 161/2 161/3 161/16 161/25 162/3 164/15 165/8 165/10 165/21 167/8 more generally [1] 51/7 morning [2] 72/5 167/21 most [12] 13/18 33/15 33/25 49/6 54/10 54/25 58/14 63/5 71/14 102/12 113/15 120/3 moulded [1] 117/16 mounting [1] 56/5 mouthful [1] 82/24 move [5] 80/4 82/15 119/19 158/18 166/6 moved [8] 77/20 77/22 78/4 78/11 79/5 79/12 80/3 100/23 moves [3] 79/25 81/10 81/18 moving [1] 133/23 Moyle [6] 3/24 8/5 8/10 9/5 9/11 39/12 Mr [75] 1/6 3/24 8/5 8/10 9/5 9/11 18/14 19/24 28/19 33/18 34/10 34/13 34/18 36/22 39/12 45/11 46/6 48/2 48/13 48/23 49/2 49/4 49/12 51/5 51/11 51/17 51/20 62/14 62/25 63/13 63/24 72/6 73/4 73/8 73/20 73/24 74/7 88/14 98/1 98/1	101/23 101/24 103/24 104/14 104/20 105/19 109/5 110/6 111/8 111/14 112/25 116/4 116/5 116/18 117/2 121/19 121/20 122/1 122/13 122/20 123/1 123/10 125/11 126/7 127/24 128/8 146/7 147/12 147/21 157/10 157/20 157/21 158/1 159/22 160/14 Mr Benner [2] 63/13 73/8 Mr Dunnhill [1] 123/1 Mr Dutton [31] 19/24 28/19 34/10 34/13 34/18 36/22 48/2 48/13 48/23 49/2 49/4 49/12 51/5 51/11 51/17 51/20 62/14 63/24 72/6 73/4 73/20 73/24 74/7 98/1 109/5 110/6 111/14 116/18 117/2 157/10 159/22 Mr Dutton's [2] 18/14 62/25 Mr Gunson [1] 88/14 Mr Harley [7] 122/20 123/10 125/11 126/7 128/8 146/7 147/21 Mr Hill [1] 1/6 Mr McKee [3] 157/21 158/1 160/14 Mr Moyle [6] 3/24 8/5 8/10 9/5 9/11 39/12 Mr Parrott [7] 98/1 101/23 101/24 103/24 104/14 104/20 105/19 Mr Shaw [1] 157/20 Mr Smart [7] 111/8 112/25 116/4 116/5 121/19 122/13 127/24 Mr Smart's [2] 121/20 122/1 Mr Watt [3] 33/18 45/11 46/6 Mr Wormald [1] 147/12 MRC [16] 22/24 25/2 43/5 43/19 46/23 47/3 74/22 74/22 78/3 78/21 78/23 79/1 79/15 82/2 82/16 103/17 MRC's [1] 82/8 Ms [4] 26/7 89/8 89/23 167/12 Ms Richards [4] 26/7 89/8 89/23 167/12 much [26] 2/6 3/21 4/21 26/18 27/18	34/16 39/2 43/16 68/25 69/7 70/1 85/4 101/18 104/1 104/24 114/11 116/25 124/6 125/1 127/2 135/10 141/23 149/25 158/3 159/18 167/20 multi [1] 164/10 multiply [1] 27/22 must [16] 4/19 5/17 13/16 33/2 35/2 39/1 59/16 62/1 119/15 120/5 125/23 129/18 131/2 138/16 139/5 141/5 my [8] 11/6 37/14 78/1 78/16 80/7 81/14 91/4 149/5 mystery [1] 143/22	36/9 58/13 58/18 61/16 70/8 75/15 77/3 90/14 98/11 113/7 125/18 127/3 127/7 130/1 148/25 154/23 need [41] 5/7 22/10 26/4 27/16 27/17 29/12 33/2 34/8 43/20 44/21 62/21 65/9 72/10 72/18 73/13 75/13 76/1 78/5 83/14 88/19 95/11 96/8 96/13 97/5 97/11 100/14 101/17 102/16 104/11 105/5 109/19 110/7 115/17 122/15 125/14 126/1 128/2 134/3 144/15 163/1 164/5 needed [20] 24/10 37/23 55/20 64/15 70/23 71/6 71/18 71/21 71/23 72/2 72/11 94/21 101/5 101/19 102/13 108/3 112/9 124/5 124/14 135/5 needing [1] 27/6 needs [17] 29/13 33/4 38/9 43/10 65/4 65/24 66/1 66/22 67/10 78/22 84/13 108/16 108/17 118/9 118/16 134/6 160/19 neither [1] 43/14 Nelson [1] 38/25 Netherlands [1] 135/14 never [5] 31/18 38/12 39/20 94/10 126/13 nevertheless [3] 34/2 66/4 134/17 new [25] 33/19 33/22 34/4 34/8 36/8 37/25 44/22 59/23 60/6 72/18 72/20 83/17 107/3 108/8 110/25 120/12 128/23 128/24 131/22 134/21 135/9 148/4 153/25 154/17 163/7 newspaper [1] 47/23 newspapers [1] 12/24 next [27] 21/11 29/15 29/25 38/14 40/9 40/20 46/11 47/25 51/8 64/6 64/10 64/23 66/11 78/18 99/19 106/2 106/23 108/15 116/7 119/6 122/19 132/24 143/11 143/13 145/11 150/20 161/16
----------	---	--	---	---	--

(58) mentioned... - next

N NHS [56] 4/24 7/2 7/13 7/23 8/9 8/15 18/24 19/15 21/5 22/4 31/6 31/25 32/9 32/13 33/10 37/21 38/7 39/1 45/2 45/4 48/18 54/24 55/24 56/15 56/15 57/11 57/20 60/23 61/3 65/1 82/19 82/20 91/23 92/1 102/2 104/5 112/12 112/23 119/11 120/10 123/25 125/23 127/17 139/6 139/11 141/25 142/4 142/23 143/5 143/25 153/2 154/24 155/24 156/3 156/8 156/9 NHS Factor VIII [1] 8/9 NHS-produced [1] 19/15 nice [1] 149/25 nil [1] 161/10 no [37] 5/25 6/5 6/5 6/17 7/19 11/10 21/15 32/2 35/1 36/4 36/13 42/15 46/13 52/6 52/7 55/6 57/15 68/20 72/22 74/2 79/14 84/9 84/11 93/4 94/3 94/8 108/24 109/21 113/6 126/9 129/14 130/6 130/22 131/24 151/10 152/24 162/1 Nobel [1] 80/16 nod [1] 143/16 Nominal [1] 154/21 non [3] 2/1 15/21 16/8 non-labile [1] 2/1 non-remunerated [2] 15/21 16/8 nor [2] 17/7 43/14 normal [3] 13/8 14/1 134/3 North [10] 65/22 83/11 83/15 83/20 148/18 148/21 149/6 150/22 151/5 152/4 North America [1] 65/22 North West [4] 148/18 149/6 150/22 152/4 Northern [4] 161/5 161/7 161/8 161/10 Northern Ireland [1] 161/7 not [138] 2/5 2/9 3/4 4/7 5/20 6/7 7/19 9/15 10/6 11/4 14/2 17/1 17/2 17/5 17/18 17/24	17/25 20/20 27/4 28/8 32/10 33/12 33/21 34/9 37/3 38/23 39/7 39/9 41/1 41/7 41/11 43/1 43/6 43/7 46/2 47/3 47/14 48/19 49/24 50/10 51/14 51/15 51/16 51/18 51/19 54/15 55/10 56/3 56/20 57/2 60/18 61/5 61/24 62/7 62/17 64/9 64/14 65/8 65/13 68/23 68/24 71/16 73/17 74/19 75/15 76/22 79/17 82/18 82/22 87/7 87/9 88/13 89/25 91/22 92/13 93/7 95/4 95/6 95/23 96/10 97/5 99/23 102/3 102/8 102/21 103/15 104/5 104/17 104/25 106/9 109/2 112/21 114/22 115/15 116/1 116/22 116/25 118/11 119/10 120/10 121/4 123/2 124/4 125/6 129/4 129/11 129/24 130/2 132/6 133/19 136/16 142/5 143/15 144/2 144/4 144/12 145/10 145/11 145/25 146/19 147/15 148/16 151/8 151/9 151/22 152/6 152/17 156/17 158/6 161/8 161/17 163/11 163/12 163/18 163/22 164/9 166/9 167/9 notable [2] 26/23 104/9 note [18] 36/10 36/11 40/15 41/13 64/8 94/17 96/2 97/13 98/4 103/12 121/23 127/16 136/20 138/12 140/9 140/14 140/15 167/19 noted [1] 144/9 notes [3] 24/13 28/1 142/25 nothing [2] 84/9 123/7 notice [1] 59/5 November [5] 74/10 92/7 138/7 138/12 154/3 November 1976 [1] 92/7 November 1978 [1] 74/10 November 1982 [1] 154/3 now [48] 7/17 9/23 21/1 22/15 23/8 26/1	26/9 29/17 32/16 32/21 33/3 34/18 36/2 36/25 41/16 48/4 48/10 55/20 58/16 59/9 74/4 74/6 84/23 88/9 88/12 91/5 91/6 91/8 102/18 105/20 111/11 112/4 116/1 121/15 125/1 125/4 128/15 129/18 132/5 134/10 141/1 145/9 145/25 147/8 147/23 151/14 153/6 154/14 nowhere [1] 76/24 number [17] 11/13 16/13 21/20 23/19 26/24 27/22 28/14 30/12 45/24 74/7 80/16 99/21 114/24 128/23 140/4 140/5 158/17 numbered [1] 120/2 numbers [2] 62/5 119/16 numerical [1] 3/19 O obligatory [1] 21/1 observation [2] 74/6 93/12 observations [1] 114/2 observed [1] 128/12 obsolete [1] 43/12 obtain [3] 50/1 61/12 159/12 obtained [3] 15/25 21/6 30/15 obtaining [1] 113/6 obviating [1] 100/14 obviously [4] 30/23 90/9 115/6 120/7 occasion [2] 98/20 144/12 occasional [1] 119/5 occupation [1] 55/13 occupied [2] 80/8 80/18 occur [1] 153/25 occurs [1] 13/6 October [9] 49/14 50/13 51/25 63/9 85/2 97/23 110/22 115/6 157/21 October '76 [1] 51/25 October 1976 [1] 49/14 October 1978 [1] 85/2 off [9] 7/14 8/14 23/18 48/23 137/17 140/21 142/7 145/3 167/21 offer [1] 112/4	Office [1] 86/18 Officer [2] 147/12 157/19 officers [1] 157/22 official [1] 18/13 officials [4] 11/20 49/5 72/8 73/10 offset [3] 101/3 101/13 154/9 offsetting [1] 34/6 often [1] 91/21 old [3] 11/10 33/3 125/2 once [5] 35/2 60/21 61/5 150/17 162/25 one [60] 1/16 2/22 5/12 6/6 8/8 8/8 8/9 8/23 11/25 12/21 15/14 16/14 16/15 20/4 36/4 36/4 39/12 39/19 40/15 51/1 68/2 69/9 69/16 69/18 70/7 72/7 86/15 87/22 88/3 88/8 89/1 89/20 91/8 94/11 96/5 105/3 105/17 110/12 110/13 114/21 115/1 122/16 126/10 127/7 127/15 127/24 135/22 135/22 145/5 145/21 150/1 154/23 157/4 160/13 162/17 163/3 163/16 165/23 166/4 166/10 one another [1] 122/16 one million [1] 154/23 one-third [3] 8/8 8/8 8/9 ones [1] 139/17 only [27] 2/1 11/8 12/21 14/2 18/23 30/16 32/10 35/2 36/15 53/3 54/21 57/23 61/6 85/1 86/3 96/23 112/13 120/10 120/24 127/6 131/21 133/21 142/13 148/5 152/15 163/18 165/25 onscreen [2] 145/17 150/5 onwards [1] 40/24 open [6] 99/25 100/2 122/24 126/19 162/19 162/22 opened [2] 59/23 94/7 opening [2] 165/1 166/15 operate [2] 44/23 58/10 operated [4] 129/7 159/16 160/17 166/8 operating [1] 145/21	operation [9] 30/22 30/22 81/5 81/5 94/19 129/9 129/19 130/5 133/22 operational [1] 46/4 operations [3] 77/22 80/17 83/7 operator [1] 165/4 opinion [1] 43/21 opportune [1] 136/21 opportunities [1] 59/3 opportunity [4] 109/12 110/16 129/12 167/14 opposed [1] 13/14 optimal [3] 49/17 49/22 53/7 optimising [1] 113/3 options [7] 103/6 105/10 122/23 123/3 127/25 146/17 148/11 or [74] 2/3 2/9 5/13 5/13 6/12 11/4 11/21 13/5 15/7 17/20 19/5 20/18 21/2 21/8 24/5 25/10 30/23 36/6 36/15 36/17 37/3 39/21 43/8 47/5 48/19 49/23 51/11 51/14 51/16 51/17 53/4 58/7 60/1 60/6 72/6 72/7 72/18 72/19 74/1 76/7 76/10 80/5 80/9 80/15 85/1 86/6 86/11 88/14 89/21 91/6 93/4 94/24 95/4 97/5 106/13 114/22 116/1 123/21 129/25 134/19 135/23 137/9 139/25 144/6 144/12 144/14 144/21 149/2 149/2 152/20 157/7 157/14 159/8 159/23 oral [1] 35/19 order [10] 31/7 34/23 72/25 109/14 113/1 125/17 136/4 159/5 161/25 166/13 ordinated [1] 107/11 ordination [7] 86/18 94/16 96/25 101/7 104/21 105/6 106/21 organisation [9] 15/11 16/6 18/3 50/9 82/19 94/9 96/24 125/23 127/17 Organisation's [1] 64/25 organisational [2] 88/23 88/24 organise [2] 42/11 56/10	organised [1] 125/25 original [8] 4/13 4/17 33/23 74/22 98/5 152/15 152/22 162/11 originally [4] 44/12 51/1 59/11 131/16 originated [1] 134/2 origins [3] 19/10 84/16 97/21 other [38] 2/10 28/7 28/14 31/17 33/13 39/22 44/1 53/7 53/8 53/9 54/1 54/22 56/5 60/11 61/3 64/20 65/16 65/25 72/7 86/15 88/4 88/5 92/23 97/3 99/4 103/22 104/19 126/9 130/15 134/20 138/14 138/20 139/14 141/25 152/1 157/21 160/16 162/20 others [10] 5/9 22/4 59/17 59/25 74/23 75/7 109/5 111/7 159/11 159/12 otherwise [1] 74/1 our [12] 3/11 5/12 19/2 64/13 65/14 67/14 79/21 147/15 158/6 158/7 158/15 158/16 out [48] 6/4 10/19 13/9 17/1 22/24 27/2 27/13 31/16 31/19 33/5 36/22 47/17 49/15 51/16 57/13 60/12 62/1 62/16 75/24 77/13 82/17 84/21 92/16 94/22 95/19 98/12 98/24 103/4 112/25 113/22 115/12 117/22 123/11 124/17 127/6 128/10 129/20 137/15 139/14 141/1 142/12 148/20 150/1 152/3 152/8 158/5 163/15 166/16 out-grown [1] 129/20 outbreak [1] 18/5 outcome [5] 27/24 92/2 105/9 116/4 146/3 outline [2] 106/12 108/11 outlined [4] 71/3 103/7 103/11 112/1 outlines [1] 95/15 output [15] 24/7 24/11 31/24 32/9 71/15 71/24 119/11 140/19 153/24 154/5 155/5 155/23 155/24 156/3
--	--	--	---	--	--

O					
output... [1] 156/8	page [64] 1/21 4/1 4/2	121/19 121/20 121/25	150/4 150/10	patient [13] 7/21 11/8	per annum [22] 29/23
outset [1] 75/1	4/12 12/14 12/15 19/9	122/1 122/22 123/11	paragraph 3 [3] 50/7	13/5 13/7 13/12 22/3	32/1 37/20 37/25 38/8
outside [3] 80/6	19/10 20/1 28/22	125/10 157/11 159/23	65/20 98/24	23/22 27/3 29/11	38/10 42/8 46/25
100/22 160/8	35/16 37/11 37/12	163/21 163/22	paragraph 34 [2] 15/1	43/14 53/3 139/20	47/12 59/1 66/25 68/8
outstanding [2]	37/12 37/13 37/15	papers [11] 12/6	137/16	140/6	69/16 71/19 113/9
135/18 136/2	37/15 38/15 40/13	28/23 46/17 83/24	paragraph 4 [6] 50/12	patients [29] 10/5	113/17 120/20 137/14
outweigh [1] 22/1	40/14 40/20 40/21	99/4 122/3 122/12	66/6 78/6 101/22	10/21 11/6 12/9 13/23	139/21 142/15 154/15
over [32] 5/3 7/6 18/2	40/21 40/21 41/16	122/16 122/24 123/1	103/7 103/20	14/8 23/19 23/25 24/2	155/7
36/1 38/14 40/9 40/20	51/8 52/3 52/4 63/13	127/25	paragraph 5.3 [1]	27/6 27/8 27/22 32/16	perceived [1] 89/24
42/22 45/21 60/10	64/4 64/10 66/9 70/13	paragraph [61] 1/21	75/9	34/24 38/9 40/17 41/9	percentage [1] 139/11
64/6 64/10 70/13 82/9	70/17 71/9 75/8 77/6	10/10 10/17 14/20	paragraph 6 [4] 50/21	47/7 47/13 54/18 62/6	perfectly [3] 13/8
82/12 83/12 85/1	93/16 96/4 106/10	15/1 19/4 29/8 29/25	66/18 66/21 70/7	113/14 120/2 139/16	13/25 50/10
86/12 87/17 87/22	111/22 115/9 118/3	34/12 35/17 39/16	paragraph 7 [2] 35/17	139/25 140/2 140/4	performed [2] 30/23
97/4 99/19 107/15	118/5 118/13 118/13	49/15 49/19 50/7	150/17	140/11 158/24	135/19
111/22 112/6 124/22	118/15 118/16 119/6	50/12 50/21 52/20	paragraph 8 [1] 103/3	pattern [5] 50/4 94/23	perhaps [16] 35/9
128/23 139/9 147/2	122/11 131/8 131/15	52/22 53/2 54/6 61/23	paragraphs [4] 61/19	121/12 125/22 127/17	45/21 54/2 68/21 96/3
148/10 148/13 151/6	133/2 138/8 138/10	61/23 62/10 63/11	96/15 150/2 154/16	Paul [42] 3/25 6/22	97/19 100/9 104/14
overall [5] 26/14 31/4	138/17 140/13 144/23	65/20 66/6 66/18	paragraphs 11 [1]	9/23 12/12 20/1 35/11	121/15 133/8 150/4
47/10 85/20 149/24	145/18 150/9 153/8	66/21 67/16 70/7	61/19	35/17 37/14 38/14	150/11 153/1 155/25
overcome [1] 50/6	153/13 155/18 163/25	70/19 73/24 75/9 77/9	paragraphs 281 [1]	40/7 40/10 41/5 41/16	159/2 159/22
overlap [1] 152/19	page 10 [2] 12/15	77/14 78/6 93/20 98/4	150/2	49/11 64/11 65/20	period [20] 5/10 6/23
overloaded [1] 131/25	40/21	98/24 101/22 103/2	parallel [1] 60/19	93/14 95/2 95/20 96/4	7/6 8/2 8/4 8/5 8/16
overshadowed [1]	page 11 [1] 133/2	103/3 103/7 103/20	paras [1] 25/22	98/3 103/21 105/15	8/18 62/19 74/15 85/5
122/3	page 115 [1] 150/9	104/19 105/25 109/6	Parliament [3] 3/24	106/11 110/24 111/23	107/15 115/22 118/22
oversight [1] 149/2	page 14 [1] 41/16	111/24 111/25 115/10	9/12 39/13	117/24 118/3 122/7	151/5 152/9 153/10
oversimplified [1]	page 15 [3] 118/13	117/3 119/7 121/8	Parliamentary [5] 8/6	131/9 133/1 138/10	153/22 155/19 156/12
149/11	118/13 118/15	137/16 150/4 150/10	11/23 12/24 17/8	140/13 143/10 145/18	periods [2] 77/10
overstated [1] 151/23	page 16 [1] 4/12	150/12 150/17 154/20	17/19	150/4 150/9 153/6	167/17
overview [1] 145/19	page 2 [3] 19/9 28/22	158/2 164/1	Parrott [7] 98/1	154/16 155/18 156/13	permanent [1] 13/23
overwhelmingly [1]	118/3	paragraph 1 [2] 49/15	101/23 101/24 103/24	157/17	permit [1] 43/24
7/1	page 23 [1] 93/16	53/2	104/14 104/20 105/19	pause [11] 13/21	persists [1] 21/17
Owen [7] 11/15 11/22	page 3 [5] 66/9 115/9	paragraph 123 [1]	part [16] 14/20 34/13	29/16 30/21 50/17	person [7] 69/10
16/17 17/13 34/10	122/11 153/13 163/25	39/16	48/15 48/18 54/2 65/4	56/7 93/24 94/17 96/2	69/16 87/8 87/19
94/17 155/23	page 4 [2] 70/17	paragraph 124 [1]	68/4 86/3 91/19 98/19	100/1 101/8 114/1	88/10 88/15 89/20
Owen's [2] 34/25	106/10	10/10	105/20 117/22 118/13	pay [1] 43/14	personal [1] 15/4
96/25	page 42 [2] 4/1	paragraph 125 [1]	155/12 158/12 166/5	paying [1] 84/5	Personally [1] 11/3
own [11] 15/4 19/2	155/18	10/17	partial [1] 91/17	payment [1] 44/23	personnel [3] 88/17
29/10 55/8 76/10	page 5 [4] 37/11	paragraph 13 [1]	particular [21] 6/12	peak [3] 140/19	129/10 151/7
80/22 95/7 102/11	37/12 37/15 75/8	61/23	6/21 10/6 10/15 14/25	140/23 143/20	persuade [1] 17/9
129/8 141/24 158/16	page 6 [3] 40/21	paragraph 134 [1]	16/17 18/1 20/12	pending [1] 91/17	persuasion [1] 94/12
owned [1] 80/8	40/21 52/4	19/4	34/20 47/21 49/7 55/5	people [9] 14/13	Peters [1] 113/10
owning [1] 149/4	page 68 [1] 77/6	paragraph 145 [1]	56/18 57/18 60/2	14/16 14/21 27/20	PF [2] 95/8 136/11
owns [1] 149/2	page 7 [2] 20/1 37/12	34/12	65/13 88/18 119/25	48/17 67/21 68/13	PFC [11] 44/16 44/19
Oxford [11] 23/5	page 75 [1] 1/21	paragraph 150 [1]	135/13 137/16 140/16	69/17 69/18	45/6 46/4 76/10 76/22
25/15 42/24 44/9	page 79 [1] 145/18	62/10	particularly [7] 4/20	per [56] 23/21 24/1	95/6 95/23 102/22
46/10 46/11 85/7 85/9	page 9 [4] 37/13	paragraph 160 [1]	5/9 22/2 26/17 52/18	24/7 25/18 25/21	144/3 161/13
89/5 153/21 160/21	37/15 40/13 40/14	67/16	65/5 99/24	29/11 29/11 29/23	PFL [19] 9/1 9/7 23/5
P	pages [1] 40/10	paragraph 163 [1]	parties [1] 58/4	32/1 37/20 37/25 38/8	23/13 24/14 24/14
pack [14] 1/25 97/17	paid [5] 15/25 16/4	73/24	partnership [1] 56/4	38/10 42/8 43/18	76/14 85/7 85/13
97/18 100/3 107/25	20/18 42/17 61/11	paragraph 167 [1]	partnership' [2] 55/21	44/20 46/25 47/12	85/15 85/20 85/25
156/16 163/7 164/3	panels [1] 75/16	77/14	58/18	59/1 66/14 66/14	86/12 92/14 92/24
164/22 165/16 165/21	paper [48] 14/18 19/6	paragraph 178 [1]	parts [1] 5/1	66/16 66/25 66/25	137/20 144/3 156/21
166/1 166/7 167/4	22/9 23/14 25/2 25/4	77/9	party [7] 43/19 46/24	67/6 67/8 67/21 68/7	160/22
packaging [1] 129/24	26/5 28/13 29/2 29/2	paragraph 190 [1]	47/4 74/23 76/12	68/8 69/2 69/7 69/9	pharmaceutical [2]
packs [13] 2/8 3/7	29/9 43/5 49/20 50/22	109/6	76/23 118/18	69/10 69/15 69/16	124/10 129/14
100/13 137/6 145/8	50/25 51/3 51/9 51/10	paragraph 192 [1]	pass [2] 7/23 132/15	69/16 70/2 71/19	pharmacology [1]
162/9 163/24 164/5	52/16 53/18 56/22	117/3	passed [1] 14/10	71/19 106/25 107/17	101/2
164/9 166/6 166/14	62/9 62/15 62/25 72/4	paragraph 2 [3] 49/19	92/17	107/18 108/19 113/9	phase [1] 31/18
166/18 167/1	95/15 103/17 105/13	52/22 54/6	passing [1] 40/15	113/17 120/20 120/21	phased [5] 31/16
	105/22 106/1 106/10	paragraph 211 [1]	passive [2] 21/8 60/9	137/14 139/20 139/21	102/14 107/1 118/1
	107/7 108/10 111/10	1/21	past [3] 93/25 121/12	140/6 141/22 142/15	118/10
	117/20 117/25 121/17	paragraph 281 [2]	145/12	154/15 154/23 155/7	phases [1] 100/18

(60) output... - phases

P	3/1 3/3 3/4 3/4 3/7 5/2 8/1 12/10 15/16 17/10 18/14 20/15 21/2 21/6 24/9 24/10 24/12 24/18 24/19 24/22 25/10 25/15 25/25 26/21 30/15 35/20 38/22 39/9 39/24 42/6 43/25 44/17 45/10 45/12 45/19 46/8 46/10 53/16 53/17 57/5 62/8 65/16 67/13 75/15 78/20 78/20 79/3 79/4 88/3 89/13 94/5 94/10 94/13 95/17 97/16 97/18 98/9 99/12 99/25 100/2 100/9 100/13 100/14 107/6 107/14 107/25 113/7 113/23 113/25 116/3 120/17 120/21 126/4 126/15 133/12 133/16 133/18 133/19 133/24 134/9 134/9 134/19 135/6 137/6 137/10 137/12 137/20 138/18 139/11 139/13 140/16 140/22 141/5 141/17 141/20 141/21 141/22 141/23 143/13 145/3 145/7 153/20 154/6 154/13 155/7 156/14 156/16 156/23 157/2 157/14 157/15 157/23 158/8 158/15 158/21 159/6 159/12 160/10 161/3 161/9 161/14 161/24 162/3 162/9 162/16 162/20 163/7 163/8 163/10 163/24 164/3 164/11 164/16 165/2 165/11 165/11 165/16 165/21 165/25 166/1 166/7 166/14 166/18 166/21 166/25 167/1 167/4 167/16	35/11 35/16 37/10 37/10 38/14 40/7 40/13 40/20 41/16 51/8 62/23 64/11 64/22 65/20 66/18 67/19 75/2 75/8 77/7 77/7 93/14 93/16 95/2 95/19 98/3 103/20 105/15 106/11 110/24 111/23 115/9 117/24 118/3 118/13 119/6 122/7 122/11 128/7 128/16 132/16 133/1 138/4 138/10 140/13 143/10 145/17 150/9 153/6 153/13 154/16 155/19 155/19 156/13 157/17 163/20 163/25 pm [5] 91/11 91/13 136/24 137/1 167/22 point [38] 2/17 3/6 6/12 11/23 14/10 17/21 22/21 25/23 27/2 48/3 51/14 53/1 53/11 53/12 56/19 68/24 76/11 86/20 97/3 97/13 98/17 103/4 104/19 105/3 114/8 115/19 117/18 121/24 131/4 135/11 144/20 149/21 152/11 156/10 157/3 158/5 159/9 160/14 pointed [8] 92/16 99/17 112/25 113/22 115/12 127/6 142/12 163/15 pointing [1] 47/16 points [4] 6/11 93/3 128/13 139/14 policy [6] 46/20 82/3 83/18 120/7 129/15 152/6 political [1] 47/23 pool [8] 21/9 21/11 21/21 133/12 133/18 133/24 134/9 165/23 pooled [4] 2/7 162/17 163/12 163/14 pooling [4] 100/15 162/16 162/21 164/8 pools [5] 20/15 21/5 107/22 107/24 164/7 poor [1] 141/3 popular [1] 43/17 population [22] 30/10 66/14 66/15 66/17 66/25 67/7 67/9 67/21 68/2 68/7 68/13 68/15 69/3 69/8 69/9 69/15 70/2 71/19 103/9 107/1 139/18 154/23	portion [1] 8/19 position [9] 15/6 29/5 29/6 87/23 96/10 119/2 125/13 132/14 158/22 positive [4] 21/21 109/4 164/17 165/24 possess [1] 135/15 possibilities [5] 45/22 59/23 98/21 101/10 126/19 possibility [4] 46/13 110/2 126/10 163/3 possible [19] 7/5 13/17 20/20 31/21 32/21 34/4 67/10 71/23 75/25 94/14 101/21 102/9 103/10 103/23 104/25 113/15 114/22 130/3 131/18 possibly [7] 18/17 18/22 55/25 59/1 61/15 69/13 156/10 post [8] 10/13 10/16 81/5 84/18 85/22 133/5 154/3 164/23 post-MARP [1] 154/3 post-quarantine [1] 164/23 post-war [1] 81/5 Postgraduate [1] 63/20 posts [2] 131/6 131/11 potency [2] 37/22 45/4 potent [1] 13/13 potential [5] 94/4 94/4 95/7 133/19 144/5 power [1] 87/17 powerful [1] 90/5 powers [1] 96/16 PPF [6] 59/14 59/15 59/17 106/25 107/4 134/10 practicable [1] 130/2 practical [4] 89/21 89/21 109/1 129/25 practicalities [1] 64/7 practically [1] 124/7 practice [9] 17/1 33/15 52/12 61/14 65/3 104/24 116/20 118/9 162/23 practices [3] 49/22 49/24 66/2 practitioner [1] 13/6 pre [1] 164/23 precise [4] 4/14 6/10 64/14 150/24 precisely [2] 76/22 148/20	precision [1] 5/16 predecessor [1] 19/21 predicted [1] 34/13 predominant [1] 55/13 prefer [1] 22/4 pregnant [1] 134/4 premises [6] 71/12 80/8 80/18 115/15 124/18 129/20 Prentice [1] 45/16 preparation [11] 13/18 35/25 54/9 57/6 58/2 79/3 95/17 102/25 106/2 131/21 133/16 preparations [3] 13/20 58/5 142/8 prepare [4] 60/6 122/22 125/10 133/11 prepared [16] 11/4 20/14 21/5 23/3 23/14 30/14 51/1 51/24 61/24 62/3 73/23 78/21 95/14 126/20 127/25 138/5 preparing [4] 49/20 60/4 60/18 61/21 prerequisite [1] 99/10 presence [1] 73/18 present [34] 28/11 31/22 31/23 32/6 39/6 44/1 44/4 44/7 44/25 46/10 46/14 50/9 54/15 57/10 57/13 60/11 60/13 62/2 65/3 66/2 71/24 75/7 94/3 94/9 94/19 99/10 100/22 101/5 106/18 111/6 112/17 124/5 131/24 133/9 presentation [18] 1/3 3/9 5/2 19/4 20/7 34/12 62/11 67/16 73/24 77/8 77/14 105/5 109/7 117/3 145/16 153/16 160/25 168/2 presented [6] 51/12 105/13 109/2 117/20 128/5 167/10 presenting [1] 51/5 presenting more [1] 51/5 presently [2] 29/22 67/1 preservation [1] 78/19 Preserving [1] 106/21 press [1] 9/25 pressure [7] 13/1	14/12 33/25 47/23 99/7 142/22 143/4 pressures [2] 101/16 133/25 Preston [1] 28/16 presumably [4] 2/11 69/20 143/7 151/17 Pretty [1] 5/25 prevalent [2] 14/23 20/20 prevent [2] 43/23 134/4 Preventative [2] 77/21 78/12 previous [12] 20/4 22/25 26/22 30/3 36/14 96/3 96/15 128/18 138/22 142/20 150/12 158/6 previously [3] 37/2 97/2 148/15 price [3] 112/17 119/12 141/25 prices [1] 142/1 pricing [1] 58/11 principal [2] 98/25 99/6 principle [5] 45/14 127/10 136/15 146/19 156/20 principles [2] 91/25 162/22 prior [1] 17/11 private [3] 116/2 117/12 146/18 privilege [1] 123/24 privileged [1] 116/21 Prize [1] 80/16 pro [22] 137/5 143/16 145/6 156/15 156/20 157/5 157/24 158/21 159/9 159/20 160/7 160/18 161/1 161/4 161/7 161/9 161/17 161/21 162/6 162/8 166/21 167/2 pro rata [19] 137/5 143/16 145/6 156/15 156/20 157/5 157/24 159/9 159/20 160/7 160/18 161/1 161/4 161/7 161/17 161/21 162/8 166/21 167/2 probability [2] 30/11 99/21 probably [10] 8/5 49/5 51/25 54/10 56/4 60/10 102/12 112/11 132/7 142/10 problem [5] 51/3 58/6 60/3 62/2 145/2 problems [10] 51/6
----------	---	---	---	---	---

(61) philosophy - problems

P	79/11 89/14 92/24 98/12 99/10 99/18 100/12 100/19 100/23 102/5 102/17 102/20 103/1 103/8 104/7 104/11 105/23 106/5 106/18 106/22 107/3 107/4 107/8 107/13 109/2 112/9 112/12 112/21 113/3 113/7 115/14 116/2 117/16 118/20 120/13 129/4 129/13 129/16 129/18 130/1 130/12 130/13 130/22 131/17 131/24 134/25 136/11 136/13 140/20 140/22 140/23 141/4 141/10 141/12 142/13 142/14 143/21 143/23 152/21 152/25 154/1 154/4 154/8 154/17 161/25 167/16 168/4 products [93] 1/4 2/2 2/9 12/20 15/13 15/25 16/12 17/5 17/24 18/7 20/4 20/14 20/23 21/1 21/5 21/19 22/6 33/13 35/21 36/20 47/21 48/1 48/11 48/19 49/4 49/17 49/23 50/16 50/19 53/24 55/23 55/25 56/6 57/11 57/21 58/7 58/11 58/12 58/20 58/23 59/4 59/9 60/7 60/24 61/5 61/9 61/13 61/24 62/4 63/3 64/6 64/9 65/2 65/4 65/8 65/11 79/1 82/25 83/4 88/5 93/11 93/18 99/15 102/5 102/16 104/7 104/11 111/20 118/2 123/20 123/24 124/1 127/3 128/3 128/22 128/23 129/23 130/9 132/19 136/17 137/6 142/17 153/20 154/11 154/24 156/21 158/10 158/21 161/2 161/6 161/15 161/18 168/5 Prof [5] 40/24 40/25 41/6 41/25 42/10 Prof Blackburn [2] 41/25 42/10 Prof Stewart [3] 40/24 40/25 41/6 Professor [6] 10/18 28/17 38/25 45/5 45/19 113/10 Professor Blackburn [3] 10/18 28/17 45/5	Professor Hardisty [1] 45/19 Professor Nelson [1] 38/25 Professor Peters [1] 113/10 profit [1] 82/19 program [1] 33/14 programme [30] 9/20 18/20 54/9 55/4 55/10 56/1 56/6 91/16 94/21 98/17 99/5 105/21 113/8 115/21 127/6 132/5 132/5 144/7 144/18 146/6 146/21 147/22 147/23 148/1 148/12 148/19 152/14 155/4 166/4 167/8 programme' [1] 115/13 programme-Gap [1] 132/5 programmes [5] 77/2 124/20 145/22 152/19 156/5 progress [2] 102/12 144/19 progressively [1] 21/20 project [11] 58/25 90/21 133/11 147/24 149/7 150/23 151/6 151/16 151/16 154/1 154/2 Projected [1] 118/16 projection [1] 94/7 projects [1] 166/12 prominently [1] 86/2 promote [3] 16/7 16/11 18/10 promoting [1] 53/5 proof [10] 26/6 39/15 63/8 77/16 85/3 93/1 95/24 121/9 138/2 150/6 proofing [1] 121/16 propaganda [2] 13/2 14/19 properties [2] 59/4 65/11 prophylactic [9] 40/16 40/19 40/25 41/6 41/10 47/15 119/19 140/2 140/5 prophylaxis [4] 43/17 120/4 120/8 140/12 proportion [5] 44/8 58/7 107/22 156/8 156/22 proportions [2] 54/16 139/11 proposal [3] 158/3	158/20 163/6 proposals [14] 98/8 103/24 104/2 104/15 105/12 109/22 118/7 126/5 127/22 135/1 146/15 148/4 152/15 166/2 Proposals' [1] 131/17 proposed [14] 36/19 38/1 48/12 48/15 100/21 106/1 106/7 117/23 122/15 123/11 125/11 141/15 141/17 143/12 proposition [1] 16/10 prospect [1] 18/19 prosthesis [2] 30/19 31/1 protect [1] 16/18 protection [1] 165/3 protein [8] 23/4 44/15 65/18 95/1 97/8 126/12 154/6 158/16 protracted [1] 132/2 prove [2] 29/24 75/16 proved [2] 13/18 127/14 provide [17] 25/10 34/23 41/10 42/6 63/6 65/24 67/3 71/18 82/14 131/19 135/2 135/5 145/14 150/12 154/22 156/18 161/9 provided [22] 2/5 4/5 7/4 10/6 12/11 26/6 31/12 32/16 35/24 37/16 48/20 76/3 97/16 102/17 104/12 108/9 130/12 137/20 156/23 158/22 160/9 160/11 provides [2] 158/23 163/23 providing [9] 12/10 12/10 72/11 94/13 136/5 157/3 159/2 159/11 160/12 provision [10] 8/19 10/3 10/22 52/18 55/5 94/15 106/13 106/17 161/14 161/15 provisional [1] 122/4 provisions [3] 42/15 123/22 160/20 PRSE0002133 [1] 12/12 PRSE0002268 [1] 40/7 publication [1] 18/4 publicise [1] 13/1 publicity [2] 71/17 113/5	publicly [1] 17/22 pull [1] 89/13 purchase [8] 109/13 112/5 119/9 119/12 124/20 141/8 141/10 141/12 purchased [4] 33/8 110/16 113/21 156/7 purchases [1] 33/9 purchasing [1] 109/18 pure [1] 160/6 purely [1] 151/24 purity [1] 22/1 purpose [6] 19/16 34/2 53/8 98/13 148/21 164/10 purposes [4] 53/9 55/8 121/6 164/20 pursued [1] 79/2 pushing [1] 12/6 put [17] 22/12 51/22 52/9 77/2 101/9 102/14 105/10 121/5 122/12 123/8 126/8 126/9 127/23 127/24 148/4 151/22 166/2 puts [3] 14/12 14/17 73/2 putting [2] 101/21 121/9	11/24 12/24 149/20 152/5 quick [2] 145/14 156/18 quickly [4] 103/3 124/19 131/18 134/21 quite [10] 5/4 18/24 33/3 68/24 88/6 118/5 123/4 124/18 151/22 152/17 quotation [1] 10/25 quote [33] 11/1 11/21 15/18 15/23 16/6 18/16 18/21 22/16 25/19 26/11 26/15 29/8 30/6 34/15 34/20 39/18 40/24 41/24 64/12 66/10 70/15 71/10 73/25 85/4 92/12 100/4 101/23 110/6 121/10 123/17 131/15 147/14 155/11 quoted [2] 10/17 73/23 quotes [1] 53/1
				R	
				radical [2] 102/4 104/6 radically [1] 127/11 radioimmunoassay [1] 21/4 Rainsford [2] 41/9 45/25 raise [2] 3/10 17/17 raised [7] 2/17 17/13 22/22 44/5 114/23 115/2 115/5 raising [1] 162/11 Raison [1] 28/12 ran [1] 149/16 range [4] 36/24 59/4 61/20 67/23 rapid [4] 118/23 164/15 165/1 165/10 rata [22] 137/5 143/16 145/6 156/15 156/20 157/5 157/24 158/21 159/9 159/20 160/7 160/18 161/1 161/4 161/7 161/9 161/17 161/21 162/7 162/8 166/21 167/2 rate [9] 31/12 31/23 35/21 37/22 67/20 67/25 106/18 112/20 120/23 rates [1] 120/20 rather [14] 3/2 15/25 36/11 72/21 76/4 82/24 89/17 92/19 137/19 148/13 151/14	

R	20/13 35/23 50/8 54/1 78/15 102/22 reception [1] 109/4 recognise [1] 28/15 recognised [3] 33/4 158/24 160/11 recollection [2] 144/11 144/13 Recommendation [1] 130/25 recommendations [5] 99/13 101/17 128/4 130/20 152/22 recommended [2] 70/12 125/21 recommending [1] 130/6 recommends [1] 131/4 reconstituted [1] 20/5 record [2] 35/9 122/14 recorded [1] 93/2 records [2] 6/6 140/17 recoup [1] 142/10 recourse [1] 13/20 recovered [1] 2/4 recruited [1] 124/21 recruiting [1] 71/18 recruitment [1] 75/18 red [5] 2/6 9/18 53/16 71/15 135/15 red cells [1] 53/16 redevelop [3] 72/18 97/6 132/3 redeveloped [4] 72/21 121/7 135/4 154/25 redeveloping [2] 100/12 121/22 redevelopment [20] 91/17 100/17 102/14 103/11 107/1 108/17 109/16 110/15 116/12 117/23 118/1 118/10 122/2 127/22 137/7 145/20 145/24 152/20 154/2 167/9 redevelopments [1] 137/4 reduce [1] 31/4 reduced [2] 55/18 141/13 reducing [2] 33/9 61/9 reductions [1] 134/16 refer [3] 6/11 121/15 144/5 reference [44] 4/12 10/16 15/10 17/15 19/3 22/10 25/3 30/2 35/4 35/8 39/16 39/23 41/19 42/1 42/2 43/4 50/17 57/8 62/25 64/3 68/11 69/21 70/1 75/2	79/21 82/25 83/5 86/1 86/6 86/8 86/13 89/6 93/11 97/15 97/17 104/9 110/11 111/19 116/22 127/16 127/18 132/19 150/17 155/15 references [4] 10/11 34/11 77/13 109/6 referred [7] 30/7 44/14 63/7 109/12 113/18 121/25 144/6 referring [3] 10/12 16/24 155/23 refers [2] 11/15 29/18 reflect [2] 65/9 65/14 reflected [1] 47/22 reflective [2] 51/6 132/14 reflects [1] 9/19 reform [1] 35/3 refrigerator [1] 13/14 refused [1] 151/6 regard [3] 52/18 71/25 126/2 regarded [2] 88/22 129/19 regardless [1] 22/5 regards [1] 124/2 regimes [2] 13/4 29/22 region [15] 47/11 55/8 62/6 84/10 84/11 84/14 94/21 141/16 141/23 143/12 146/24 151/18 159/1 159/4 159/5 Region's [3] 55/9 141/17 143/13 regional [65] 1/23 11/16 12/4 17/10 23/15 25/3 37/7 55/15 55/17 55/22 58/19 58/22 60/13 61/20 61/25 63/16 67/23 70/23 71/14 71/21 75/4 75/4 83/11 83/16 83/20 90/6 90/17 90/22 96/17 96/22 98/7 98/7 99/11 99/22 100/8 104/22 104/23 105/1 105/2 105/7 105/7 112/16 120/6 127/8 148/18 149/6 150/22 152/4 152/7 152/11 154/11 157/9 157/19 157/20 157/22 160/3 160/4 162/17 163/1 163/4 163/11 163/17 164/9 165/9 165/13 regions [24] 38/24 55/3 57/3 57/17 87/17	88/6 100/12 113/24 120/7 126/1 126/4 141/18 141/19 141/23 141/25 156/22 157/1 157/15 159/10 160/21 161/1 161/3 161/24 162/3 regulatory [2] 164/20 165/19 Rehabilitation [1] 147/24 rehabilitative [1] 59/24 Reinforcing [1] 115/19 rejecting [1] 148/11 rejects [1] 116/4 related [4] 62/7 92/25 135/18 156/15 relating [2] 70/6 94/6 relation [3] 99/24 122/16 122/17 relationship [9] 17/14 17/18 55/6 102/2 104/4 157/7 157/8 159/4 165/13 relative [1] 22/5 relatively [6] 6/24 7/15 127/19 134/3 139/22 140/4 relatives [1] 13/5 released [1] 38/22 relevance [1] 93/13 relevant [5] 1/16 4/23 12/16 132/8 167/17 reliable [3] 6/4 6/17 50/2 reliant [1] 102/21 relieved [1] 133/24 relocated [1] 100/22 reluctant [1] 158/13 rely [1] 96/22 relying [1] 61/11 remained [4] 84/18 85/22 86/23 140/20 remaining [2] 13/13 112/15 remedied [1] 125/5 remember [1] 106/4 remembered [1] 91/22 remind [1] 24/25 remit [1] 98/22 removed [1] 30/17 removing [1] 157/14 remunerated [2] 15/21 16/8 renamed [2] 132/5 147/25 render [1] 43/25 rendered [1] 33/5 reorganisation [2]	11/2 11/4 repealed [1] 123/22 repeat [2] 77/15 145/10 repeated [2] 22/3 115/16 repeatedly [2] 18/15 19/25 repetitive [1] 155/13 replaced [2] 63/25 134/10 replacement [1] 53/4 report [48] 12/13 12/17 35/19 46/24 47/9 63/5 64/11 72/12 73/22 74/2 74/9 74/13 74/17 74/22 74/23 75/6 76/2 92/10 92/11 93/9 93/15 93/18 97/22 116/7 116/17 116/19 122/4 122/12 122/25 124/13 128/2 128/14 132/12 132/18 132/22 133/2 138/21 144/10 152/22 153/1 153/5 153/9 153/9 153/15 153/19 155/8 155/11 159/14 reported [3] 35/6 35/20 41/25 reports [4] 5/19 22/25 40/18 144/1 represent [1] 36/4 representation [2] 4/16 73/10 representations [1] 167/15 representatives [6] 40/5 50/13 83/20 83/21 97/24 97/25 represented [1] 49/22 representing [1] 28/16 reputation [1] 136/3 requests [1] 11/17 require [11] 23/25 24/2 24/17 24/18 54/13 54/19 59/3 59/10 61/6 101/7 141/6 required [25] 3/3 11/9 14/7 20/6 23/21 24/8 24/21 26/24 36/6 36/16 50/3 57/16 58/16 59/13 59/14 66/12 71/12 76/9 76/25 114/19 120/17 126/5 147/13 165/9 166/13 requirement [14] 3/1 25/12 30/8 47/4 47/10 54/21 55/24 58/14	61/2 71/2 113/9 113/12 164/19 165/19 requirements [37] 13/15 14/7 22/13 23/18 24/4 32/4 42/22 46/20 54/24 55/11 57/19 59/7 59/15 61/25 64/15 64/16 65/14 65/15 66/4 66/7 71/4 74/3 93/3 105/22 107/8 108/2 108/6 110/8 113/16 116/6 118/12 124/1 129/13 135/3 141/24 164/6 165/8 requires [2] 55/8 108/4 requisite [2] 142/23 143/5 research [26] 77/19 77/19 78/10 78/19 79/1 80/13 80/15 80/17 81/15 83/9 100/20 107/19 108/5 108/8 129/11 129/16 135/12 135/16 135/20 135/20 135/21 136/7 136/8 136/12 136/16 143/24 reservations [1] 148/7 reserve [1] 125/13 resided [1] 45/24 resolution [3] 15/11 15/12 15/15 resolutions [2] 61/10 65/1 resolved [2] 95/24 97/11 resonance [1] 49/7 resort [1] 61/16 resource [3] 64/20 101/12 165/9 resources [4] 31/22 33/25 71/20 83/8 respect [2] 50/2 140/16 respect of [2] 50/2 140/16 respects [1] 92/15 respond [3] 50/10 60/5 134/21 response [5] 3/15 12/21 34/25 101/22 109/1 responsibilities [1] 147/17 responsibility [5] 58/24 82/13 85/1 136/5 151/24 responsible [5] 12/10 82/3 94/22 141/9
----------	--	--	--	--	---

(63) rather... - responsible

R	rise [7] 3/14 8/13 26/24 32/12 105/11 107/13 151/4 rises [1] 7/4 rising [1] 113/8 risk [12] 13/10 15/24 17/1 19/1 20/11 20/22 20/24 21/16 21/18 21/24 22/1 22/6 Rizza [2] 28/18 38/2 role [20] 19/22 28/8 60/9 60/12 81/2 81/25 82/8 83/8 83/15 84/14 85/15 85/16 85/23 86/17 96/6 136/2 149/9 149/14 151/15 157/13 root [1] 60/2 rose [2] 119/9 141/12 rounding [1] 139/4 row [3] 82/16 82/16 86/14 Royal [2] 44/13 63/20 RPH [1] 21/8 RTCs [15] 58/22 94/5 94/10 95/9 100/6 100/13 100/15 101/5 101/10 101/12 102/7 102/9 141/7 154/12 164/5 RTD [1] 23/13 RTDs [1] 75/18 rubella [1] 134/4 run [3] 89/17 127/12 141/1 running [5] 44/22 109/9 110/12 142/14 149/13 runs [1] 89/11	76/15 83/8 88/19 90/1 90/3 90/16 113/5 121/9 125/12 126/13 141/4 141/18 147/1 147/25 150/4 152/14 155/11 158/1 167/8 sale [1] 142/11 same [12] 8/2 11/10 28/5 31/24 36/18 39/12 41/14 87/7 87/8 90/18 121/19 124/1 satellites [1] 100/10 satisfactory [1] 158/7 save [3] 56/11 93/5 135/10 savings [3] 32/19 32/22 101/4 savings' [1] 147/7 saw [11] 10/20 15/10 16/13 18/4 18/6 24/25 47/5 99/6 137/10 162/11 162/19 say [26] 5/10 6/8 7/19 25/8 29/21 30/21 50/17 70/8 70/10 70/25 72/20 86/3 90/20 90/21 90/23 95/4 96/8 101/8 114/22 122/17 123/13 123/15 126/7 144/13 166/25 167/5 saying [14] 8/10 27/3 27/11 67/12 72/9 74/4 79/13 79/14 81/7 89/22 90/12 116/18 140/17 151/23 says [15] 21/12 23/23 70/15 74/2 78/6 78/17 81/14 81/20 85/3 95/25 96/23 105/25 138/8 152/10 164/2 scale [13] 24/12 41/2 41/8 55/19 56/22 58/16 70/24 94/20 129/3 129/5 129/13 129/18 129/19 scan [1] 95/19 scheme [22] 94/9 94/13 96/24 101/6 101/8 146/9 149/25 157/5 157/24 159/10 159/20 160/7 160/8 160/17 161/4 161/17 161/22 162/5 162/6 162/8 162/12 166/21 schemes [2] 16/15 124/10 School [2] 63/20 160/13 scientific [10] 37/7 83/23 83/25 84/3 111/3 111/15 116/11	121/18 122/8 150/15 scientists [1] 129/10 scope [3] 98/11 135/17 147/6 Scotland [13] 12/22 13/21 14/8 31/12 44/12 44/13 44/18 45/1 46/2 63/15 76/11 88/21 89/3 Scottish [7] 12/13 28/20 45/15 46/5 63/22 64/1 102/22 screen [2] 63/4 77/6 second [28] 15/22 27/25 29/1 40/2 63/4 70/9 77/11 82/16 93/19 95/19 103/2 104/3 105/24 111/20 111/24 114/8 115/10 117/10 118/23 119/7 138/10 138/18 140/13 143/18 145/7 145/23 145/25 158/1 secondly [1] 135/8 secretaries [3] 28/18 51/1 111/14 secretary [5] 63/23 73/4 76/15 123/6 123/10 section [14] 12/16 41/5 41/21 77/13 93/17 95/21 96/1 108/12 118/9 118/14 138/18 155/3 155/24 167/11 sector [3] 116/2 117/12 146/18 secure [1] 95/5 see [70] 2/18 6/14 6/24 7/3 7/11 7/17 7/22 8/6 8/12 8/16 11/6 18/1 18/9 19/10 20/2 21/12 23/5 23/6 23/9 28/11 28/18 30/2 30/4 35/12 40/10 40/12 49/12 52/4 63/8 63/10 67/17 73/12 75/22 81/18 81/22 86/14 88/18 98/4 101/15 105/17 105/20 108/12 110/25 111/6 111/10 111/13 111/16 115/10 117/25 122/10 123/6 125/20 127/21 132/17 132/23 136/18 138/11 138/13 139/24 143/11 144/23 147/6 147/20 150/7 153/8 155/21 156/6 159/17 160/13 167/3 seek [3] 58/17 60/6 123/6	seeking [1] 64/14 seem [2] 99/3 143/15 seemed [4] 45/5 102/15 121/11 126/9 seems [9] 16/16 60/12 80/1 98/2 156/9 156/15 159/18 160/2 162/10 seen [20] 9/18 15/8 33/2 51/15 51/19 51/19 52/13 54/1 74/23 76/12 110/21 113/9 128/18 133/3 139/17 144/13 152/24 156/24 166/3 166/24 sees [1] 165/6 selected [1] 56/18 selective [2] 102/18 104/13 self [28] 1/4 15/10 16/11 16/21 18/11 18/20 18/24 39/21 49/3 55/16 55/17 57/20 60/24 61/1 61/4 61/13 65/1 72/9 90/15 109/1 109/3 142/24 143/6 154/24 158/5 158/18 161/20 168/3 self-sufficiency [23] 1/4 15/10 16/11 16/21 18/11 18/24 39/21 49/3 60/24 61/1 61/4 61/13 65/1 72/9 90/15 109/1 109/3 142/24 143/6 154/24 158/5 158/18 168/3 self-sufficient [3] 55/16 55/17 161/20 sell [1] 141/24 selling [1] 60/12 semi [1] 157/8 semi-contractual [1] 157/8 send [1] 100/13 sending [3] 11/19 88/5 95/16 senior [3] 63/17 72/8 124/21 sense [11] 39/21 61/7 76/22 88/7 89/19 97/4 101/11 104/16 151/14 151/21 159/10 sensitive [1] 21/22 sent [10] 35/20 44/17 62/8 94/10 105/17 105/18 128/8 128/17 157/18 162/18 sentence [7] 17/17 64/23 69/14 97/9 97/14 104/3 143/11 separate [5] 88/23 88/24 89/4 102/20	129/7 separated [1] 2/7 separately [1] 107/9 separation [1] 100/21 September [19] 51/16 52/1 52/5 83/6 84/19 85/1 88/12 93/9 97/22 126/21 128/6 128/9 128/18 132/25 136/19 150/16 159/20 163/22 166/3 September '76 [1] 52/1 September '78 [1] 88/12 September 1976 [2] 51/16 52/5 September 1977 [3] 97/22 159/20 166/3 September 1978 [2] 83/6 84/19 sequelae [1] 13/11 sequence [1] 23/2 series [4] 10/11 23/16 64/14 127/25 serious [4] 15/15 124/6 135/24 147/17 seriously [1] 131/25 serum [1] 78/20 servants [1] 64/1 serve [1] 156/25 service [24] 11/3 12/14 35/3 35/7 35/14 37/16 42/5 44/14 52/18 55/3 63/15 65/5 65/23 75/21 83/2 86/18 86/22 88/6 89/7 135/15 136/5 136/9 158/24 160/12 services [9] 15/20 16/8 64/19 71/2 100/20 102/12 120/6 132/21 135/13 serving [1] 78/22 session [1] 137/3 set [18] 3/19 4/15 6/5 6/5 22/13 28/7 36/13 62/16 75/24 77/13 82/2 82/7 117/22 120/14 122/8 137/15 148/4 166/16 sets [4] 49/15 64/23 98/24 164/5 seven [1] 110/10 several [4] 42/1 62/18 123/8 124/4 severe [5] 29/14 29/17 119/25 134/15 152/16 severely [4] 22/2 23/24 27/6 130/11 shares [1] 56/24
----------	---	--	--	---	--

(64) responsible... - shares

S	showing [3] 7/2 77/9 167/16 shown [5] 4/10 4/10 4/16 5/6 7/13 shows [7] 4/14 11/25 48/25 61/9 63/24 153/1 160/25 side [3] 30/18 67/22 127/24 sight [1] 91/4 significance [1] 73/5 significant [8] 7/22 7/24 26/24 27/23 126/6 155/12 156/7 158/8 significantly [3] 7/6 30/20 31/2 signs [1] 61/9 similar [3] 15/2 122/10 125/6 similarities [1] 85/10 similarity [1] 15/5 similarly [1] 100/10 simple [1] 58/10 simplified [2] 77/9 95/10 simply [8] 6/6 39/17 39/22 52/8 60/5 139/5 144/9 149/9 since [14] 38/9 50/3 74/2 78/8 80/13 86/23 88/3 94/7 120/8 125/14 126/9 140/20 141/20 151/9 single [24] 3/7 6/5 56/5 97/17 97/18 100/2 100/13 107/22 107/24 107/25 137/6 145/7 156/15 162/9 163/7 163/24 164/3 165/21 166/1 166/7 166/14 166/18 167/1 167/3 single-donor [1] 97/17 single-pack [1] 166/7 single-plasma [2] 97/18 100/2 sir [54] 1/7 2/16 4/3 4/25 6/2 11/25 14/25 24/25 28/5 29/16 30/21 36/10 46/15 47/25 48/10 50/17 53/10 56/14 56/24 57/8 62/9 64/8 68/24 69/13 72/3 81/17 83/8 84/18 90/3 91/15 96/2 99/1 99/16 100/1 101/8 103/13 106/4 114/1 114/4 121/1 121/23 127/13 127/16 128/17 130/19 131/9 133/15 136/20 137/3 143/16 149/18 162/8 167/7 167/19 Sir William Maycock [1] 84/18 sit [1] 160/8 site [15] 46/14 77/22 80/23 81/2 82/7 85/16 109/15 109/18 112/3 112/5 134/15 149/2 149/4 149/13 154/18 sits [1] 84/2 situation [12] 10/24 34/21 61/5 98/21 112/2 116/21 120/25 125/19 126/23 129/15 142/21 143/3 size [1] 112/8 slight [3] 7/15 114/8 137/24 slightly [9] 36/1 48/24 68/17 70/4 70/5 76/4 138/25 155/25 157/13 slow [1] 137/17 small [12] 6/24 7/1 20/25 21/5 21/17 107/22 129/3 129/16 133/18 133/24 134/9 140/4 small-pool [2] 133/24 134/9 smaller [4] 8/18 8/19 24/15 156/2 smallpox [1] 80/15 Smart [8] 111/8 111/8 112/25 116/4 116/5 121/19 122/13 127/24 Smart's [2] 121/20 122/1 Smith [1] 85/19 Snap [3] 1/20 1/20 1/22 snapshot [2] 138/19 140/8 SNBTS [2] 12/18 53/21 so [132] 1/24 2/15 3/10 4/8 4/14 5/17 6/6 6/8 6/18 7/10 9/12 16/10 19/18 23/16 24/3 24/7 24/23 25/5 25/23 26/8 26/17 29/23 34/5 36/13 46/2 49/6 51/5 51/24 53/11 53/25 55/5 55/23 56/7 57/18 58/3 58/7 58/11 61/1 63/9 67/12 67/21 67/25 68/15 69/6 69/7 69/13 69/16 69/18 70/4 70/19 71/7 72/6 72/17 73/7 73/12 74/12 75/5 75/23 76/21 77/14 79/7 79/11 79/21 79/23 81/18 82/7 82/15 83/2 83/13 84/2 84/9 84/19 84/24 86/5 86/23 87/6 87/14 88/1 88/22 91/8 92/20 93/24 96/12 97/1 98/13 98/15 98/22 101/8 101/20 104/14 106/6 108/18 110/5 111/1 111/4 112/5 112/18 114/22 116/25 118/11 119/23 124/8 129/21 135/20 135/23 137/21 137/23 138/22 139/16 139/18 140/4 144/3 144/14 146/20 147/8 147/23 148/3 148/12 149/16 149/17 152/9 152/17 152/21 154/25 159/2 159/13 161/23 163/10 165/6 165/11 167/10 167/20 so-called [2] 1/24 135/20 sold [1] 80/20 sole [1] 28/8 solely [2] 61/25 65/14 solution [3] 2/2 102/14 103/10 solutions [5] 65/6 65/18 102/4 104/7 153/25 some [62] 1/16 2/17 5/1 5/8 9/9 11/24 12/5 12/9 14/6 14/7 15/4 21/24 22/15 22/20 30/2 40/3 40/4 46/16 47/14 55/20 59/14 59/20 62/17 65/10 65/11 66/14 71/23 72/10 74/3 75/16 75/18 83/24 89/24 91/24 95/9 96/13 97/2 113/10 115/6 124/12 124/16 125/22 125/23 132/8 133/24 135/19 135/20 138/3 139/17 144/19 147/20 149/21 152/15 159/3 159/3 159/10 159/15 160/7 161/1 161/3 166/17 167/15 somebody [4] 19/24 83/14 143/7 149/1 someone [1] 52/9 something [18] 1/8 3/8 17/2 18/17 18/22 54/19 62/14 81/18 83/10 85/17 88/23 94/24 97/19 116/3 127/15 133/4 145/4 165/18 sometimes [2] 5/19 6/15 somewhere [7] 7/7 7/8 72/19 144/14 144/16 146/24 147/2 soon [3] 13/17 39/3 60/9 sooner [2] 11/8 11/9 sophisticated [1] 101/4 sorry [13] 18/19 37/12 41/3 50/24 52/24 64/23 67/5 70/17 74/22 89/18 131/9 149/19 155/23 sort [2] 152/8 157/7 sought [1] 145/5 source [4] 5/18 58/21 138/3 141/6 sources [6] 6/3 13/2 14/12 20/17 61/4 130/11 south [5] 45/10 45/13 45/21 63/15 113/19 southern [1] 45/23 space [8] 52/9 108/4 117/8 117/9 129/21 131/19 134/16 134/22 speak [2] 10/19 90/9 speaking [3] 9/11 29/9 99/1 special [10] 9/20 17/7 34/1 46/21 57/9 86/9 158/22 160/7 160/20 160/20 specific [3] 4/7 57/2 59/12 speech [1] 17/20 speedy [1] 113/2 spend [6] 72/10 77/3 104/2 146/24 148/13 163/15 spending [1] 3/18 spent [7] 32/7 32/8 101/14 112/19 119/8 127/2 153/23 spite [1] 134/16 spoke [1] 19/21 SPP [5] 164/3 164/9 164/15 164/21 164/25 St [1] 63/18 St Mary's [1] 63/18 stabilise [1] 65/19 staff [12] 44/23 82/6 109/20 117/11 124/11 124/21 130/4 131/6 131/11 148/23 149/10 149/12 stage [15] 18/12 56/20 92/7 107/21 107/23 108/3 108/6 108/6 108/7 117/15 135/7 144/7 145/11 145/13 160/15 Stage I [1] 108/3 stage II [2] 108/6 108/6 stage III [1] 108/7 stages [6] 58/4 107/16 108/3 128/23 166/4 166/5 stagnate [1] 136/13 stand [1] 126/2 standardisation [1] 164/13 standardised [1] 4/21 standards [6] 92/18 92/19 99/23 130/13 130/15 132/1 stands [1] 133/13 start [5] 6/24 105/4 105/24 139/25 158/14 started [1] 65/21 starting [4] 29/9 53/1 53/11 53/12 starts [1] 23/18 state [6] 18/23 76/15 123/6 123/10 125/8 146/14 stated [3] 42/24 73/20 150/21 statement [8] 1/20 1/22 78/7 85/18 85/19 132/11 133/4 150/2 states [5] 16/6 16/10 18/8 23/11 104/25 static [4] 7/15 61/5 119/12 140/20 statistically [1] 7/21 stay [1] 42/20 stayed [1] 85/12 steps [8] 38/17 83/11 84/14 84/20 84/21 96/11 131/5 131/10 stepwise [1] 106/19 sterile [6] 100/14 129/13 162/24 163/3 163/14 163/16 Stewart [4] 38/6 40/24 40/25 41/6 still [11] 3/21 32/8 90/16 99/3 107/21 110/1 125/12 134/7 144/21 148/1 159/20 stimulate [1] 120/11 stimulus [1] 98/5 stock [1] 98/20 stockpile [1] 160/19 stood [1] 138/20 stop [47] 91/2 91/3 91/6 91/8 91/8 91/15 91/15 92/3 92/23
----------	--

S	subjects [2] 107/10 135/17 submission [2] 146/11 148/8 submitted [3] 92/4 109/24 110/6 subsequent [2] 132/2 147/17 subsequently [4] 96/18 98/16 159/24 167/4 subsidising [1] 159/11 substance [1] 18/24 Substances [1] 123/19 substantial [6] 32/19 55/2 99/17 115/17 118/5 124/23 substantially [2] 39/4 123/23 substantive [1] 73/3 substitutes [1] 59/19 succeed [1] 60/16 successful [4] 31/3 71/2 102/3 104/6 successor [2] 95/13 108/23 such [13] 13/11 27/8 56/3 57/23 59/24 70/24 82/9 101/6 102/14 125/13 131/21 152/24 163/16 suffering [1] 11/7 sufficiency [25] 1/4 15/10 16/11 16/21 18/11 18/20 18/24 39/21 49/3 57/20 60/24 61/1 61/4 61/13 65/1 72/9 90/15 109/1 109/3 142/24 143/6 154/24 158/5 158/18 168/3 sufficient [14] 11/5 25/25 34/23 41/8 42/6 43/23 55/16 55/17 59/17 67/2 67/9 67/13 71/4 161/20 suggest [4] 90/24 96/16 119/20 135/1 suggested [10] 11/22 29/12 32/6 75/18 100/5 113/10 114/5 115/3 123/12 162/13 suggesting [2] 11/19 79/7 suggestion [3] 11/15 14/15 108/24 suggestions [1] 50/8 suggests [6] 23/19 28/9 91/15 93/25 108/14 119/3	suitable [3] 2/1 113/15 124/21 sum [1] 46/16 summarised [3] 117/2 128/13 153/4 summary [5] 62/10 156/19 163/23 164/1 164/3 sums [1] 148/14 Sun [1] 10/14 Sunday [1] 10/13 Superimposed [1] 110/7 superseded [2] 27/14 47/2 supplied [4] 158/9 160/22 161/5 161/21 suppliers [1] 57/22 supplies [8] 1/10 42/4 42/19 43/25 44/2 44/11 100/9 141/5 supply [46] 1/14 1/24 2/24 5/2 8/1 10/2 11/18 12/23 15/12 18/14 27/9 31/6 37/18 38/7 38/17 39/9 41/20 42/6 43/13 43/21 45/2 45/6 45/9 64/7 65/4 89/14 99/12 107/6 107/20 130/11 137/10 137/16 138/18 140/17 140/22 145/3 156/14 157/14 157/15 157/23 158/20 159/6 161/23 166/21 166/25 167/16 supplying [1] 88/3 support [10] 85/8 100/19 113/7 126/5 154/11 157/12 158/20 159/3 159/21 164/12 supported [2] 38/12 136/12 supporting [2] 83/9 147/12 suppose [1] 68/16 supra [1] 120/7 supra-regions [1] 120/7 sure [6] 68/1 68/23 68/24 89/25 103/15 144/4 surely [1] 39/1 surgery [5] 31/3 36/3 43/22 59/24 119/19 surgical [2] 30/22 47/14 surpassed [1] 74/12 surprise [1] 35/1 surprisingly [1] 135/17 surrender [1] 80/20 surrounding [2] 39/15	109/14 survey [1] 19/14 susceptible [1] 22/3 suspect [2] 88/7 90/10 Sweden [1] 29/7 Swinburne [1] 10/18 switch [1] 3/7 Switzerland [1] 135/14 sympathy [1] 11/19 synthetic [1] 59/18 system [16] 16/19 44/24 56/18 58/9 89/1 89/4 130/3 141/15 143/12 162/15 162/19 162/21 162/22 163/10 164/22 165/17 system' [1] 164/5 systems [3] 99/25 100/2 165/2 systems' [1] 164/7	target [33] 22/12 22/16 31/5 33/3 33/19 33/22 33/23 34/4 34/8 34/9 35/24 36/4 37/19 37/23 37/25 38/3 38/4 38/12 39/20 39/21 39/22 39/23 42/21 42/25 43/1 44/21 45/17 46/19 57/5 74/18 75/10 120/15 121/13 targets [11] 3/19 22/23 37/4 43/6 71/13 75/19 103/1 103/8 107/2 137/13 154/4 task [2] 54/10 149/1 tasks [1] 152/1 team [8] 4/4 4/8 6/2 9/7 74/20 76/19 114/24 166/22 team's [1] 143/23 teams [1] 151/18 technical [10] 83/23 83/25 84/3 87/7 111/3 111/16 116/11 121/18 122/9 150/15 technically [1] 87/11 techniques [1] 134/24 technology [1] 54/12 Telegraph [1] 10/15 television [1] 12/25 tell [2] 89/23 149/4 telling [1] 6/17 temporary [2] 38/21 152/20 tempting [1] 58/1 ten [1] 64/6 ten years [1] 64/6 tend [2] 102/11 136/13 tender [1] 148/19 tenor [1] 90/10 tension [3] 12/5 105/5 147/20 tensions [1] 36/25 TEP [3] 1/25 2/3 2/7 term [20] 2/24 3/2 46/23 70/20 75/14 75/25 91/18 110/15 116/12 118/8 118/14 122/2 126/3 126/3 135/8 146/15 146/21 147/13 152/6 158/18 termed [2] 106/15 117/14 terminology [1] 14/18 terms [16] 8/15 14/22 25/24 26/19 32/17 61/2 64/3 79/21 88/23 88/25 90/13 104/25 108/19 111/19 142/12 165/9	Terry [1] 1/20 Terry Snape [1] 1/20 test [4] 21/2 21/3 21/15 165/22 tested [3] 21/7 21/9 165/21 testing [4] 55/12 58/8 71/12 165/22 tests [2] 21/22 165/24 Thames [10] 83/11 83/15 83/20 100/8 148/18 148/22 149/6 150/22 151/5 152/4 than [37] 5/9 5/22 6/1 13/13 15/25 19/2 21/19 23/20 26/22 27/15 36/4 36/11 39/2 39/5 56/4 60/11 67/14 71/25 72/21 74/3 76/4 78/14 92/19 101/5 113/22 120/1 126/9 126/14 135/5 137/19 139/17 139/18 148/13 155/9 162/4 163/16 165/23 thank [15] 3/12 9/23 40/10 41/5 52/25 62/12 67/19 70/18 81/22 91/1 91/10 103/21 128/15 155/20 167/20 that [889] that 30 million [1] 108/25 that BPL [1] 96/20 that I [5] 3/10 5/7 25/23 86/15 105/4 that is [72] 1/15 1/17 2/16 2/22 3/4 3/10 5/5 7/10 7/19 7/25 14/24 16/10 19/3 22/7 23/19 24/7 25/19 26/1 27/10 28/8 29/18 35/8 50/17 63/2 63/7 63/10 67/14 68/3 68/3 68/6 68/11 68/24 69/20 71/7 73/5 79/14 82/15 83/14 83/15 85/17 85/17 86/7 90/1 92/2 93/8 97/6 97/17 97/20 97/22 99/16 101/8 101/20 107/25 109/16 110/11 110/14 111/4 115/21 117/18 128/8 138/8 139/13 139/16 139/23 140/8 143/7 143/14 145/4 154/25 155/15 162/8 167/1 that it [2] 98/19 152/14 that's [29] 3/12 4/25 6/2 6/8 11/19 24/7
----------	--	---	---	---	--

T	13/9 23/25 33/6 43/23 52/20 53/5 53/13 55/19 60/16 119/19 139/25 140/1 there [198] there's [1] 6/17 thereafter [3] 85/13 94/1 121/2 thereby [1] 53/5 therefore [8] 21/16 34/7 49/24 72/1 102/23 151/18 158/13 161/10 these [32] 4/15 5/6 6/10 8/24 9/10 20/8 20/25 22/6 42/25 49/23 54/10 71/13 89/2 102/24 107/2 109/21 113/11 120/2 121/9 122/16 122/24 128/17 128/21 130/2 130/15 134/16 135/19 135/23 151/9 154/24 158/9 166/2 they [65] 3/20 4/9 5/22 6/14 6/15 10/7 10/20 10/20 11/21 16/24 16/25 17/2 25/1 25/17 28/24 36/16 42/13 43/7 49/15 51/22 52/9 55/14 55/23 57/4 58/12 58/13 59/10 60/14 60/16 64/4 66/1 67/12 70/10 70/11 74/9 74/24 87/7 88/24 96/16 96/22 104/16 104/17 123/25 125/4 125/19 126/1 127/2 142/19 142/20 142/22 143/4 149/9 151/9 151/11 151/15 151/16 152/1 152/6 156/23 157/2 158/15 160/11 160/11 160/22 162/4 they're [3] 19/18 53/15 161/2 thin [1] 7/1 things [9] 9/10 28/7 96/3 109/22 121/24 138/14 138/19 138/20 149/25 think [31] 52/12 58/1 68/18 68/20 70/17 77/5 77/24 78/17 79/14 80/7 81/20 82/19 85/23 89/8 90/23 91/2 91/7 91/9 96/8 131/7 139/5 147/19 149/11 149/11 149/12 151/22 151/23 152/3 160/16 161/11	162/12 thinking [7] 5/15 15/5 62/20 68/21 101/24 114/17 157/5 thinks [1] 26/21 third [11] 8/8 8/8 8/9 16/2 25/6 36/4 36/15 40/18 110/14 117/13 118/24 this [217] those [44] 11/24 12/9 15/3 15/6 16/5 27/16 27/21 28/11 29/19 29/22 30/4 30/5 46/17 47/8 61/24 63/23 63/25 73/18 80/20 86/4 88/2 89/13 92/19 100/6 108/3 114/15 122/1 122/3 128/15 130/21 135/13 138/1 140/12 145/17 152/7 156/3 156/12 156/16 156/18 159/16 160/13 160/20 165/5 166/23 though [7] 4/17 32/13 69/2 89/25 137/9 145/14 152/3 thought [22] 11/20 12/11 26/14 27/5 30/5 31/18 33/7 33/18 38/2 38/19 61/1 88/19 93/2 98/19 116/10 120/16 122/20 123/1 126/24 139/19 147/1 149/3 thoughts [1] 157/23 thousand [3] 66/14 66/15 66/16 threat [2] 147/9 147/9 three [13] 15/17 59/10 86/4 89/2 98/24 99/6 106/13 107/16 108/3 117/4 120/24 129/6 147/3 three years [2] 120/24 147/3 threw [1] 76/7 through [22] 5/21 6/3 14/9 23/16 40/8 40/22 52/22 61/18 62/17 62/24 77/12 88/5 89/11 106/9 108/2 115/11 130/20 132/7 145/11 145/12 146/2 156/18 Throughout [1] 87/4 throughput [2] 129/25 154/21 throw [1] 165/25 thus [6] 39/8 43/25 100/14 101/12 134/20 164/10 tied [2] 110/19 166/3	time [66] 1/18 2/3 2/21 3/4 5/3 5/9 6/14 8/11 9/7 14/23 17/22 18/1 19/7 22/19 22/22 27/5 31/24 33/22 36/6 47/5 47/24 49/6 50/6 53/22 62/20 68/2 68/16 70/24 72/8 73/6 74/17 77/4 82/9 82/21 84/19 86/13 96/23 96/25 110/12 111/2 111/7 114/13 114/23 115/6 121/23 124/6 124/12 126/21 136/20 139/21 139/24 140/20 143/25 144/22 144/25 145/4 145/21 155/1 155/10 156/6 157/25 161/18 161/22 162/3 164/8 167/19 time-consuming [1] 164/8 time-expired [3] 1/18 2/21 3/4 times [7] 10/13 24/5 24/5 55/16 59/10 92/19 115/1 timescale [1] 106/7 title [3] 12/16 78/25 82/23 to [1015] to 220,000 [1] 154/8 to BPL [1] 21/13 to the [1] 50/18 today [7] 2/18 8/21 18/15 19/25 50/20 97/20 162/11 today's [1] 1/17 together [6] 25/17 45/8 86/4 89/13 117/21 166/21 told [2] 126/23 148/21 Tom [1] 18/12 tomorrow [10] 4/25 8/21 9/9 76/20 138/2 162/2 167/3 167/6 167/14 167/20 too [5] 2/6 22/15 104/17 141/23 147/19 took [11] 8/13 22/18 28/3 37/8 40/5 82/12 86/11 97/23 115/11 127/19 150/16 top [7] 4/1 19/10 23/9 63/8 64/10 70/19 84/3 topic [1] 163/23 total [13] 24/4 25/12 30/7 30/12 34/22 39/6 43/10 47/4 55/24 118/23 138/22 142/13 146/24 totally [4] 57/11	102/21 134/13 141/5 touch [1] 3/8 touching [1] 6/23 Tovey [8] 96/11 111/7 113/5 113/17 125/25 126/24 127/6 159/24 towards [2] 119/19 143/16 trace [2] 6/6 146/2 traced [1] 77/18 track [1] 48/24 trade [1] 15/16 training [2] 124/11 124/19 transaction [1] 58/4 transfer [2] 70/21 81/4 transfers [1] 81/6 transfusion [69] 1/23 11/3 12/14 15/20 18/8 23/15 25/3 35/3 35/7 35/14 37/6 42/5 44/14 52/17 55/14 55/22 57/14 58/19 58/23 60/13 61/21 63/15 63/16 64/19 65/23 67/24 70/23 71/1 71/14 75/4 83/2 86/22 89/6 89/14 90/6 90/22 95/11 96/17 96/22 98/8 99/11 99/22 100/8 104/22 105/2 105/8 112/16 120/6 127/8 132/20 135/13 135/15 135/18 135/22 136/1 136/3 136/5 136/7 136/9 154/12 158/16 160/3 162/17 163/1 163/4 163/12 163/17 165/9 165/13 transitional [1] 117/15 translate [1] 114/9 translates [1] 68/8 translation [2] 68/19 69/2 transmission [1] 20/22 transmitting [3] 15/24 21/17 22/1 transposed [1] 4/9 traumatic [1] 14/1 Travenol [1] 166/8 treat [2] 34/24 113/14 treated [3] 10/5 119/17 161/7 treatment [49] 7/4 7/12 8/19 10/7 10/21 12/7 12/8 12/23 13/10 20/21 22/4 22/14 28/2 28/10 29/10 29/15 29/20 30/13 32/15	32/17 32/19 33/4 34/15 35/18 35/23 36/3 40/17 40/19 40/25 41/6 47/6 47/7 47/13 47/15 47/18 48/17 50/4 53/6 54/18 59/23 59/24 65/12 119/22 119/24 119/25 140/3 140/5 140/11 167/11 treats [1] 11/8 Treloar [3] 40/18 158/23 160/12 tremendously [1] 90/13 trend [8] 5/14 6/20 7/3 7/10 7/16 7/16 47/20 47/22 trends [23] 6/9 50/10 50/15 50/18 50/19 63/2 63/3 64/5 66/3 66/10 70/7 71/9 73/3 74/9 76/3 76/11 76/22 99/14 103/18 114/4 115/4 119/14 156/12 trial [4] 40/16 40/19 40/23 41/10 trials [1] 166/10 true [1] 42/14 try [9] 6/4 12/3 28/7 32/24 51/16 89/12 90/15 109/2 163/3 trying [5] 19/16 27/19 47/13 53/22 121/11 tuberculosis [1] 80/16 turn [24] 20/1 28/22 40/13 41/16 47/25 51/8 70/13 77/1 80/14 91/2 93/23 106/10 115/9 118/12 122/11 128/15 133/1 137/9 138/4 138/10 150/9 153/13 163/25 166/19 Turning [3] 15/9 52/16 62/13 turns [2] 24/9 114/17 tweak [1] 27/21 two [29] 1/12 6/16 13/2 28/23 36/24 37/5 42/2 49/5 70/4 70/5 75/17 88/2 90/4 110/12 113/21 120/24 122/12 135/1 135/21 137/9 143/6 145/5 145/21 147/2 148/10 148/13 150/20 152/19 154/16 two paragraphs [1] 154/16 two years [3] 75/17 113/21 148/10
----------	---	--	---	---	---

(67) that's... - two years

T	understood [2] 5/7 42/23 undertake [1] 61/21 undertaken [2] 92/7 129/20 undertaking [1] 71/13 undertook [1] 126/20 undesirability [1] 61/11 undoubted [1] 13/9 unifying [1] 88/2 unique [1] 109/12 unit [30] 30/17 39/1 69/9 69/16 69/18 77/20 77/25 78/1 78/2 78/11 78/25 79/1 79/2 79/6 79/8 79/9 79/10 79/11 81/5 81/6 81/10 81/15 81/21 91/8 102/20 112/18 141/22 141/22 142/11 164/10 United [9] 12/22 18/8 30/9 32/3 45/7 49/4 112/10 114/10 139/16 United Kingdom [8] 12/22 30/9 32/3 45/7 49/4 112/10 114/10 139/16 United States [1] 18/8 units [120] 4/21 6/25 7/4 7/8 7/9 8/25 23/21 23/23 24/1 24/7 24/13 24/14 24/17 24/18 25/11 26/19 27/7 27/9 29/11 29/13 29/23 30/8 31/7 31/8 31/9 31/11 31/25 33/19 37/20 37/25 38/3 38/5 38/8 38/10 38/13 39/8 39/11 39/20 42/7 42/25 43/3 43/18 44/5 44/6 44/20 45/18 47/12 55/15 55/18 66/25 67/8 68/7 68/9 69/3 69/9 69/15 69/19 69/24 70/2 70/9 74/11 74/14 74/19 74/25 75/12 75/23 76/16 99/22 100/9 101/1 103/8 103/14 106/6 106/7 106/24 108/21 108/22 108/25 110/23 112/11 112/13 112/14 113/8 113/17 114/3 114/10 114/13 114/14 114/19 114/20 115/2 115/24 118/19 118/24 120/14 120/15 120/18 120/19 120/21 121/2 121/3 123/25 129/7 138/23 139/1 139/7 139/8 139/10 139/10	139/21 140/24 143/20 143/24 144/2 144/5 154/6 154/6 155/6 160/7 160/20 universally [1] 161/23 unless [5] 2/13 125/7 134/22 134/23 162/23 unlikely [3] 33/25 92/13 125/16 unlimited [1] 43/14 unreasonably [1] 151/8 unsurprisingly [1] 159/22 until [28] 8/15 41/8 42/17 48/5 57/2 80/19 84/18 85/13 85/22 86/23 88/11 95/23 97/10 122/19 123/10 125/18 126/18 130/7 136/23 145/20 146/10 148/16 151/7 152/25 158/14 163/12 164/18 167/23 unused [1] 134/22 up [44] 1/8 6/16 8/18 8/23 11/6 18/9 18/14 19/24 23/17 23/25 27/7 27/20 28/7 35/10 35/22 42/9 46/16 52/22 55/21 57/7 59/23 61/8 61/22 89/18 90/17 93/17 93/19 96/5 97/3 97/14 101/12 103/5 109/11 111/24 121/24 123/13 136/14 139/4 142/6 143/10 145/9 147/16 158/4 162/3 upgrade [2] 108/20 146/16 upgraded [1] 130/8 upgrading [2] 131/1 150/24 upon [5] 3/8 6/23 39/14 47/12 107/20 upper [1] 103/16 upward [3] 7/15 7/16 47/20 urged [2] 16/6 32/23 urgent [5] 54/10 95/13 115/16 125/15 126/1 us [7] 22/17 67/25 97/1 105/2 143/22 158/9 167/7 USA [1] 142/6 usage [13] 27/3 48/19 112/10 112/21 114/3 121/13 138/14 139/20 140/6 141/6 142/9 144/22 144/24 use [49] 1/17 8/3 12/7	12/23 14/17 14/19 19/7 21/19 22/4 30/6 34/14 34/16 36/19 45/18 46/1 47/20 48/1 48/11 49/16 49/17 49/22 53/7 53/7 53/23 54/2 58/12 59/18 60/8 60/14 60/20 65/16 65/18 79/3 91/21 116/20 118/20 118/22 118/23 118/25 119/5 119/21 120/11 120/23 126/11 142/7 145/7 164/10 166/9 167/4 used [18] 3/2 6/25 12/25 27/18 29/6 32/8 32/25 43/16 44/25 45/3 49/25 58/13 72/12 121/6 138/24 156/11 160/18 163/8 useful [3] 98/20 123/9 138/19 usefully [1] 60/20 uses [2] 23/22 134/23 using [9] 2/24 21/24 21/25 22/6 53/4 54/17 107/5 162/4 165/22 utilisation [1] 15/12 UVL [2] 133/12 133/13	vi [1] 164/21 vice [1] 141/13 view [24] 10/23 11/12 11/17 27/3 40/1 50/15 50/22 53/20 56/24 60/22 60/23 73/13 73/14 108/15 114/18 116/24 122/15 123/4 130/16 135/8 151/8 152/11 152/16 165/6 views [9] 15/2 15/6 34/3 34/10 51/3 51/20 59/14 61/12 111/19 vii [1] 164/25 VIII [157] 1/9 1/15 2/9 2/12 2/25 3/3 7/17 7/20 7/23 8/3 8/8 8/9 8/15 8/17 12/16 12/19 12/23 13/4 13/12 13/19 14/5 14/7 14/14 19/6 19/12 19/15 20/13 22/13 23/10 23/17 25/11 25/12 26/19 26/25 28/8 28/23 29/3 29/6 30/9 31/6 31/11 32/18 33/11 33/17 33/20 34/8 35/18 35/25 36/5 37/20 37/22 38/3 38/4 38/7 38/13 38/18 38/21 39/1 39/2 39/5 39/8 41/20 42/4 42/7 42/21 43/15 43/16 43/21 44/11 44/20 44/25 45/1 45/2 45/3 45/6 45/9 45/12 46/19 46/24 47/5 47/21 54/22 56/6 56/9 56/21 59/11 59/22 61/2 62/3 62/21 64/9 65/5 65/25 66/20 66/24 67/8 67/11 67/15 69/4 70/8 70/14 74/3 75/19 75/24 76/25 94/14 95/17 98/10 99/8 99/18 100/19 101/16 101/18 103/9 103/13 105/23 106/3 106/22 106/24 107/4 107/8 107/12 108/12 108/14 110/20 112/7 112/10 112/17 112/19 112/22 113/3 113/7 113/20 118/19 118/22 119/1 119/9 119/20 120/14 120/20 120/23 134/7 134/11 138/14 139/20 141/16 143/21 153/24 154/5 154/22 155/24 158/25 159/13 161/23 161/25 162/2 162/4 viral [1] 20/16	visit [4] 92/6 116/17 122/6 122/18 visits [2] 123/16 124/3 vociferous [1] 12/22 volume [3] 20/6 94/12 158/21 voluntarily [1] 154/13 voluntary [7] 15/21 16/1 16/8 16/11 16/15 16/18 21/6 volunteered [1] 42/18
U	UK [20] 4/6 4/18 16/18 19/7 19/19 20/23 21/21 22/12 29/10 29/21 42/10 43/25 45/9 62/22 68/16 68/20 68/24 71/24 138/24 142/2 UK domestic [1] 19/19 ultimate [1] 112/8 ultimately [2] 93/7 161/12 ultraviolet [1] 133/13 Um [1] 69/11 unable [3] 96/21 126/4 158/12 unaided [1] 60/16 unanimously [1] 126/16 unavoidable [1] 32/14 unawareness [1] 60/1 uncertainty [9] 59/6 59/12 59/21 59/25 94/2 95/4 97/4 125/22 127/16 under [22] 10/5 10/21 10/22 12/16 53/1 78/23 85/20 87/6 90/17 90/19 91/20 92/20 94/9 105/14 123/19 128/5 130/22 130/23 147/9 153/2 153/3 153/12 under-provision [1] 10/22 under-treated [1] 10/5 under-treatment [1] 10/21 underestimate [1] 29/24 underneath [1] 87/8 understand [11] 2/15 2/16 19/17 69/25 78/9 84/11 84/13 87/14 126/25 132/22 152/11 understand it [2] 132/22 152/11 understandable [2] 59/7 151/4 understanding [6] 31/15 78/1 80/7 81/14 82/1 149/5 understands [1] 104/20				

(68) type - wasn't

W	144/25 149/4 149/8 151/14 152/1 156/10 157/6 166/4 well-being [1] 130/10 Welsh [1] 86/17 went [6] 29/21 48/23 96/1 146/11 146/12 166/10 were [118] 1/12 3/19 3/20 4/21 5/19 6/23 8/22 10/5 10/6 10/9 10/12 12/2 12/6 12/9 15/17 16/24 22/24 26/10 26/12 28/14 28/24 28/24 29/6 29/15 29/22 30/22 32/8 32/15 42/3 42/15 42/19 43/13 45/8 47/24 49/5 49/5 49/15 49/23 51/6 53/21 55/14 55/15 57/2 57/4 57/18 60/8 64/15 67/2 70/11 74/7 75/13 77/2 78/21 79/5 87/6 87/8 87/15 88/24 90/12 91/1 92/4 92/8 92/18 93/5 95/4 102/3 103/8 104/5 105/7 109/24 112/14 112/21 113/13 113/20 117/6 122/22 123/3 123/4 123/23 124/4 124/14 126/8 127/24 128/5 128/23 128/24 129/2 130/1 130/3 130/5 132/5 133/25 134/13 134/17 139/24 140/2 140/8 140/11 140/12 144/6 149/7 149/8 152/6 152/6 152/7 157/2 158/9 158/12 158/12 159/10 160/4 160/7 160/12 160/20 161/19 162/4 163/2 166/18 weren't [1] 5/22 Wessex [2] 157/19 160/21 west [16] 29/5 44/11 44/13 44/18 45/1 83/11 83/15 83/20 98/6 113/19 148/18 148/22 149/6 150/22 151/5 152/4 what [108] 4/9 4/10 4/14 4/16 6/13 6/19 8/10 9/15 10/20 12/6 12/9 12/17 14/21 17/25 18/3 19/17 19/18 20/9 22/7 22/24 26/9 26/13 27/4 30/4 34/9 34/19 36/16 37/2 39/18 45/18 46/16	46/19 49/15 51/19 52/23 53/12 54/6 55/20 59/2 60/13 60/22 60/25 61/13 63/4 64/11 64/15 67/12 70/4 70/7 70/10 72/14 73/13 74/16 78/1 78/6 78/17 79/13 79/14 79/22 80/4 81/6 81/14 86/20 88/18 89/3 89/22 90/12 91/9 93/20 94/21 100/1 101/20 101/20 102/13 103/22 108/2 109/11 109/16 110/9 110/18 114/17 115/21 117/14 118/4 118/5 121/11 121/15 122/17 122/21 123/13 123/15 124/15 126/7 127/4 127/13 128/1 128/19 140/17 144/4 145/12 145/21 145/23 146/2 150/4 153/13 158/1 163/1 163/23 whatever [2] 68/15 102/10 whatsoever [1] 108/24 when [32] 4/25 5/12 5/21 9/11 11/6 13/6 15/24 24/12 27/9 31/5 32/23 33/23 45/11 46/3 46/6 62/24 73/22 77/18 78/10 81/2 84/19 85/5 90/6 92/2 100/2 115/1 129/15 157/21 158/11 160/6 162/12 163/13 where [22] 8/22 19/13 20/19 29/5 43/6 45/23 53/21 59/22 60/5 62/4 69/8 69/20 74/20 80/12 97/20 98/15 103/15 126/1 138/19 140/8 144/7 148/25 whereas [1] 30/16 whereby [5] 65/3 141/15 143/12 161/5 162/16 whether [20] 31/21 37/3 48/19 49/17 49/22 49/23 51/16 57/20 60/4 60/15 76/6 89/18 95/4 97/5 116/1 123/5 123/9 124/16 144/5 144/11 which [237] while [10] 42/19 59/16 74/6 80/2 82/5 104/20 109/25 153/25 159/12 159/20	whilst [2] 85/23 127/24 white [1] 53/16 who [26] 5/20 12/9 18/12 22/3 28/11 29/14 29/19 49/5 56/13 61/10 73/2 82/14 84/5 84/15 88/10 96/11 98/1 99/1 99/4 111/7 111/9 142/19 143/1 149/1 149/2 160/8 WHO's [1] 16/14 whole [7] 2/4 45/7 53/16 55/13 112/5 154/14 163/9 wholly [1] 118/25 whose [2] 19/24 51/10 why [11] 2/15 6/8 27/12 27/20 35/2 48/22 55/9 82/15 84/14 104/20 149/8 wicket [1] 89/18 widely [3] 28/9 33/4 59/13 wider [2] 14/20 20/2 widespread [1] 65/22 will [77] 3/8 5/3 8/20 18/14 23/21 24/10 24/12 24/17 24/18 26/4 26/7 26/20 28/5 28/18 28/25 30/2 30/4 36/20 39/17 46/15 54/18 54/21 56/25 59/10 59/15 60/17 61/6 61/22 62/18 65/17 65/18 66/24 70/22 71/12 71/13 71/17 71/21 72/18 77/10 86/15 92/14 92/21 93/22 94/1 94/19 94/25 97/19 106/4 107/13 107/25 108/3 108/11 110/25 111/13 116/9 117/18 119/23 119/24 120/25 121/4 132/7 135/1 135/9 136/13 136/14 136/16 138/2 138/13 148/13 154/18 156/18 164/21 165/15 167/3 167/5 167/12 167/14 William [1] 84/18 winners [1] 80/17 wireless [1] 12/25 wish [1] 123/12 wished [3] 125/12 142/21 143/3 wishes [2] 60/22 95/15 with [121] 5/3 6/8 6/9 6/13 6/16 7/1 7/5 8/10	10/6 11/19 14/13 14/16 14/21 15/19 16/14 19/1 19/23 22/22 22/24 23/17 23/18 25/25 27/20 29/18 30/13 31/21 31/22 36/2 41/11 42/24 44/7 45/8 46/21 48/17 52/18 53/14 55/18 58/5 58/15 59/22 61/8 62/3 64/18 64/25 76/10 76/18 78/19 82/2 82/10 87/19 88/15 88/21 92/18 92/22 93/18 94/4 94/11 95/9 96/20 97/7 98/15 100/6 100/9 100/19 101/10 102/8 103/16 104/17 107/7 107/22 107/23 108/15 109/8 112/25 114/13 115/3 116/6 116/24 117/12 119/11 120/1 120/5 120/14 121/13 122/2 123/9 124/1 125/6 126/23 129/1 129/10 130/16 131/18 131/23 132/4 135/22 136/4 136/14 136/18 138/18 142/18 142/23 143/5 143/6 145/9 145/22 145/23 146/1 146/23 146/23 148/19 153/17 153/25 158/6 158/24 161/6 161/13 162/3 165/2 166/8 166/21 withdraw [1] 42/18 within [17] 13/25 14/17 29/15 38/7 66/11 67/23 74/8 79/21 81/3 88/15 94/23 108/4 112/3 115/14 135/23 143/8 151/18 without [9] 13/20 59/1 75/17 94/24 126/6 136/8 136/13 149/16 159/13 WITN3431001 [1] 1/19 WJE [1] 157/19 women [1] 134/5 won [2] 159/21 159/24 won't [18] 10/24 14/9 15/13 17/15 22/8 26/8 39/17 40/8 40/22 61/18 73/23 77/15 95/21 115/10 116/1 130/20 159/16 165/5 wonder [2] 48/2 136/20 wondered [2] 38/4	123/4 word [2] 14/19 137/9 words [3] 53/7 72/12 162/20 work [14] 60/18 79/2 83/22 85/8 85/10 86/3 94/1 101/3 101/10 101/11 135/18 136/11 150/24 155/2 worked [3] 62/1 148/21 166/12 working [28] 43/19 44/24 46/23 47/4 50/18 50/19 63/1 63/2 63/11 66/10 70/7 71/10 73/4 73/10 74/8 74/22 74/22 76/2 76/11 76/23 99/14 99/15 101/17 103/19 114/4 115/4 118/18 130/3 works [5] 108/4 144/6 147/13 147/22 151/7 world [8] 15/11 16/5 17/20 18/3 18/6 29/4 61/8 64/25 Wormald [1] 147/12 worthy [1] 102/15 would [147] 2/11 2/15 8/10 11/20 14/24 19/22 25/8 25/10 27/25 30/15 30/19 30/24 31/1 31/16 31/20 32/19 32/22 32/24 33/1 33/7 33/16 33/18 34/1 34/3 37/20 38/23 39/3 39/4 39/9 39/12 40/2 43/11 43/21 43/24 44/21 44/23 45/13 45/20 45/21 45/25 46/4 46/6 46/11 46/12 57/16 57/23 58/6 58/9 60/9 60/10 61/7 62/21 64/17 67/8 68/16 68/16 70/1 70/10 75/12 75/14 76/1 85/11 87/15 89/25 91/5 91/25 92/1 94/22 95/3 97/13 98/20 99/11 99/23 100/17 100/22 100/23 100/25 101/3 101/5 101/6 101/12 102/8 102/11 102/12 102/23 103/5 104/25 105/17 106/6 109/15 112/6 113/6 113/18 113/24 116/5 116/6 116/7 116/17 116/19 120/3 120/10 120/17 121/15 121/23 123/1 124/5 124/13
----------	--	---	---	---	--

(69) wasn't... - would

<p>W</p> <p>would... [40] 125/5 125/16 125/19 125/24 126/4 126/17 127/1 127/4 127/7 127/12 130/6 140/6 140/9 141/6 141/19 142/5 142/10 144/2 146/24 147/1 149/21 149/25 152/18 155/8 156/21 156/25 157/6 158/5 160/5 160/8 160/9 160/18 160/18 161/7 161/12 162/16 162/24 163/5 163/12 163/13</p> <p>wouldn't [1] 91/23</p> <p>writes [1] 22/7</p> <p>writing [2] 11/16 11/22</p> <p>written [20] 3/9 10/9 12/17 18/12 19/4 34/12 54/6 62/10 64/11 67/16 73/20 73/24 77/8 77/14 109/7 117/3 143/14 145/16 159/14 160/24</p> <p>wrong [1] 41/3</p> <p>wrote [16] 15/7 18/15 18/19 20/9 34/18 93/21 95/22 116/18 116/18 118/17 133/7 147/12 147/21 150/11 153/14 159/23</p> <p>Y</p> <p>year [25] 18/6 23/21 24/1 24/7 25/18 29/11 39/13 43/18 44/20 46/11 74/12 74/12 74/15 93/9 93/23 93/25 107/15 114/22 132/21 135/23 138/22 153/18 158/7 160/4 166/19</p> <p>years [28] 4/15 4/20 7/23 29/15 36/6 36/17 42/13 42/22 43/2 64/6 66/11 74/4 75/17 87/1 99/19 106/2 108/15 113/21 114/6 120/24 128/23 134/18 135/25 147/3 148/10 148/13 150/20 158/17</p> <p>yes [74] 1/6 2/11 3/5 5/17 5/24 6/2 48/4 48/9 51/13 52/3 52/6 52/7 52/14 53/10 53/18 53/25 54/4 54/5 56/11 56/17 56/19 56/23 68/3 68/5 68/10 68/14 69/2 69/5 69/13</p>	<p>69/22 72/14 72/16 72/20 72/24 73/1 73/12 73/12 73/12 73/14 73/16 79/11 79/15 79/15 79/19 79/25 80/11 80/25 81/1 81/8 81/20 81/24 82/20 84/8 86/25 87/5 87/9 87/13 87/21 87/25 89/10 90/8 91/1 91/14 130/19 133/15 136/22 137/2 148/24 149/19 149/23 151/1 151/20 151/23 152/2</p> <p>yesterday [19] 1/11 3/11 3/13 6/23 7/25 8/22 8/24 11/24 15/10 16/13 16/23 19/21 25/1 28/6 29/17 30/4 46/22 47/6 137/11</p> <p>yet [4] 75/19 119/11 124/4 150/25</p> <p>yield [6] 24/13 24/14 26/18 27/17 120/20 141/21</p> <p>yields [3] 26/12 61/20 67/10</p> <p>Yorkshire [2] 10/12 10/16</p> <p>you [91] 1/12 1/13 1/14 1/14 3/12 5/10 6/7 6/15 7/23 7/23 8/2 8/4 8/24 9/10 9/24 10/24 11/25 12/15 14/9 15/13 17/15 20/2 22/8 24/25 26/1 26/3 26/7 26/20 27/21 27/23 28/5 37/6 39/17 40/3 40/11 40/22 41/5 41/22 52/24 52/25 53/7 53/8 61/18 62/12 62/18 67/19 68/1 69/12 69/14 69/17 69/17 70/17 70/18 72/17 73/23 77/17 81/22 87/10 87/15 87/15 87/18 88/1 88/9 91/1 91/1 91/5 91/10 95/21 103/21 103/23 105/20 106/4 106/9 110/18 118/4 128/15 140/6 144/14 148/20 148/21 149/5 149/19 149/20 151/22 155/20 159/16 165/22 165/24 165/25 167/20 167/21</p> <p>you'd [1] 86/21</p> <p>you'll [2] 89/8 161/16</p> <p>you're [6] 53/4 54/3 68/20 79/13 80/22 89/22</p> <p>you've [4] 83/8 88/18</p>	<p>90/3 90/16</p> <p>young [1] 10/6</p> <p>your [4] 6/2 14/25 26/20 68/1</p>			
--	---	--	--	--	--

(70) would... - your