CHAPTER 3 PRELIMINARIES TO THE ANALYSIS

0. Introduction. The current chapter introduces the "Influenzal Antibodies" article which is analyzed in chapter 4. In the first section the general organization of the text is presented and the treatment of titles and subtitles, footnote indicators and citation numerals is discussed. Section 2 extends the discussion to the tables and graphs contained in the article. Some preliminary results of the analysis are given in section 3: These concern some of the classifier relations which obtain between referentials and their referends, and the zero referentials established on the basis of these relations. Section 4 presents a few additional considerations pertaining to the scope of the analysis.

1. The Text. The article analyzed, "Influenzal Antibodies in Lymphocytes of Rabbits Following the Local Injection of Virus", is composed of five sections together with an acknowledgment and references.[1] These are, in order: Introduction, Methods and Materials, Experimental, Discussion, and Summary. Some of the section divisions appear to be relevant in the organization of cross-reference, e.g., in respect to the location of referends (chapter 5, section 5). The second and third of these sections comprise a number of subsections, e.g., in Methods and Materials, the subsection Injection of Rabbits; in Experimental, the subsection Sequence of Events Following Injection of the Viral Antigens.

While, as noted in chapter 2, Methods sections of the articles were excluded from the analyses in FIS and are considered to form a sublanguage of procedures, results of the present investigation suggest that the points of connection between these sublanguages are quite close and involved (chapter 5, section 5-6).

The titles and subtitles of the sections are perhaps of less moment than the divisions of the article which they effect. Their relevance to the present study emerges from the fact that (i) there are a few scattered anaphoric cross-references to occurrences of phrases in subsection titles, and (ii) a few of the subsection titles themselves contain referentials, generally epiphoric. The former are touched upon in passing in the course of the analysis. An example is R22, i.e., referential 22, of the Methods and Materials section, the rabbits injected, whose referend can be taken as occurring in the subsection title Injection of Rabbits (see below).[2] An instance of the latter is provided by the other subsection title cited above (the viral antigens and perhaps sequence of events); these are not considered in the analysis. To retain the definition of text given in section 1.1 of chapter 1, i.e., as a string of sentences, the titles and subtitles should, in a complete analysis, be recast as sentences. For instance, Discussion could be reworded as: This section presents a discussion of the article, though this is at the cost of introducing 'meta-referentials' (cf. section 4 of chapter 1) -- this section,

the article -- which relate to the organization of the text and present difficulties in analysis. Various subtitles may be reworded with epiphoric referentials, e.g., Injection of Rabbits as Rabbits were injected as follows.

Similarly, the epiphoric cross-references effected by footnote indicators and citation numerals require a rewording of portions of the article. Both can be construed as "metalinguistic reading instructions", comparable with the imperative see below. There are two footnotes, indicated by an asterisk, in the article -- the first is incorporated into the Methods and Materials section; the second occurs in Table 1 (section 2). Each of them contain anaphoric referentials. Citation numerals occur more often in the article, especially in the Introduction and Method and Materials section.[3] In at least some sentences (and perhaps all), the citation (-referend) can be substituted for particular phrases in the sentence together with the numeral. For instance, in sentence 193.2.2 of the Introduction -- In other studies of this series it was shown that macrophages did not, on contact with antigens in vivo, produce antibodies (8)..., other studies of this series together with (8) is replaceable by the reference: In Ehrich, W.E., ...1946, The absence of antibody in the macrophages during maximum antibody formation, it was shown.... Neither footnote indications nor citation numerals are considered in chapter 4; in one instance, R46 of the Introduction, citation numerals assist in determining the location of the referend.

2. Tables and Figures. The tables and figures contained in the "Influenzal Antibodies" article -- there are two tables and three figures -- present issues related to those just considered. A number of zero-referentials reconstructed in sentences of the text (cf. sections 3.22-23) are taken to have their referends in sentences obtained from the tables and figures. In addition, there are several text-sentences (or: sentence-fragments) which are referential either to sentences obtainable from the tables (or figures) or consequences of such sentences. A few of these are discussed below. The possibility of converting these tables and figures into sentential form is suggested by the fact that there is a culturally instilled, and rather uniform way of "reading" these symbol-systems. In the discussion which follows a procedure is sketched for converting each of the tables into sentences; the figures present several complications.

It should perhaps first be noted that most of the uses of figure and table as proper names, e.g., Figs. 2 and 3 in sentence 203.1.1, may be considered as "meta-referentials". If they are not to be construed as relating to the organization of the article, their replacement -- by sentences of "transformed" tables and figures -- poses difficulties. Replacement is perhaps simplified if certain of these occurrences are taken as classifiers (cf. section 3.21) or, in one instance, as a container-word. Thus, in 200.1.1 The range of individual variation...is illustrated in

Table II would be transformed to ...in that which is Table II, where that is referential to the converted table. Sentence 203.3.2 The table also gives the corresponding cell-counts... can be transformed to That which is in the table also gives..., comparable to the analysis given to The box of candy tasted good in GEMP:205 (in 203.3.2 the table is itself anaphoric to the occurrence of Table I of the preceding paragraph). Further complications are presented by the fact that the tables and figures summarize a large number of sentences; the resulting sentence will be felt as cumbersome.[4]

Occurrences of figure and table names also serve as referends of various zero-referentials. For instance, in 203.1.3, a zero-referential -- there -- can be reconstructed after seen in As can be seen[5]; the referend is the occurrence of Figs. 2 and 3 in the first sentence of the paragraph.

2.1. The Tables. Both of the tables in the "Influenzal Antibodies" article (see pp. 201, 205) can be rather straightforwardly converted into sentences. The task is simplified if the columns and rows are numbered and/or alphabetized as indicated. The approach, loosely, is to trace a path for each row of the table together with the entry focussed upon among the various columns and their entries. Here, a path is preferred which yields a sentence close to the regularized sentences of FIS (see chapter 2, sections 2-3). This requires the insertion of determiners and appropriate prepositions.

2.11 Table I. For Table I (see p. 201) there are as many sentences as entries given under the columns labelled 6-8, 10-13 (a total of 75). For rows a-i, there are seven sentences each; for rows j-k, there are six each. Columns 1-4 form a standard subordinate sentence-form for the seven (and six) sentences per row. Column 13 corresponds to a formula represented in FIS as two sublanguage sentence-types (AVC, AVT) together with a conjunction.[6] A schema for the column 10 entries could be given as

> column 4 entry$_i$ + col. 4 title + with + col. 3 entry$_i$ + into the col. 2 entry$_i$ + col. 2 title + of col. 1 title + col. 1 entry$_i$, the col. 9 title + of col. 10 title + from col. 5 title + is + col. 10 entry$_i$
> (articles and appropriate prepositions which are inserted are underlined)

with i ranging over rows a-k. For row a, substitution of the relevant entries and title names yields: 3 days after inoculation with PR2X into the L(eft) leg of rabbit no. 34, the titer of lymph-supernate from lymph is 256. Antibody before titer is recoverable from the title, which itself can be read as: "Antibody occurs in particular concentrations in lymphocyte-extracts relative to antibody concentrations in lymph-supernate." Similar schemata can be readily developed for the other relevant column entries (6-8, 11-13).[7]

In the main, the column headings in Table I conform to the word-classes (and, in some instances, e.g., column 8

TABLE I

Relative Concentrations of Antibody in Lymphocyte-extract and Lymph-supernate

1 Rabbit No.	2 Leg	3 Inoc. with	4 Days After Inoculation	Lymph 5						13 Ratio of Titer of Cells to Supernate
				6 Volume collected	7 White blood cell count per mm.^{3}	8 Volume of Lymphocytes	9 Titer of 10 Lymph Supernate	11 Lymph Supernate 1/10 vol.	12 Lymphocyte extract	
				ml.		ml.				
34	L	PR8 2x*	3	0.25	75,000	.0038	256	256	4096	16
39	L	PR8 20x	3	0.25	38,650	.0019	1024	1024	8192	8
40	L	PR8 20x	3	0.25	26,900	.0014	512	512	8192	16
40	R	PR8 20x	3	0.30	30,500	.0018	512	512	6072	12
36	L	PR8 2x	5	0.35	24,400	.0017	512	512	2048	4
36	R	PR8 2x	5	0.30	48,100	.0029	512	512	4096	8
42	R	PR8 20x	5	0.25	31,700	.0016	512	1024	2048	2
42	L	PR8 20x	5	0.30	39,050	.0023	512	768	2048	3
38	L	PR8 2x	7	0.20	29,600	.0012	512	512	1024	2
62	L	Typhoid	2	0.55	26,000	.0029	<64	<64	<64	
65	L	Typhoid	3	0.65	37,000	.0048	<64	<64	<64	

*These preparations of influenzal virus were concentrated either 2-fold or 20-fold, as indicated.

TABLE I

sentence-types, e.g. CW) established in FIS (cf. chapter 2, section 3). Since the representation by formulas of regularized texts in FIS may also be regarded as tables (FIS: chapters 1 and 3), it is of interest to note where the respective tables diverge. One point of distinction is the lack in FIS of a distinctive word-class for column 2 ("body-part", cf. the discussion of referential-classifiers in section 3.22). Another distinction is the numerical specification given to, e.g., the titer of lymph-supernate in Table I and the specification in columns 1-3 of members of the word-classes labelled B and G. The latter can be accommodated within FIS by a listing of subclasses; the former can be regarded as part of a presupposed science, i.e., arithmetic.

Some "Cross-References to Table I". Among the sentences which contain references to Table I, two are briefly considered here. One is such total lymph-cell volumes are shown in Table I (195.2.3) where such total lymph-cell volumes is an anaphoric referential phrase; the phrase is also "referential" to column 9 (i.e., sentences obtained from column 9) of the table. Resolution of the referential yields: The volumes of lymphocytes obtained by an expression -- cell-volume = 0.0002 TV ml where T equals the total cell-count of the lymph in thousands and V the volume of lymph collected are shown in Table I (the referend occurs in 195.2.1; see Note to R60 in Methods and Materials in chapter 4). The phrase replacing the referential could be taken

as referential to those sentences obtained from column 9. Depassivizing the sentence just given, replacement of the referential yields (loosely): Table I shows that 3 days after..., the volume of lymphocytes in the lymph is .0038 ml, ..., ..., that 7 days after inoculation..., the volume of lymphocytes in the lymph is .0012 ml,....[8]

The other sentence considered (203.3.1) is quite involved; only major points of the analysis are indicated:

> It is seen that the titer of antiviral antibodies in the contents of the lymphocytes is in all cases higher than that in the plasma of the same specimen, and that this difference is greatest in the earlier days.

Seen, as noted above, announces a zero-referential -- there with its referend an occurrence of Table I. PR8 (in column 3) can be considered the referend of the virus (antiviral antibodies is rewritten antibodies against the virus). The same specimen refers to the same lymph-specimen, indicating that each comparison (between sentences obtainable from columns 10 and 12; possibly between those obtained from columns 11 and 12) is made in respect to sentences obtained from the same row. The first conjunct of sentence 203.3.1 is a conclusion drawn from a number of the sentences obtained from Table I; is in all cases higher indicates that it is a generalization (all cases makes reference to phrases in these sentences corresponding to column 1 entries in rows a-i; see section 3.22 on classifiers of word-occurrences in the word-class B). To establish the conclusion requires some tacit arithmetical sentences, e.g., 4096 is higher than 256.

Similarly, the second conjunct is a conclusion, requiring for its establishment various arithmetic sentences and 3 days (after inoculation) is earlier than 5 and 7 days. Several points remain unclear: this difference can be taken to relate to sentences "derivable from" column 13 or to sentences concluded (by arithmetic calculation) from those obtained from columns 12 and 11 (or 12 and 10); the plural days in 203.3.1 is peculiar (given that the greatest differences are all on day 3), unless it is supposed that various occurrences of day 3 are referred to.

Other sentences pertinent to Table I are: sentences 203.2.5, 203.3.2-3.

2.12 Table II. This table (see p. 205) is readily transformed into sentences (a total of 21, one sentence for each entry in the columns labelled 2, 3, and 4) following the schema:

> Antibody + column 1 title + of + col. 2/3/4 title + of + col. 2/3/4 $entry_i$ + on the Ordinal (col. 5 $entry_i$) + col. 5 title + from + col. 6 title + col. 6 $entry_i$
> (appropriate prepositions and articles introduced are underlined)

with i ranging over rows labelled a-g and Ordinal a functor giving the ordinal form of the column 5 entry, e.g., Ordinal (2) = second. From this schema, one obtains for instance: Antibody titer of lymph is 128 on the 2d day of collection from rabbit no. 328. The title of the table indicates that day of collection (column 5 title) = "day after injection";

TABLE II

Range of Individual Variations in Titer of the Specimens Tested in the Early Days After Injection of Antigen

		Titer of		
Rabbit No. [6]	Day of Collection [5]	Lymph [2]	Lymphnode-extract [3]	Serum [4]
328	2	128	32	<16
317	4	384	96	64
341	3	256	128	16
330	4	384	256	16
316	3	64	48	<16
340	2	64	64	16
214	3	16	32	<16

the column 5 entries are stated to be early days. In the title, the specimens tested can be taken to announce a zero-referential of the tissues (section 3.23) with the tissues referential to occurrences of lymph, lymphnode-extract, and serum (the column titles of columns 2-4) in sentences obtained from the table.

The sentences in the "Influenzal Antibodies" article which involve cross-references to Table II are 200.1.1-3.[9]

2.2 Figures. Conversion of the graphs in this article (Figs. 1-3 on pp. 208-210) into the form of sentences poses difficulties. I restrict myself here to some general remarks on the figures (using Figure 1 as an example) and problems in their "conversion"; no procedure is provided to recast the figures (nor are referentials in the figure captions considered in the analysis of chapter 4). The cost of excluding the figures from the text of the article is that a few cross-references will remain unresolved.

The keys which are given in the upper left-hand corner of each figure (Figure 2 is actually a composite of two graphs) provide part of a "translation manual" from the graphs to sentences. This is done by providing a "sample" of the graphic feature next to a particular tissue name, e.g. '---' next to serum. The abscissa title in all of the figures is days after injection with the abscissa itself marked for particular days. The ordinate title is, e.g., antibody titer to PR8 virus (Figure 1). In Figure 1, it is

noted that each point represents 9 rabbits (the geometric mean value of titer in the tissues for 9 rabbits). This remark presumably does not pertain to points on the graph but to sampling points indicated in sentence 198.2.2, i.e., 1, 2, 3, 4, 5, 7, 9, 10, and 15 days after injection.[10] The intervals marked on the abscissa are generally in agreement with those noted in 198.2.2, except for the inclusion in the graph of '3/4' and '6' and its exclusion of '9' (a fore-shortening of the intervals marked on the abscissa is indicated by '//'). One can "identify" the relevant values of titer to PR8 virus by projecting perpendicular lines from each of the sampling points, noting the point of intersection with a given curve, and then projecting a line to the ordinate. A problem is presented in precisely identifying these values, i.e., interpolating between the values recorded on the ordinate. It is not immediately clear how to deal with this problem -- one possibility is to make use of the range of values (indicated on the ordinate) between which a given value is located. Supposing this issue to be settled (a major assumption), Figure 1 could be converted into sentences of the form: On the abscissa-entry$_i$ + abscissa title (minus -s on days), ordinate-titer + in extract of lymphnode/lymph/serum (from the key) is X_i , where X_i is the (sometimes) interpolated value on the ordinate. In respect to the sentence-formulas of the grammar, these sentences can be represented: GJB: AV_iT.[11] Figures 2 and 3 could be altered in a similar fashion. It may be noted that some of the other

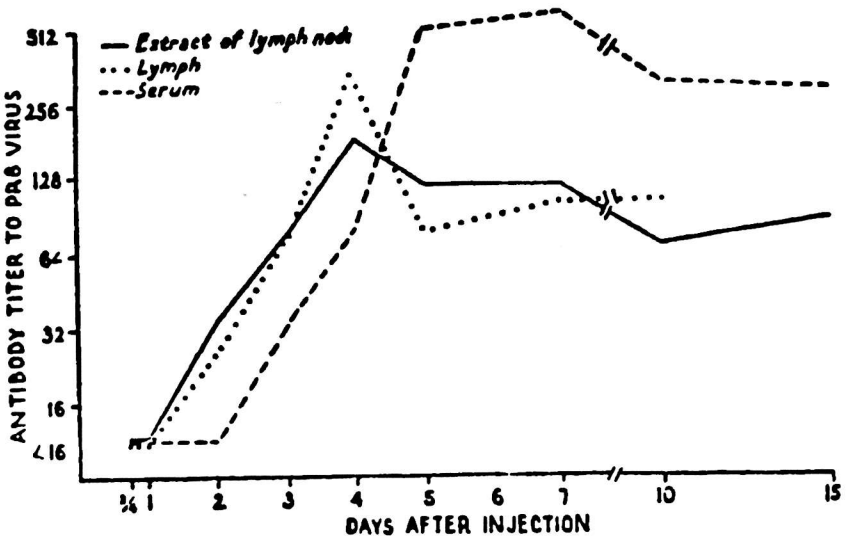

Fig. 1. Geometric Mean Antibody-titers of Lymph, Lymphnode-extract and Serum at Various Intervals Following the Injection of Inactivated Influenzal Virus into the Foot-pad.

Each point represents 9 rabbits.

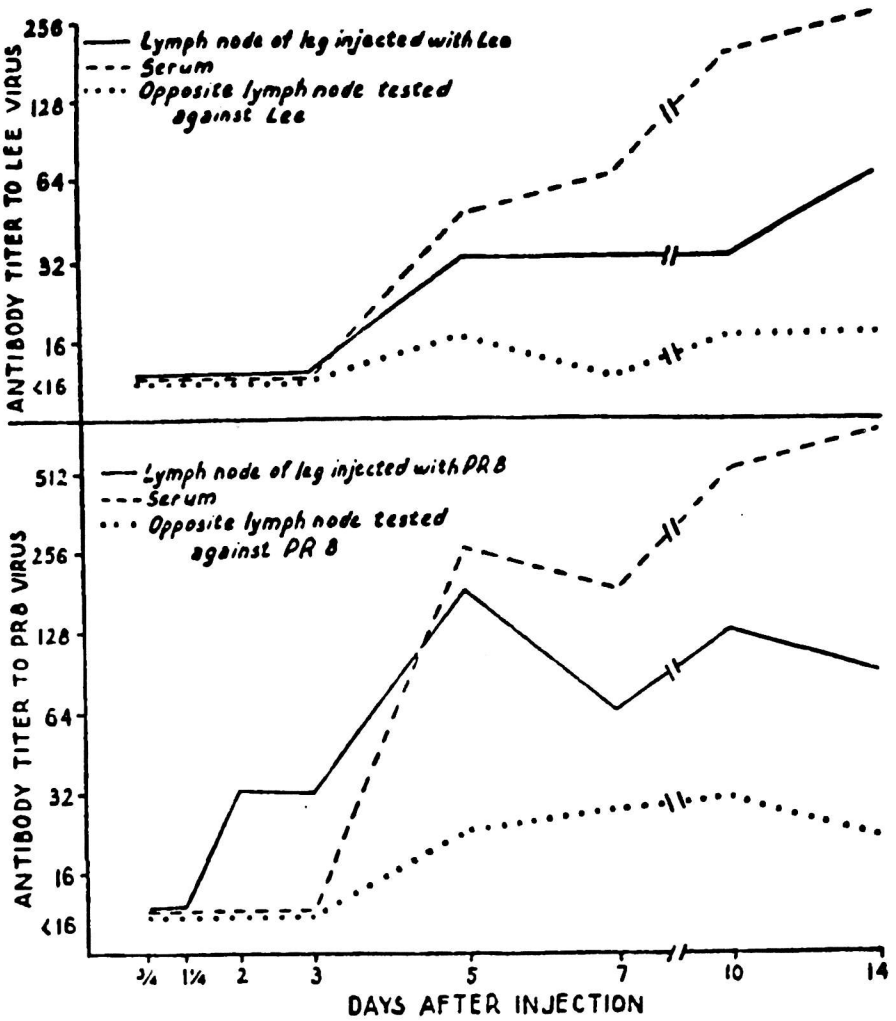

Fig. 2. Antibody-titers to Homologous and Heterologous Strains of Influenzal Virus in both Popliteal Lymphnodes of Rabbits Following the Injection of Serologically Distinct Strains of the Virus into the Respective Feet of each Rabbit: Comparison with Serum-titers.

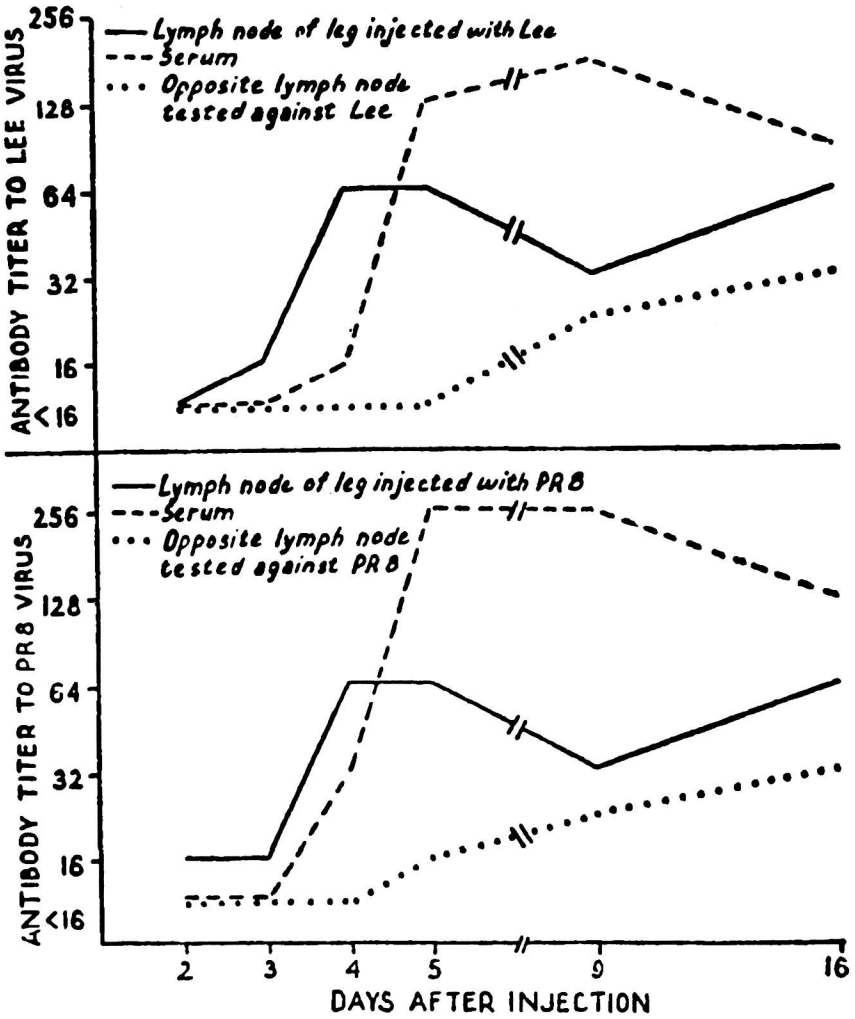

Fig. 3. Similar Experiment to that Shown in Fig. 2.

Although these results indicate that the PR8 preparation was of less antigenic potency than the preparation used in the previous experiment, the time-relations in rise of antibody-titers are seen to follow the same pattern.

figures in the articles analyzed in FIS present fewer difficulties -- in some, data-points are clearly distinguished and "bar"-graphs are employed.

3. Zero-Referentials in the "Influenzal Antibodies" article. In the course of establishing the definition of cross-referential relation presented in chapter 1, section 5.3, it was noted that a referential may occur "tacitly" in a text, i.e., as introduced (announced) by a phrase which occurs explicitly in the text (section 2.2 of that chapter). The phrases so "signalling" the occurrence of a referential are referred to below as "introducers" and "announcers". This section presents an extensive review of these announcers and the referentials which they introduce. In particular, the focus is upon announcers which introduce a referential-classifier for a word (or: word-sequence) in an argument word-class of the sublanguage or introduce referentials which are otherwise established in respect to the formulas of the sublanguage (cf. chapter, 2, section 3). Such announcers may be termed "sublanguage announcers"; they are presented in section 3.3. This discussion is preceded by a review and discussion of referential-classifiers for phrases in the argument word-classes in the sublanguage grammar -- including consideration of the criteria used in establishing a classifier-relation between referential and referend (section 3.2.). Other announcers, not established in respect to the sublanguage grammar, are taken up in the section below.

3.1. Announcers. As noted in section 2.2 of chapter 1, zero-referentials can be introduced by a variety of phrases: (a) adverbs, (b) comparative and comparative-related forms, (c) nominalizations, and (d) quantifiers. Below an example or two of each of these is provided from the "Influenzal" article. Following the notation to be presented in chapter 4, the reconstructed preposition (or: than) preceding the referential is underlined, as is the referential. The referential itself (or: the initial part of the referential phrase) is capitalized, with the entire referential phrase placed in brackets and underlined (to indicate reconstruction). If the announcer (or: the phrase in which it is included) is to be rewritten, it is here[12] placed in parentheses and the alternate form is given after it.

(a) (Accordingly) - In accord with [THIS], a study was undertaken of the immunological response.... (from 194.1.2)

Similarly to [THIS], the blood collected from the rabbits' hearts contained antibody to influenzal virus.... (from 197.3.11)

(b) In the case of the lymph, this number of specimens was smaller than [THAT].... (from 198.2.18)

Cross-absorption studies (further pointed) - pointed further than [THIS] to the fact that.... (from 193.1.10)

(c) The allantoic fluids...were dialized...to prevent formation of precipitates on storage of [THEM] at 4C. (from 194.2.7)

When popliteal lymphnodes were excised..., gross examination of [THEM] showed.... (from 197.3.3)

(d) The lymph was mixed well, enough of [IT] was drawn off for a white-blood-cell count.... (from 195.1.1)

Each part of [IT] was frozen and stored.... (from 195.1.2)

In connection with (a), mention can be made of conjunctional forms such as (1) thus and (2) however. Following GEMP (section 9.6), these forms are analyzed as: (1) in accord with [THIS], (2) in spite of [THIS]. The notes to the analysis of chapter 4 present a discussion of 'difficult' cases, e.g., correspondingly and respectively and the related forms corresponding and respective.[13]

Not all occurrences of comparative or comparative-related forms serve as announcers of zero-referentials. For instance, zero-referentials cannot be said to be introduced by the -er forms in: ... the skin of the inner aspect of the knee was incised (from 194.3.4), ...this rather laborious demonstration had comprised the major portion....(from 205.1.6). In other sentences, reconstruction of a zero-referential from an -er form appears forced. For example, in:

...one type of influenzal virus was injected into one foot-pad, and a heterologous type was injected into the other foot-pad. (from 194.1.4)

reconstruction of, e.g., a foot-pad other than that, is questionable. In such cases, the other N (where N is noun) could

be considered as a name of one of a pair. Another possibility is to say that the other is an announcer of the two N-s; however, here one of the referends of the announced referential will be the other of the two N so that reconstruction appears excessive.[14] In respect to the comparative-announcers, it may be noted that in some occurrences, alternative forms of the referential phrase can be stated, e.g., in:

> By the 9th day, the counts were down to 10,000 to 15,000 and even somewhat lower by the 16th day. (198.2.4)

the zero-referential can be specified as: than [THIS], or -- given the comparison made -- than [THESE COUNTS].

With the case of nominalized operators such as are presented under (c), only a zero-referential for the complement of that operator is given. Reconstruction of a zero-referential for the subject of these operators would be to little effect (or: would entail the statement of many implicit sentences, e.g., Researchers store experimental materials) inasmuch as referends for the referential do not occur in the text (cf. the situation with nominalizations of sublanguage operators, e.g., injection, where reconstruction of zero-referentials for the subject and complements of the operator is made).[15]

As with certain comparative-forms, reconstruction of zero-referentials on the basis of the occurrence of quantifiers may, in certain instances, be felt as excessive, e.g., reconstructing of [THE rabbits], given the occurrence of each in ...opposite legs of each rabbit received injections

of different serological types of virus (from 204.4.1). In the analysis, zero-referentials have been reconstructed for the most part only where reconstruction did not appear as forced. Further examination of the conditions under which these reconstructions can usefully be made is needed.

In the examples given under (b)-(d), it should be noted that specification of the zero-referential as to number presumes identification of the putative referend. The establishment of the referential phrase is thus somewhat circular but can be said to be justified if replacement of the referential phrase by its referend (in respect to a rule of consequence and paraphrase) does in fact yield a consequence or phrase of the text. Section 3.23 notes some instances where specification of number for the zero-referential is not critical, i.e., the referential can be indifferently specified as singular or plural (cf. section 6.3 of chapter 1).

Finally a problem with compound-nouns, e.g., the lymph-cells, the serum-titer, should be mentioned. It is not always clear whether these forms are to be related to, e.g., the cells of lymph, the titer of serum, or should be considered as announcing the occurrence of a zero-referential (the lymph, the serum). One can suggest that the decision be made based upon the occurrence (or not) of an available referend. In some cases reconstruction of a referential phrase nevertheless appears as excessive.[16]

3.2. Classifiers and Sublanguage-Announcers. Many instances of cross-references involving a referential-classifier have

been presented in the course of the preceding work. An example -- not from the articles of the sublanguage -- was provided in the introduction to chapter 1 (it is reprinted below):

(3) Ararat is located in eastern Turkey.
I've never seen THE MOUNTAIN.

The capitalized referential-phrase is considered to be a classifier of its (underlined) referend by way of the classifier-sentence Ararat is a mountain. In connection with the "Influenzal Antibodies" article, section 3.21 discusses some conditions for a referential-phrase to be called a classifier of its referend. On the basis of these conditions, the conjecture, made in section 3.1 of the previous chapter, that each of the argument word-classes of the immunological sublanguage (A, C, T, G, B -- see chapter 2, section 3.1) has a referential-classifier was investigated. That is, referentials to occurrences of phrases in each of these classes were examined to establish classifier-relations holding between referential and referend. The results of this inquiry are presented and discussed in section 3.22. Given these results, various occurrences of operators and other phrases in the sublanguage, e.g., quantifiers, can be taken as announcers of particular referential-classifiers in the "Influenzal" article. By reconstruction of these referential-classifiers, many sentences in the article -- taken as instances of "incomplete" sentence forms of the sublanguage -- can be grouped together with their full-fledged counterparts (cf. section 3.2

of chapter 2).[17] Sublanguage-announcers are presented in section 3.23; the role of classifier-sentences in the analysis is briefly addressed in 3.24.

3.21. Conditions on the Classifier-Relation; Problems. In GEMP (section 2.13) two conditions are stated for a noun to be considered a classifier of another. The first is the absence of an inverse form, i.e., with the nouns permuted around *is*, e.g., compare *A dog is a mammal* versus *A mammal is a dog*.[18] The second is the possibility of considering the classifier-noun as derived from *something* (or: *that*) *which is a N*, e.g., *something which is a mammal slept*. While it is held that a subset of classifier nouns cannot be established for English, the possibility of such a subset is considered for sublanguages (GEMP: 72-73).

In the examination of referential-classifiers below the second condition mentioned is not considered. As in English, generally, so in the article analyzed here, it is difficult to evaluate a reconstruction such as:

> ...following introduction of that which is an antigen into the tissues of that which is an animal, antibodies could be found... (from 193.1.2).

Only the first condition is used. A referential-phrase B is taken to be a classifier of its referend C if there is a corresponding sentence of the form: *(a) C is (a) B* with no inverse form (see fn. 18). If B is a classifier of C, and C likewise a classifier of B, B and C are considered synonyms (GEMP: 368), e.g. *lymph-supernate* and *lymph-plasma* are considered synonyms in the article.

In some cases this condition might be considered inadequate. For instance, in a number of cross-references, the node is referential to occurrences of the lymphnode. While the sentence a lymphnode is a node can be obtained from this cross-reference, the node might also be considered a shortened form of the lymphnode in which case there is no classifier-relation. In the analysis of chapter 4, the node is considered as a shortened form of the lymphnode and not a classifier of it. The listing of classifier-relations below does not mention a number of minor ones of the form -- (a) Adj. N is (a) N, e.g., A popliteal lymphnode is a lymphnode, Efferent lymph is lymph, Influenzal virus is a virus. It is perhaps not necessary to consider such sentences as implicit classifier sentences in the analysis inasmuch as the referends are analyzable into sentences such as Lymph is efferent.

Another difficulty is presented by relational nouns, e.g., specimens. In some occurrences these nouns could be considered classifiers of their referends. For instance, in the first example of (b), (section 3.1), specimens could be taken as a referential-classifier of its referend, rabbits in 198.2.17. Alternatively, in line with other occurrences of specimens, e.g., lymph-specimens in 197.1.1, specimens from rabbits in 200.1.2, it can be considered a sublanguage-announcer of: of the tissue (cf. section 3.23). In this case, which is that given in the analysis, specimens is not a classifier but an introducer of one (i.e., as tissue is

a classifier of lymph). Importantly, all of the classifier-sentences established must be adjudged to be correct by the immunologist-informants. The classifier-sentences presented were all checked in the course of analysis with judgments of the informants.

3.22. Referential-Classifiers: Results and Discussion. Cross-references to occurrences of phrases in the various argument word-classes of the sublanguage were examined to establish instances of classifier-relations obtaining between referential and referend. In the case of those cross-references where the referend is in turn a referential phrase, i.e., chains of referentials, only the initial cross-reference was considered. Next to each of the word-class symbols, the classifier is indicated in capital letters and the referend(s) classified in small type. Problematic cases are noted in the discussion which follows:

Referential Classifiers

A:	SUBSTANCES	antibodies.
C:	CELLS	lymphocytes.
T:	MATERIALS	lymph from the efferent lymphatic vessel of the popliteal lymphnode, the popliteal lymphnode and heart-blood.
G:	VIRUS	a viral agent, a PR8 vaccine and a Lee vaccine.
	VIRAL AGENT	a commercially prepared vaccine of influenzal virus of types A and B.
	AGENT	a viral agent.
	VIRAL PROTEIN	inactivated influenzal virus.

Referential Classifiers (cont.)

G:	VACCINE	an inactivated preparation of the PR8 strain of influenzal virus.
	TOXIN	vaccine.
	ANTIGEN	influenzal virus, an inactivated preparation of the PR8 strain of influenzal virus which had been concentrated 10 times, PR8 virus, Lee virus, virus, allantoic fluid.
B:	CASE	animal, rabbit
	ANIMAL	rabbit.

Notes

(A) From the referential-relation noted, a classifier sentence -- An antibody is a substance -- can be obtained.[19] The referential introduced by the "quantifier" phrases, titer or concentration can be stated as either the antibody or the substance (see section 3.23).[20] In sentence 204.4.6 a substance occurs as a classifier of antibody though not as a referential. In sentence 193.3.4 the neutralizing principle has as its referend an antiviral principle in the preceding sentence.

(C) Cell (a lymphocyte is a cell) can serve as a classifier for other phrases occurring in the word-class C in this article, e.g., macrophage in 193.2.2.[21]

(T) The listing does not include two sources of supply (in sentence 204.4.9) which classifies the popliteal lymph-nodes (see Note to R96 of the Discussion section, chapter 4). Tissue can be considered as the classifier introduced by particular sublanguage-announcers discussed in section 3.2.3. That is, it can serve as a classifier of all phrases occurring

in the T word-class. (Tissue occurs non-referentially in sentences 200.4.11 and 204.4.2.) In section 3.23, occurrences of local lymphatic tissue and local lymphatic system are discussed; these can perhaps be considered classifiers, though in the special sense of a 'whole consisting of parts'.

(G) Cross-references between referentials and referends in the word-class G present the most elaborate pattern of classifier-relations. Virus and vaccine can perhaps be considered as mutual classifiers (hence, as synonyms). The inclusion of viral protein could be considered spurious inasmuch as it may be altered to protein of the virus; a similar transformation of viral agent is questionable. Viral protein, agent, and toxin (the latter two occur but once in the article) occur only as referential-classifiers in the article. Some occurrences of virus without a determiner, e.g., in paragraph 204.3, could be taken as referential-classifiers to occurrences of inactivated influenzal virus (in the analysis, these occurrences were not analyzed as referentials). In the analysis, the antigen is taken to be the referential-classifier introduced by particular sublanguage-announcers,[22] antigen serves as a classifier of all phrases occurring in the word-class G (although the referential relations in the article do not present all of the requisite classifier sentences, e.g., A viral agent is an antigen). In 200.4.3, these strains has as referend a part of a phrase occurring in the word class G, i.e., PR8 and Lee in 4.2.

(B) In the word-class B, case can serve as a classifier of particular rabbit-names (often rendered as numerals). Importantly, neither case nor animal can serve as classifiers of all the phrases occurring in the word-class B: neither foot-pad nor leg can be so classified. The phrases foot-pad and leg can be assigned to a new word-class; call it B*. The referential classifiers for this word-class are:

B*: AREA foot-pad

SITE OF INJECTION foot-pad

Site of injection can serve as a referential-classifier of occurrences of phrases in B* (see the discussion of local, regional in 3.23). Animal serves as a referential-classifier for the revised word-class B (including, e.g., mice in 193.3.6.[23]

3.23 Sublanguage-Announcers. In the previous chapter (section 3.2) it was suggested that instances of "incomplete" sentence-types of the sublanguage-grammar, e.g., GJ, AV, could be reconstructed to full forms, e.g., GJB, AVT, by positing zero-referential classifiers. The supposition of reconstructed referentials is supported in part by the frequent occurrence of explicit referential forms in positions where tacit occurrences would be posited. For instance, in

> ...antibodies could be found in the regional lymphnode, often appearing [THERE] earlier than in the blood serum. (from 193.1.2)

the referential form there occurs in the position occupied by phrases of the class C or T. Thus, given a sentence (or:

fragment thereof) of the form AV_i, e.g., the level of antibody-titer rose (from 198.2.8), a PN modifier of the operator rose can be reconstructed as a zero-referential, e.g., [THERE] or in [THE tissue], said to be introduced by the sublanguage-operator rose.[24] In like fashion, into [THE animal] (or, given the results concerning B*, into [THE site of injection]) can be reconstructed, given the sublanguage-operator (J) injection with a subject of word-class G in, e.g.,...following injection of active virus (from 193.3.2).[25] A referential-classifier from [THE animal] is reconstructed as the complement of W-operators such as was excised, collected with subjects in the word-class T.

Given sentences such as: ...antibody could not usually be detected before the second day following injection of the antigen. (from 198.2.6), where both the antigen and injection of the antigen are construed as referentials, one can establish a zero-referential following/after [THE injection][26] in others, e.g.:

> ...no measurable amount of antibody was present usually before the 3d day. (from 198.2.11)

Further support for the reconstruction is provided by the ordinal form, 3rd on day, in the example from 198.2.11; the injection is the point in respect to which the ordering signalled by the occurrence of 3rd is made.

Sentences such as the popliteal lymphnodes were excised 3 days following injection of the vaccine (from 197.3.3) are instances of the sentence-formula -- GJ:^{t} TW in the analyses of FIS. The "t" superscript on the colon represents the

occurrence of 3 days as a higher operator on following (represented as ":", cf. chapter 2, section 3.2; FIS chapter 5, section 4.2 presents a detailed discussion of the operator-argument relations in sentences of this sort). Phrases in the word-class "t" can thus be considered as announcers of after [THE injection] in their occurrences in sentences such as 198.2.11.

In 198.2.11, the third day is itself recognized as referential (its referend occurs in 198.2.2). In marking the cross-references in the article (see chapter 4, section 1 for a discussion of the notation used), the cost in 'legibility' of reconstructed referentials can be mitigated by adopting the convention that a sublanguage operator which is referential includes in its referend all arguments of that operator. Thus, in 198.2.11, the third day will be marked as referential -- its referend in 2.2 of page 198 is 3...days after injection. Similarly, injection in 2.2 is a referential; following the convention above, there is no need to reconstruct the subject (G) and complement (B* or B) of injection as zero-referentials, i.e., of [THE antigen] into [THE animal] -- injection includes the subject and complement of was injected (the first conjunct of 198.2.2) in its referend.

Reconstruction of zero-referentials can also be avoided in sentences such as:

> Evidence of multiplication of [THE virus introduced] was found in the lymphnodes.... (from 193.3.5)

In this sentence, the virus introduced is considered referential by itself; there is no reconstruction of the complement, e.g., into [THE animal].

A particular group of sublanguage-announcers can be termed "body-part announcers". As noted in section 8.4 of the first chapter, initial occurrences of, e.g., the popliteal lymphnode, in a particular section of the article, need not be analyzed as involving "singular" occurrences of the definite article, cf. the sun. The definite article is instead considered to announce an appositive clause in which a zero-referential occurs, e.g., of [THE animal]; the first occurrence of the is hence taken as determinative (cf. chapter 1, section 8.4) and the second is taken to be anaphoric.[27]

In many cross-references, the zero-referential can be specified as singular or plural whether the referend is in the singular or plural, e.g.:

(a) Cellular antigens were injected into the foot-pad of (the rabbit's) hind-foot, and simultaneous studies were made of extracts of the popliteal lymph-node of [THE animal(s)]....(from 193.1.6)

(b) Histological examination of (these lymph-nodes) showed severe destruction of lymphocytes in [THE tissue(s)].... (from 197.3.6)

In (a) and (b), the referend of the bracketed zero-referential is placed in parentheses. Use of the plural form of the referential in (a) is possible if the rabbit is interpreted as 'class of rabbits'; use of the singular referential in (b) has the tissue interpreted as 'class of tissues'.

In other cases, the number specified for the reconstructed referential must agree with that of the putative referend. Questions concerning specification of number could be obviated by the disjunction implied by placing -s in parentheses, though this is certainly an artifice. In some cases, e.g., example (b), these questions can be elided by use of the pro-form there.

The following chart presents a fairly extensive listing of the sublanguage-announcers in the "Influenzal" article. Next to the word-category symbol in the first column, the referential phrases introduced are given in capitals. The announcers are noted in the third column together with a citation number (and section heading) of some occurrence of the zero-referential which it introduces (see chapter 4, section 2). The 'type' of announcer -- if applicable -- is noted in the fourth column. Announcers marked with a "+" receive discussion below.

Word-Class	Zero-Referential	Announcer	Type of Announcer
A	THE ANTIBODY	titer (R18 The Concentration of Antibody).	Referential-quantifier.
T	THERE, THE TISSUE	appearance (R58 Introduction), rose (R31 Sequence of Events).	Sublanguage-operator (with A as subject).
	THE TISSUE	specimen (R15 The Concentration of Antibody).	Relational noun.

Word-Class	Zero-Referential	Announcer	Type of Announcer
T	THE TISSUE	the efferent lymphatic vessel (R30 Methods)	Body-part.
G	THE ANTIGEN	specific (R49 Discussion).+	Sublanguage-operator (with A as subject).
		homologous (R55 Discussion).+	
		heterologous (R56 Discussion).+	
B	THE ANIMAL	excised (R34 Methods); collected (R31 Methods).	Sublanguage-operator (with T as subject).
		injected (R48 Introduction).	Sublanguage-operator (with G as subject).
		the blood-serum (R16 Introduction).	Body-part.
B*	THE SITE OF INJECTION	homologous (R55 Discussion).+	
		heterologous (R56 Discussion)+	
		local (R8 Summary)+	
		regional (R50 Introduction).+	

Word-Class	Zero-Referential	Announcer	Type of Announcer
GJB(:)	THE INJECTION	reaction (R2 Experiments Involving Different Types).	
		the 3d day (R45 Sequence of Events).	

Specific: Specific and related occurrences of neutralizing and non-specific occur in the environment A _ G, i.e., with a phrase of word-class A as its first argument and one of G as its second. In the article, there are frequent occurrences of phrases such as antibodies to influenzal virus, in which the operator specific has been zeroed (see FIS chapter 5, section 4.4.1 for a detailed discussion). The occurrence of influenzal virus (or virus, etc.) can in nearly all these cases be regarded as referential to occurrences of some phrase (often, an occurrence of influenzal virus) in a related injection (GJB) sentence. Support for this is given in occurrences of explicitly referential phrases, e.g., antibodies to the viral protein in 205.2.1 of the Summary (and perhaps by an implicit sentence, e.g., Antibodies are specific to an antigen which has been injected). In the analysis of chapter 4 only those occurrences whose referential status is "marked" by the definite article have been considered. Emendations to provide for these other occurrences should be made in later work.

The occurrence of specific in specific-antibody titer (from 204.3.4) is thus taken to announce the referential

classifier the antigen: antibody titer specific to [THE antigen]. Relatedly, neutralizing (regarded here as a synonym of specific to) in The neutralizing principle was found in higher concentration....(from 193.3.4) is taken to introduce [THE antigen]: The principle neutralizing the antigen.

Homologous, Heterologous: In a few sentences of the article, words which modify phrases in the G word-class appear adjectivally on occurrences of words in the class A. For instance, in the title of the article "Influenzal Antibodies in Lymphocytes of Rabbits Following the Local Injection of Virus", influenzal occurs adjectivally on antibodies: the phrase influenzal antibodies can be rewritten as antibodies (specific) to [THE influenzal virus] with its referend the succeeding occurrence of virus. In McMaster and Kidd had demonstrated an antiviral principle in extracts...(from 193.3.3), an antiviral principle is transformed to a principle (directed) against [THE virus].[28]

Similarly, homologous-antibody in (from 204.4.3): in following the homologous-antibody titers of extracts of a given lymphnode...is rewritten as: antibody to the homologous virus/antigen. (Homologous and heterologous otherwise occur in the phrases homologous virus and heterologous virus.) Referential occurrences of the homologous virus and the heterologous virus involve a cross-reference to a particular phrase of the G word-class as well as a reference to a particular phrase in the B* (or: T) word-class. This is seen below.

In 203.4.2, it is stated: Each rabbit received 0.2 ml of a PR8 vaccine in the right foot-pad and 0.2 ml of a Lee vaccine in the left foot-pad (the right/left foot-pad occur in the word-class B*; see above). Subsequent occurrences of right and left as modifiers on lymphnode (or: node) are considered as announcers of [THE right/left site of injection] referential to the right/left foot-pad in 4.2 above. In 4.10, the authors state: The level of antibody found in the respective lymphnode-extracts against the heterologous virus generally was about 10 to 15 per cent of the level of serum-antibody. A general sentence can be stated as: A virus heterologous to a given site (or: side) of injection is the virus injected on the opposite site (or: side). From 4.2 and the general sentence, it can be determined that for the lymphnode located on the right site (side) of the injection, the heterologous virus referred to is PR8 vaccine; for the node on the other site (side), the referend is Lee vaccine (the referends are in 4.2). Similarly, for referential occurrences of the homologous virus, the definitional sentence -- A virus homologous to a given side (site) of injection is the virus injected on that site -- can be given. A virus heterologous to a particular side is homologous to the other and vice versa. This 'reciprocal' status makes for complicated replacements of these phrases occurring as referentials. The definitional sentences presented above are not written out as implicit sentences of the analysis. The notes to the analysis provide further discussion of these referentials.

Local, Regional: Regional occurs as an adjectival modifier on lymphnode (e.g., in 193.1.2) and local as a modifier of lymphatic system (e.g., in 203.1.4) and lymphatic tissue (e.g., in 206.1.1) in the "Influenzal" article. These phrases are considered to announce the referential-classifier for the B* word-class noted above, i.e., the site of injection. Thus, e.g., the local lymphatic system is rewritten as the lymphatic system local to [THE site of injection].[29] In sentences of this article and others in the corpus of FIS which I have examined, there are no occurrences of such expanded forms. Some textual support for the expansion, i.e., reconstruction of the referential classifier, can be gleaned from sentence 205.2.1 of the Summary in which the site of injection occurs explicitly as a referential; its referend is the foot-pad in that sentence:

> Following the injection of inactivated influenzal virus into the foot-pad of the rabbit, antibodies to the viral protein can be found in the popliteal lymphnode, which drains the site of injection, and in lymph obtained from the efferent lymphatic vessel of that node.

Here the popliteal lymphnode is said to drain the site of injection. In an immunology-review article of those papers analyzed in FIS (chapter 8 of FIS), it is stated that: Ehrich and Harris (1942) extended these observations by injecting cellular antigens into the hind feet of rabbits and at intervals thereafter collected the local (popliteal) lymphnodes,...(p. 261). Here the local lymphnode is said to be the popliteal node. From these sentences it can be concluded that the local lymphnode is the node which

drains the site of injection. Further support is the acceptability of such reconstructions to the immunology informants.

The popliteal lymphnode is only local to the particular site of injection stated; in 205.2.1, to the foot-pad. In the review article mentioned mediastinal lymph-nodes are stated to be the local nodes in a study by Burnet and Lush.[30] Given a resolution of [THE site of injection] in sentences containing the local lymphatic tissue or the local lymphatic system, the local lymphatic tissue/system themselves can be taken in certain occurrences as referential to occurrences of the popliteal lymphnode (or: the lymphnode -- supposed here to be itself referential and linked by a chain of referentials to an initial occurrence of the popliteal lymphnode), and the lymph (or: efferent lymph) of the popliteal lymphnode. Sentences obtainable from these cross-references, such as a popliteal lymphnode is a lymphatic tissue local to the foot-pad, establish local lymphatic tissue as a classifier. The same sentence with system in place of tissue is regarded as unacceptable by the immunologist-informants. However, a popliteal lymph-node and/or the lymph from the efferent lymphatic vessels are part of a lymphatic system local to the foot-pad/leg is considered correct. The local lymphatic system could thus be said to be a "mereological classifier" of the phrases mentioned in their occurrences as referends.

Finally, mention should be made of announcers in the Methods and Materials section. In many cases, these are

identical to those in the rest of the article (e.g., specimens, non-specific, collected). A special case is presented by agglutination: an examination of the distribution of agglutinate and related forms permits us to establish the operator as having phrases of the C word-class as first argument and phrases of the G word-class (specifically occurrences of virus and related phrases) as second argument. In a few sentences in 196.1, agglutination can be considered to announce zero-referentials: of [THE cells] for its subject and by [THE virus] for its complement.[31]

3.24 The Role of Classifiers in the Analysis. The classifier-relations noted in 3.22 for the establishment of zero-referentials do not exhaust those instances of cross-reference in which the referential is a classifier of its referend. A number of important referential-classifiers are presented in sections 4-6 of chapter 5. Of more immediate concern is the role of classifier-sentences in the analysis of the article.

All of the classifier-sentences from which the listing given in section 3.22 was obtained are considered as implicit sentences. These sentences are required to be acceptable to the immunologist-informants. In cross-references where a classifier-sentence is taken as tacit, the rule of paraphrase or consequence applied in effecting replacement of the referential is marked with an asterisk (superscripted to right of the name of the relevant rule). In those

instances in which a referential is replaced under a paraphrastic identity transformation, the asterisk indicates that the relevant classifier-sentence is to be appended as a secondary sentence to the referend. For instance, in 205.2.1, cited above -- Following the injection of inactivated influenzal virus into the foot-pad of the rabbit, antibodies to the viral protein can be found in the popliteal lymphnode... -- replacement of the referential-classifier the viral protein by its referend inactivated influenzal virus under identity (symbolized I* in the notes of chapter 4) yields:

> Following the injection of inactivated influenzal virus into the foot-pad of the rabbit antibodies to inactivated influenzal virus, which is a viral protein, can be found in the popliteal lymphnode....

Simple substitution of the referend for the referential phrase yields not a paraphrase, but a consequence of the sentence.

4. Excluded from the Analysis: Aside from items noted above, e.g., figure captions, the analysis of chapter 4 does not cover: (a) determinative and generic uses of the definite article (several occurrences of those are considered to be determinative): In some cases the distinction between determinative and anaphoric usage of the is difficult to discern. Such cases are mentioned in the notes to the analysis and discussed briefly in chapter 5, section 4. (b) "meta-referentials" relating to the organization of the article: These include occurrences of, e.g., above. The

analysis does cover referential phrases in which these forms occur, e.g., the studies referred to above in 193.1.1. (c) cross-references within implicit sentences stated to obtain a referend (cf. chapter 1, section 2.4.2). The rules of consequence applied in obtaining a sentence containing a referend from the implicit sentence and a sentence of the text are not described in full detail.

FOOTNOTES CHAPTER 3

1. Susanna Harris and T. N. Harris, "Influenzal Antibodies in Lymphocytes of Rabbits following the Local Injection of Virus", Journal of Immunology, vol. 61 (1949), pp. 193-207.

2. The convention for citation of sentences and enumeration of referentials is given in section 1 of chapter 4.

3. In the analysis (chapter 4, section 2), a referend is marked by enclosing it in parentheses and assigning it a subscript number corresponding to the number assigned to the phrase which cross-refers to it. This should not present any confusion with the citation-numerals which are themselves enclosed in parentheses and are written level with the text.

4. It is not clear whether the sentences obtained will even be grammatical.

5. Zero-referentials, e.g, there can be established by comparison with sentences like Such total lymph-cell volumes are shown in Table I (sentence 195.2.3).

6. That is, as Titer of cells (AVC) is in ratio to Titer of supernate (AVT).

7. The table contains a footnote, indicated by '*', which is not considered here.

8. The rule of inference applied is Detach. Each of the referend-components is nominalized as that S and conjoined (cf. section 1 of chapter 4).

9. References to Table II in these sentences are not considered here. It is not clear how the groups are compared and in respect to what differences (arithmetical, proportional).

10. That this sentence-fragment is relevant can be discerned by mention of Fig. 1 in this section, e.g., sentence 198.2.16.

11. See section 3.2 of chapter 2; on the superscript 't', see section 3.2.3 of the present chapter.

12. In chapter 4, section 2, these rewritten phrases are enclosed in curly-brackets.

13. See, e.g., sentences 198.2.13-14, 21-22.

14. Yet another is to assume a tacit sentence in such cases, e.g., There are two N.

15. Reconstruction of zero-referentials for subjects of the operators in (c) would result in these operators being considered "M'" operators, see chapter 2, section 3.5.

16. Cf. the pattern-method in 196.1.6; a possible referend for the pattern occurs in 196.1.4.

17. In Zellig Harris, et al., Form of Information in Science (Dordrecht, Holland: to be published by D. Reidel Publishing Company in the series, Boston Studies in the Philosophy of Science), (hereafter cited as FIS), chapter 5, sections 4.2 and 4.4, similar reconstructions were considered instances of "sublanguage appropriateness". The notion of reconstructing zero-referentials in these cases departs from a suggestion made by Anne Daladier in her contribution to FIS.

18. A sentence in which the classifier noun occurs before be may be acceptable with particular intonations and is read as a case of "exemplification", e.g., An instance/example of of a mammal is a dog.

19. On the relation between pluralized forms, e.g., Antibodies are substances, and the singular, e.g., An antibody is a substance, see Alison Anderson, "Characteristics of the Syntax of the English Plural", Linguistics, vol. 133 (1974), pp. 1-19.

20. In the article one finds both the "count" noun antibodies and the "mass" noun antibody; the former, presumably, as antibody is composed of molecules. Within this article and others in the corpus of FIS, no procedures were applied to count antibody molecules (i.e., antibodies and antibody are not distinguished). The form the antibody is chosen for the zero-referential inasmuch as substance could serve to classify other phrases in other word-classes, e.g., an antigen is a substance. Substances does not itself occur as the referend of any referential.

21. This case could be considered spurious given the relation of the affix -cyte to cell.

22. The operator agglutinate, which occurs in the "Methods" section, is taken to announce of the virus given its distribution within this section (see section 3.2.3); the antigen can be reconstructed as well.

23. The phrase case which classifies animals does not itself occur as the referend of any referential. Excepting case then, animal classifies all phrases occurring in the (revised) word-class B.

24. Choice of *there* avoids the problem of specifying the referential as to word-class C or T. In the article, the "Experimental" subsections do not consider cell content of antibody until the final subsection. Thus, for the preceding subsections, the zero-referential *in the tissue(s)* is reconstructed in section 2 of chapter 4 (i.e., a discourse-analysis is presumed). A possible alternative is to use a disjunctive *in the cells/the tissue* though this is clearly an artifice.

25. In the analysis, the zero-referential *into the animal(s)* is given; an alternative is to reconstruct both zero-referentials: *into the site of injection on the animal*.

26. There may be some cases in which *after injection* is preferred as a reconstruction. The immediate environments and referends of clearly referential instances of *injection* and *the injection* were compared to see whether there is any patterning in the distribution of their referends. (Discussion and Summary sections were excluded.) It was hypothesized that the verb-like *injection* would have as proximate referends either other occurrences of *injection* (also referential) or a sentence with *injected* (also, other members of the J word-class, e.g. *received*) whereas the strong nominalization *the injection* would have as its proximate referend the weak nominalization.

This hypothesis was not substantiated -- while indeed the first claim holds, the 3 instances of *the injection* have as immediate referends sentences with *were injected*, etc. For instance, 193.1.7 *the injection of antigen* has as referend *Cellular antigens were injected into the pad of the rabbit's hind foot* (from the previous sentence). It was however noticed that whereas instances of *the injection* (193.1.7, 198.1.10, 200.3.1) could be replaced by the weak nominalized form, substitution of *the injection* for those occurrences of *injection* which have as their immediate referend *was injected*, etc., in all but one case (3rd sentence, p. 201), is felt as odd (see 197.3.3, 198.2.2, and 200.2.1; 200.2.1 has 198.2.2 as its referend-sentence).

27. The sentence-type for *the popliteal lymphnode (is) of the animal* is TWB.

28. Cf. *The level of antibody...against the heterologous virus* (200.4.10).

29. The occurrence of *local* and *regional* as announcers appears to be a grammatical feature specific to this sublanguage. Contrast the case with, e.g., *local government* where *local* does not function in this way.

30. The study of Burnet and Lush referred to in the review article of FIS is that cited in 193.1.2 of the "Influenzal" article.

31. The passival form virus is agglutinated by cells could be taken as an instance of the sentence-type GUC. The relation of agglutinate to occurrences of the form agglutinins, appearing as a member of the word-class A, merits further study.