

19MAI0017 PARAG PUJARI LAB 2----- -29/05/2020

```
In [2]: import nltk
        from nltk.stem import PorterStemmer
        stemmerporter = PorterStemmer()
        stemmerporter.stem('happiness')
```

Out[2]: 'happi'

```
In [3]: import nltk
        from nltk.stem import LancasterStemmer
        stemmerLan =LancasterStemmer()
        stemmerLan.stem('happiness')
```

Out[3]: 'happy'

```
In [4]: import nltk
        from nltk.stem import RegexpStemmer
        stemmerregexp=RegexpStemmer('learn')
        stemmerregexp.stem('learning')
```

Out[4]: 'ing'

```
In [5]: import nltk
        from nltk.stem import SnowballStemmer
        SnowballStemmer.languages
        frenchstemmer=SnowballStemmer('french')
        frenchstemmer.stem('manges')
```

Out[5]: 'mang'

```
In [6]: #TASK 3: STEMMING PARAGRAPHS
```

```

from nltk.stem import PorterStemmer

stemmer = PorterStemmer()
example = "Am quick brown fox jumps over a lazy dog"
example = [stemmer.stem(token) for token in example.split(" ")]
print(" ".join(example))

```

Am quick brown fox jump over a lazi dog

```

In [7]: # TASK 4: LEMMATIZER
from nltk.stem.wordnet import WordNetLemmatizer

lemmatizer = WordNetLemmatizer()
print(lemmatizer.lemmatize("cacti"))
print(lemmatizer.lemmatize("mice"))
print(lemmatizer.lemmatize("rocks"))

print(lemmatizer.lemmatize("better", pos = 'a')) # given the part-of-speech, better lemmatizes to good

print(lemmatizer.lemmatize("Am")) # This error is fixed when the Part of Speech is given

print(lemmatizer.lemmatize("am", pos = 'v'))

```

cactus
mouse
rock
good
Am
be

```

In [8]: # TASK 5: CHINESE SEGMENTATION USING JIEBA

import jieba
seg = jieba.cut("把句子中所有的可以成词的词语都扫描出来", cut_all = True)
print(" ".join(seg))

```

```
Building prefix dict from the default dictionary ...
Loading model from cache C:\Users\Parag\AppData\Local\Temp\jieba.cache
Loading model cost 1.754 seconds.
Prefix dict has been built successfully.
```

把 句子 中所 所有 的 可以 成 词 的 词语 都 扫描 描出 描出来 出来

In [9]: *# TASK 6: BASIC TEXT PROCESSING PIPELINE*

```
import nltk
sent = "Become an expert in NLP"
words = nltk.word_tokenize(sent)
print(words)

texts = ["""The only true wisdom is in knowin' you know nothing.
Beware the barrenness of a busy life.
I decided that it was not wisdom that enabled poets to write their poet
ry,
but a kind of ins. or inspiration, such as you find in seers and prophe
ts who deliver all their sublime messages without knowing in the least
what they mean. Be as you wish to seem. Wonder is the beginning of wis
dom. Be kind, for everyone you meet is fighting a hard battle. Our pra
yers should be for blessings in general, for God knows best what is goo
d for us."""]
```

```
['Become', 'an', 'expert', 'in', 'NLP']
```

In [10]:

```
for text in texts:
    sentences = nltk.sent_tokenize(text)
    for sentence in sentences:
        words = nltk.word_tokenize(sentence)
        print(words)
        tagged = nltk.pos_tag(words)
        print(tagged)
```

```
['The', 'only', 'true', 'wisdom', 'is', 'in', 'knowin', '', 'you', 'kn
ow', 'nothing', '.']
[('The', 'DT'), ('only', 'JJ'), ('true', 'JJ'), ('wisdom', 'NN'), ('i
s', 'VBZ'), ('in', 'IN'), ('knowin', 'NN'), ('', ''), ('you', 'PR
```

P'), ('know', 'VBP'), ('nothing', 'NN'), ('.', '.')]

['Beware', 'the', 'barrenness', 'of', 'a', 'busy', 'life', '.']

[('Beware', 'NNP'), ('the', 'DT'), ('barrenness', 'NN'), ('of', 'IN'), ('a', 'DT'), ('busy', 'JJ'), ('life', 'NN'), ('.', '.')]

['I', 'decided', 'that', 'it', 'was', 'not', 'wisdom', 'that', 'enable d', 'poets', 'to', 'write', 'their', 'poetry', ',', 'but', 'a', 'kind', 'of', 'ins', '.']

[('I', 'PRP'), ('decided', 'VBD'), ('that', 'IN'), ('it', 'PRP'), ('wa s', 'VBD'), ('not', 'RB'), ('wisdom', 'JJ'), ('that', 'IN'), ('enable d', 'VBD'), ('poets', 'NNS'), ('to', 'TO'), ('write', 'VB'), ('their', 'PRP\$'), ('poetry', 'NN'), (',', ','), ('but', 'CC'), ('a', 'DT'), ('ki nd', 'NN'), ('of', 'IN'), ('ins', 'NNS'), ('.', '.')]

['or', 'inspiration', ',', 'such', 'as', 'you', 'find', 'in', 'seers', 'and', 'prophets', 'who', 'deliver', 'all', 'their', 'sublime', 'messag es', 'without', 'knowing', 'in', 'the', 'least', 'what', 'they', 'mea n', '.']

[('or', 'CC'), ('inspiration', 'NN'), (',', ','), ('such', 'JJ'), ('a s', 'IN'), ('you', 'PRP'), ('find', 'VBP'), ('in', 'IN'), ('seers', 'NN S'), ('and', 'CC'), ('prophets', 'NNS'), ('who', 'WP'), ('deliver', 'VB P'), ('all', 'DT'), ('their', 'PRP\$'), ('sublime', 'NN'), ('messages', 'NNS'), ('without', 'IN'), ('knowing', 'VBG'), ('in', 'IN'), ('the', 'D T'), ('least', 'JJ'), ('what', 'WP'), ('they', 'PRP'), ('mean', 'VB P'), ('.', '.')]

['Be', 'as', 'you', 'wish', 'to', 'seem', '.']

[('Be', 'VB'), ('as', 'IN'), ('you', 'PRP'), ('wish', 'VBP'), ('to', 'T O'), ('seem', 'VB'), ('.', '.')]

['Wonder', 'is', 'the', 'beginning', 'of', 'wisdom', '.']

[('Wonder', 'NNP'), ('is', 'VBZ'), ('the', 'DT'), ('beginning', 'NN'), ('of', 'IN'), ('wisdom', 'NN'), ('.', '.')]

['Be', 'kind', ',', 'for', 'everyone', 'you', 'meet', 'is', 'fighting', 'a', 'hard', 'battle', '.']

[('Be', 'NNP'), ('kind', 'NN'), (',', ','), ('for', 'IN'), ('everyone', 'NN'), ('you', 'PRP'), ('meet', 'VBP'), ('is', 'VBZ'), ('fighting', 'VB G'), ('a', 'DT'), ('hard', 'JJ'), ('battle', 'NN'), ('.', '.')]

['Our', 'prayers', 'should', 'be', 'for', 'blessings', 'in', 'general', ',', 'for', 'God', 'knows', 'best', 'what', 'is', 'good', 'for', 'us', '.']

[('Our', 'PRP\$'), ('prayers', 'NNS'), ('should', 'MD'), ('be', 'VB'), ('for', 'IN'), ('blessings', 'NNS'), ('in', 'IN'), ('general', 'JJ'),

```
(' , ', ' , '), ('for', 'IN'), ('God', 'NNP'), ('knows', 'VBZ'), ('best', 'JJ'), ('what', 'WP'), ('is', 'VBZ'), ('good', 'JJ'), ('for', 'IN'), ('us', 'PRP'), ('.', '.')] ]
```

HOME WORK 3 ---snowball stemmer

```
In [11]: import nltk
from nltk.stem import SnowballStemmer
stemmer = SnowballStemmer("hindi")
stemmer.stem("सीखना")

-----
-----
ValueError                                Traceback (most recent call last)
<ipython-input-11-cafa0157d53b> in <module>
      1 import nltk
      2 from nltk.stem import SnowballStemmer
----> 3 stemmer = SnowballStemmer("hindi")
      4 stemmer.stem("सीखना")

C:\ProgramData\Anaconda3\lib\site-packages\nltk\stem\snowball.py in __init__
    109 def __init__(self, language, ignore_stopwords=False):
    110     if language not in self.languages:
--> 111         raise ValueError("The language '{0}' is not supported."
    112                             .format(language))
    112     stemmerclass = globals()[language.capitalize() + "Stemmer"]
    113     self.stemmer = stemmerclass(ignore_stopwords)

ValueError: The language 'hindi' is not supported.
```

```
In [12]: import nltk
from nltk.stem import SnowballStemmer
stemmer = SnowballStemmer("oriya")
stemmer.stem("ଘର")
```

```

-----
ValueError                                Traceback (most recent call last)
<ipython-input-12-94a6822368b1> in <module>
      1 import nltk
      2 from nltk.stem import SnowballStemmer
----> 3 stemmer = SnowballStemmer("oriya")
      4 stemmer.stem("ഓറ")

C:\ProgramData\Anaconda3\lib\site-packages\nltk\stem\snowball.py in __init__
    109     def __init__(self, language, ignore_stopwords=False):
    110         if language not in self.languages:
--> 111             raise ValueError("The language '{0}' is not supported."
    112                               .format(language))
    112         stemmerclass = globals()[language.capitalize() + "Stemmer"]
    113         self.stemmer = stemmerclass(ignore_stopwords)

ValueError: The language 'oriya' is not supported.

```

```

In [13]: import nltk
        from nltk.stem import SnowballStemmer
        stemmer = SnowballStemmer("arabic")
        stemmer.stem("قراءة")

```

Out[13]: 'قراء'

```

In [14]: import nltk
        from nltk.stem import SnowballStemmer
        stemmer = SnowballStemmer("french")
        stemmer.stem("jouant")

```

Out[14]: 'jou'

```

In [15]: import nltk
        from nltk.stem import SnowballStemmer

```

```
stemmer = SnowballStemmer("german")
stemmer.stem("Deutscher")
```

Out[15]: 'deutsch'

```
In [16]: #hindi and oriya are not getting
print(" ".join(SnowballStemmer.languages))
```

arabic danish dutch english finnish french german hungarian italian norwegian porter portuguese romanian russian spanish swedish

HOMEWORK 4----DO TOKENIZATION,STEMMING AND TAGGING USING A CORPUS DATA

```
In [17]: #IMPORT
import nltk
from nltk.stem import PorterStemmer
from nltk.corpus import brown
```

```
In [18]: #FIELDS IN BROWN CORPUS
brown.fileids()[:10]
```

Out[18]: ['ca01',
'ca02',
'ca03',
'ca04',
'ca05',
'ca06',
'ca07',
'ca08',
'ca09',
'ca10']

```
In [19]: #length of corpus
```

```
len(brown.fileids())
```

Out[19]: 500

```
In [20]: #we are taking reviews from brown corpus  
browntext = brown.words('cc17')
```

```
In [21]: #length of our text file  
len(browntext)
```

Out[21]: 2370

```
In [22]: print(browntext)  
  
['The', 'reading', 'public', ',', 'the', ...]
```

```
In [23]: #frequency distribution  
fdist = nltk.FreqDist(w.lower() for w in browntext)
```

```
In [24]: fdist
```

Out[24]: FreqDist({' ': 163, 'the': 146, '.': 98, 'of': 70, 'and': 62, 'a': 43, 'is': 38, 'to': 36, 'in': 35, 'that': 29, ...})

```
In [25]: #conditional frequency distribution  
from nltk.probability import ConditionalFreqDist  
cfd=ConditionalFreqDist((len(word),word) for word in browntext)  
cfd[3]
```

Out[25]: FreqDist({'the': 131, 'and': 58, 'for': 24, 'The': 15, 'has': 14, 'D r.': 12, 'fat': 9, 'are': 8, 'all': 6, 'his': 6, ...})

```
In [26]: cfd[1]
```

Out[26]: FreqDist({' ': 163, '.': 98, 'a': 40, '(' : 13, ')': 13, ':': 11, 'A': 3, ';': 2, '8': 1, 'K': 1, ...})


```
In [27]: #1)converting list to string and tokenizing
from nltk.tokenize import sent_tokenize
#converting list to single string str1
str=" ".join(browntext)
tokenizedstr=sent_tokenize(str)
print(tokenizedstr)
```

['The reading public , the theatergoing public , the skindiving public , the horse-playing public -- all these and others fill substantial roles in U.S. life , but none is so varied , vast and vigilant as the eating public .', 'The Department of Agriculture averaged out U.S. food consumption last year at 1,488 lbs.', 'per person , which , allowing for the 17 million Americans that John Kennedy said go to bed hungry every night , means that certain gluttons on the upper end must somehow down 8 lbs.', 'or more a day .', 'That mother hen of the weight-height tables , the Metropolitan Life Insurance Co. , clucks that 48 million Americans are overweight .', 'Through previous centuries , eating changed by nearly imperceptible degrees , and mostly toward just getting enough .', 'Now big forces buffet food .', "For the first time in history , the U.S. has produced a society in which less than one-tenth of the people turn out so much food that the Government's most embarrassing problem is how to dispose inconspicuously of 100 million tons of surplus farm produce .", 'In this same society , the plain citizen can with an average of only one-fifth his income buy more calories than he can consume .', 'Refrigeration , automated processing and packaging conspire to defy season and banish spoilage .', 'And in the wake of the new affluence and the new techniques of processing comes a new American interest in how what people eat affects their health .', 'To eat is human , the nation is learning to think , to survive divine .', 'Fads , facts Not all the concern for health is well directed .', 'From the fusty panaceas of spinach , eggs and prunes , the U.S. has progressed to curds , concentrates and capsules .', 'Each year , reports the American Medical Association , ten million Americans spend \$900 million on vitamins , tonics and other food supplements .', "At juice bars in Los Angeles' 35 `` health '' stores , a new sensation is a pink , high-protein cocktail , concocted of dried eggs , powdered milk and cherry-flavored No-Cal , which sells for 59-cents per 8-oz.", 'glass .', 'Grocery stores sell dozens of foods that boast of having almost no food value at all .', 'But a big part of the public wants to know facts about diet and health , and a big group of U.S. scientists wants to supply them .', "The man most firmly at

grips with the problem is the University of Minnesota's Physiologist Ancel Keys, 57, inventor of the wartime K (for Keys) ration and author of last year's bestselling *Eat Well And Stay Well*. "From his birch-paneled office in the Laboratory of Physiological Hygiene, under the university's football stadium in Minneapolis (' ' We get a rumble on every touchdown ' '), blocky, grey-haired Dr. Keys directs an ambitious, \$200,000-a-year experiment on diet, which spans three continents and seven nations and is still growing.", 'Pursuing it, he has logged 50,000 miles, suffered indescribable digestive indignities, and meticulously collected physiological data on the health and eating habits of 10,000 individuals, from Bantu tribesmen to Italian contadini.', "He has measured the skinfolds (the fleshy areas under the shoulder blades) of Neapolitan firemen, studied the metabolism of Finnish woodcutters, analyzed the ' ' mealie-meal ' ' eaten by Capetown coloreds, and experimented on Minneapolis businessmen.", 'And fats.', "Keys's findings, though far from complete, are likely to smash many an eating cliché.", "Vitamins, eggs and milk begin to look like foods to hold down on (though mothers' milk is still the ticket).", 'Readings of the number of milligrams of cholesterol in the blood, which seem to have value in predicting heart attacks, are becoming as routine as the electrocardiogram, which can show that the heart has suffered a symptomatic attack.', 'Already many an American knows his count, and rejoices or worries depending on whether it is nearer 180 (safe) or 250 (dangerous).', "Out of cholesterol come Keys's main messages so far: Americans eat too much.", 'The typical U.S. daily menu, says Dr. Keys, contains 3,000 calories, should contain 2,300.', 'And extra weight increases the risk of cancer, diabetes, artery disease and heart attack.', 'Americans eat too much fat.', 'With meat, milk, butter and ice cream, the calorie-heavy U.S. diet is 40% fat, and most of that is saturated fat -- the insidious kind, says Dr. Keys, that increases blood cholesterol, damages arteries, and leads to coronary disease.', 'Obesity: a malnutrition.', "Throughout much of the world, food is still so scarce that half of the earth's population has trouble getting the 1,600 calories a day necessary to sustain life.", 'The deficiency diseases -- scurvy, tropical sprue, pellagra -- run rampant.', "In West Africa, for example, where meat is a luxury and babies must be weaned early to make room at the breast for later arrivals, a childhood menace is kwashiorkor, or ' ' Red Johnny ' ', a growth-stunting protein deficiency (signs: reddish hair, bloated belly) that kills more than half its vi

ctims , leaves the rest prey for parasites and lingering tropical disease .", 'In the well-fed U.S. , deficiency diseases have virtually vanished in the past 20 years .', "Today , as Harrison's Principles Of Internal Medicine , a standard internist's text , puts it , `` The most common form of malnutrition is caloric excess or obesity '' .", 'Puritan New England regarded obesity as a flagrant symbol of intemperance , and thus a sin .', "Says Keys : `` Maybe if the idea got around again that obesity is immoral , the fat man would start to think '' .", 'Morals aside , the fat man has plenty to worry about -- over and above the fact that no one any longer loves him .', "The simple mechanical strain of overweight , says New York's Dr. Norman Jolliffe , can overburden and damage the heart `` for much the same reason that a Chevrolet engine in a Cadillac body would wear out sooner than if it were in a body for which it was built '' .", 'The fat man has trouble buying life insurance or has to pay higher premiums .', 'He has -- for unclear reasons -- a 25% higher death rate from cancer .', 'He is particularly vulnerable to diabetes .', 'He may find even moderate physical exertion uncomfortable , because excess body fat hampers his breathing and restricts his muscular movement .', "Physiologically , people overeat because what Dr. Jolliffe calls the `` appestat '' is set too high .", "The appestat , which adjusts the appetite to keep weight constant , is located , says Jolliffe , in the hypothalamus -- near the body's temperature , sleep and water-balance controls .", 'Physical exercise raises the appestat .', 'So does cold weather .', 'In moderate doses , alcohol narcotizes the appestat and enhances appetite (the original reason for the cocktail) ; ; but because liquor has a high caloric value -- 100 calories per oz.' , '-- the heavy drinker is seldom hungry .', 'In rare cases , diseases such as encephalitis or a pituitary tumor may damage the appestat permanently , destroying nearly all sense of satiety .', 'Food for frustration .', 'Far more frequently , overeating is the result of a psychological compulsion .', "It may be fostered by frustration , depression , insecurity -- or , in children , simply by the desire to stop an anxious mother's nagging .", 'Some families place undue emphasis on food : conversations center on it , and rich delicacies are offered as rewards , withheld as punishment .', "The result says Jolliffe : `` The child gains the feeling that food is the purpose of life '' .", 'Food may act as a sedative , giving temporary emotional solace , just as , for some people , alcohol does .', 'Reports Dr. Keys : `` A fairly common experience for us is the wife who finds her husband staying out more and more .', 'He may be

interested in another woman , or just like being with the boys .', 'So she fishes around in the cupboard and hauls out a chocolate cake .', "It's a matter of boredom , and the subconscious feeling that she is entitled to something , because she's being deprived of something else ' ' .", 'For the army of compulsive eaters -- from the nibblers and the gobblers to the downright gluttons -- reducing is a war with the will that is rarely won .', "Physiologist Keys flatly dismisses such appetite depressants as the amphetamines (Benzedrine , Dexedrine) as dangerous `` crutches for a weak will ' ' .", "Keys has no such objections to Metrecal , Quaker Oats's Quota and other 900-calorie milk formulas that are currently winning favor from dieters .", "`` Metrecal is a pretty complete food ' ' , he says .", "`` It contains large amounts of protein , vitamins and minerals .', "In the quantity of 900 calories a day , anyone will lose weight on it -- 20 , 30 or 40 lbs. ' ' , ' .', 'But Keys worries that the Metrecal drinker will never make either the psychological or physiological adjustment to the idea of eating smaller portions of food .', 'That remarkable cholesterol .', "Despite his personal distaste for obesity (`` disgusting ' ') , Dr. Keys has only an incidental interest in how much Americans eat .", "What concerns him much more is the relationship of diet to the nation's No. 1 killer : coronary artery disease , which accounts for more than half of all heart fatalities and kills 500,000 Americans a year -- twice the toll from all varieties of cancer , five times the deaths from automobile accidents .', "Cholesterol , the cornerstone of Dr. Keys's theory , is a mysterious yellowish , waxy substance , chemically a crystalline alcohol .", "Scientists assume that cholesterol (from the Greek chole , meaning bile , and sterios , meaning solid) is somehow necessary for the formation of brain cells , since it accounts for about 2% of the brain's total solid weight .", 'They know it is the chief ingredient in gallstones .', 'They suspect it plays a role in the production of adrenal hormones , and they believe it is essential to the transport of fats throughout the circulatory system .', 'But they cannot fully explain the process of its manufacture by the human liver .', 'Although the fatty protein molecules , carried in the blood and partly composed of cholesterol , are water soluble , cholesterol itself is insoluble , and cannot be destroyed by the body .', "`` A remarkable substance ' ' , says Dr. Keys , `` quite apart from its tendency to be deposited in the walls of arteries ' ' .", 'When thus deposited , Keys says that cholesterol is mainly responsible for the arterial blockages that culminate in heart attacks .', 'Explains Keys : As the f

atty protein molecules travel in the bloodstream , they are deposited i n the intima , or inner wall of a coronary artery .', 'The proteins and fats are burned off , and the cholesterol is left behind .', 'As cholest erol piles up , it narrows , irritates and damages the artery , encour aging formation of calcium deposits and slowing circulation .', 'Eventu ally , says Keys , one of two things happens .', 'A clot forms at the s ite , seals off the flow of blood to the heart and provokes a heart att ack .', "Or (more commonly , thinks Keys) the deposits themselves get so big that they choke off the artery's flow to the point that an infar ct occurs : the heart muscle is suffocated , cells supplied by the arte ry die , and the heart is permanently , perhaps fatally injured .", 'Fa ts & coronaries .', "Ordinarily , the human liver synthesizes only enou gh cholesterol to satisfy the body's needs -- for transportation of fat s and for production of bile .", 'Even eggs and other cholesterol-rich foods , eaten in normal amounts , says Dr. Keys , do not materially aff ect the amount of cholesterol in the blood .', 'But fatty foods do .', 'During World War 2 , , doctors in The Netherlands and Scandinavia note d a curious fact : despite the stresses of Nazi occupation , the death rate from coronary artery disease was slowly dropping .', 'Not until lo ng after the war -- 1950 , in fact -- did they get a hint of the reason .', "That year , Sweden's Haqvin Malmros showed that the sinking death rate neatly coincided with increasingly severe restrictions on fatty fo ods .", "That same year the University of California's Dr. Laurance Kin sell , timing oxidation rates of blood fats , stumbled onto the discove ry that many vegetable fats cause blood cholesterol levels to drop radi cally , while animal fats cause them to rise .", 'Here Keys and others , such as Dr. A. E. Ahrens of the Rockefeller Institute , took over to demonstrate the chemical difference between vegetable and animal fats - - and even between different varieties of each .', 'All natural food fa ts fall into one of three categories -- saturated , mono-unsaturated an d poly-unsaturated .', 'The degree of saturation depends on the number of hydrogen atoms on the fat molecule .', 'Saturated fats can accommoda te no more hydrogens .', 'Mono-unsaturated fats have room for two more hydrogens on each molecule , and the poly-unsaturated fat molecule has room for at least four hydrogens .', 'The three fats have similar calor ic values (about 265 calories per oz.)', ' , but each exerts a radical ly different influence on blood cholesterol .']

In [28]: #POS tagging

```
str1 = str
```

```
tokenizedstr=nltk.word_tokenize(str1)  
print(tokenizedstr)
```

```
tagged = nltk.pos_tag(tokenizedstr)  
print(tagged)
```

```
['The', 'reading', 'public', ',', 'the', 'theatergoing', 'public', ',',  
'the', 'skindiving', 'public', ',', 'the', 'horse-playing', 'public',  
'--', 'all', 'these', 'and', 'others', 'fill', 'substantial', 'roles',  
'in', 'U.S.', 'life', ',', 'but', 'none', 'is', 'so', 'varied', ',', 'v  
ast', 'and', 'vigilant', 'as', 'the', 'eating', 'public', '.', 'The',  
'Department', 'of', 'Agriculture', 'averaged', 'out', 'U.S.', 'food',  
'consumption', 'last', 'year', 'at', '1,488', 'lbs', '.', 'per', 'perso  
n', ',', 'which', ',', 'allowing', 'for', 'the', '17', 'million', 'Amer  
icans', 'that', 'John', 'Kennedy', 'said', 'go', 'to', 'bed', 'hungry',  
'every', 'night', ',', 'means', 'that', 'certain', 'gluttons', 'on', 't  
he', 'upper', 'end', 'must', 'somehow', 'down', '8', 'lbs', '.', 'or',  
'more', 'a', 'day', '.', 'That', 'mother', 'hen', 'of', 'the', 'weight-  
height', 'tables', ',', 'the', 'Metropolitan', 'Life', 'Insurance', 'C  
o.', ',', 'clucks', 'that', '48', 'million', 'Americans', 'are', 'overw  
eight', '.', 'Through', 'previous', 'centuries', ',', 'eating', 'change  
d', 'by', 'nearly', 'imperceptible', 'degrees', ',', 'and', 'mostly',  
'toward', 'just', 'getting', 'enough', '.', 'Now', 'big', 'forces', 'bu  
ffet', 'food', '.', 'For', 'the', 'first', 'time', 'in', 'history',  
',', 'the', 'U.S.', 'has', 'produced', 'a', 'society', 'in', 'which',  
'less', 'than', 'one-tenth', 'of', 'the', 'people', 'turn', 'out', 's  
o', 'much', 'food', 'that', 'the', 'Government', "'s", 'most', 'embarra  
ssing', 'problem', 'is', 'how', 'to', 'dispose', 'inconspicuously', 'o  
f', '100', 'million', 'tons', 'of', 'surplus', 'farm', 'produce', '.',  
'In', 'this', 'same', 'society', ',', 'the', 'plain', 'citizen', 'can',  
'with', 'an', 'average', 'of', 'only', 'one-fifth', 'his', 'income', 'b  
uy', 'more', 'calories', 'than', 'he', 'can', 'consume', '.', 'Refriger  
ation', ',', 'automated', 'processing', 'and', 'packaging', 'conspire',  
'to', 'defy', 'season', 'and', 'banish', 'spoilage', '.', 'And', 'in',  
'the', 'wake', 'of', 'the', 'new', 'affluence', 'and', 'the', 'new', 't  
echniques', 'of', 'processing', 'comes', 'a', 'new', 'American', 'inter  
est', 'in', 'how', 'what', 'people', 'eat', 'affects', 'their', 'healt  
h', '.', 'To', 'eat', 'is', 'human', ',', 'the', 'nation', 'is', 'learn
```

ing', 'to', 'think', ',', 'to', 'survive', 'divine', '.', 'Fads', ',',
'facts', 'Not', 'all', 'the', 'concern', 'for', 'health', 'is', 'well',
'directed', '.', 'From', 'the', 'fusty', 'panaceas', 'of', 'spinach',
,, 'eggs', 'and', 'prunes', ',', 'the', 'U.S.', 'has', 'progressed',
'to', 'curds', ',', 'concentrates', 'and', 'capsules', '.', 'Each', 'ye
ar', ',', 'reports', 'the', 'American', 'Medical', 'Association', ',',
'ten', 'million', 'Americans', 'spend', '\$', '900', 'million', 'on', 'v
itamins', ',', 'tonics', 'and', 'other', 'food', 'supplements', '.', 'A
t', 'juice', 'bars', 'in', 'Los', 'Angeles', '"', '35', '`', 'health',
'`, 'stores', ',', 'a', 'new', 'sensation', 'is', 'a', 'pink', ',',
'high-protein', 'cocktail', ',', 'concocted', 'of', 'dried', 'eggs',
,, 'powdered', 'milk', 'and', 'cherry-flavored', 'No-Cal', ',', 'whic
h', 'sells', 'for', '59-cents', 'per', '8-oz', '.', 'glass', '.', 'Groce
ry', 'stores', 'sell', 'dozens', 'of', 'foods', 'that', 'boast', 'of',
'having', 'almost', 'no', 'food', 'value', 'at', 'all', '.', 'But',
'a', 'big', 'part', 'of', 'the', 'public', 'wants', 'to', 'know', 'fact
s', 'about', 'diet', 'and', 'health', ',', 'and', 'a', 'big', 'group',
'of', 'U.S.', 'scientists', 'wants', 'to', 'supply', 'them', '.', 'Th
e', 'man', 'most', 'firmly', 'at', 'grips', 'with', 'the', 'problem',
'is', 'the', 'University', 'of', 'Minnesota', "'s", 'Physiologist', 'An
cel', 'Keys', ',', '57', ',', 'inventor', 'of', 'the', 'wartime', 'K',
'(', 'for', 'Keys', ')', 'ration', 'and', 'author', 'of', 'last', 'yea
r', "'s", 'bestselling', 'Eat', 'Well', 'And', 'Stay', 'Well', '.', 'Fr
om', 'his', 'birch-paneled', 'office', 'in', 'the', 'Laboratory', 'of',
'Physiological', 'Hygiene', ',', 'under', 'the', 'university', "'s", 'f
ootball', 'stadium', 'in', 'Minneapolis', '(', '``', 'We', 'get', 'a',
'rumble', 'on', 'every', 'touchdown', '``', ')', ',', 'blocky', ',', 'g
rey-haired', 'Dr.', 'Keys', 'directs', 'an', 'ambitious', ',', '\$', '20
0,000-a-year', 'experiment', 'on', 'diet', ',', 'which', 'spans', 'thre
e', 'continents', 'and', 'seven', 'nations', 'and', 'is', 'still', 'gro
wing', '.', 'Pursuing', 'it', ',', 'he', 'has', 'logged', '500,000', 'm
iles', ',', 'suffered', 'indescribable', 'digestive', 'indignities',
,, 'and', 'meticulously', 'collected', 'physiological', 'data', 'on',
'the', 'health', 'and', 'eating', 'habits', 'of', '10,000', 'individual
s', ',', 'from', 'Bantu', 'tribesmen', 'to', 'Italian', 'contadini',
, '.', 'He', 'has', 'measured', 'the', 'skinfolds', '(', 'the', 'fleshy',
'areas', 'under', 'the', 'shoulder', 'blades', ')', 'of', 'Neapolitan',
'firemen', ',', 'studied', 'the', 'metabolism', 'of', 'Finnish', 'woodc
utters', ',', 'analyzed', 'the', '``', 'mealie-meal', '``', 'eaten', 'b

y', 'Capetown', 'coloreds', ',', 'and', 'experimented', 'on', 'Minneapolis', 'businessmen', '.', 'And', 'fats', '.', 'Keys', "'s", 'findings', ',', 'though', 'far', 'from', 'complete', ',', 'are', 'likely', 'to', 'smash', 'many', 'an', 'eating', 'cliche', '.', 'Vitamins', ',', 'egg s', 'and', 'milk', 'begin', 'to', 'look', 'like', 'foods', 'to', 'hold', 'down', 'on', '(', 'though', 'mothers', '"', 'milk', 'is', 'still', 'the', 'ticket', ')', '.', 'Readings', 'of', 'the', 'number', 'of', 'milligrams', 'of', 'cholesterol', 'in', 'the', 'blood', ',', 'which', 'seem', 'to', 'have', 'value', 'in', 'predicting', 'heart', 'attacks', ',', 'are', 'becoming', 'as', 'routine', 'as', 'the', 'electrocardiogram', ',', 'which', 'can', 'show', 'that', 'the', 'heart', 'has', 'suffered', 'a', 'symptomatic', 'attack', '.', 'Already', 'many', 'an', 'American', 'knows', 'his', 'count', ',', 'and', 'rejoices', 'or', 'worries', 'depending', 'on', 'whether', 'it', 'is', 'nearer', '180', '(', 'safe', ')', 'or', '250', '(', 'dangerous', ')', '.', 'Out', 'of', 'cholesterol', 'come', 'Keys', "'s", 'main', 'messages', 'so', 'far', ':', 'Americans', 'eat', 'too', 'much', '.', 'The', 'typical', 'U.S.', 'daily', 'menu', ',', 'says', 'Dr.', 'Keys', ',', 'contains', '3,000', 'calories', ',', 'should', 'contain', '2,300', '.', 'And', 'extra', 'weight', 'increases', 'the', 'risk', 'of', 'cancer', ',', 'diabetes', ',', 'artery', 'disease', 'and', 'heart', 'attack', '.', 'Americans', 'eat', 'too', 'much', 'fat', '.', 'With', 'meat', ',', 'milk', ',', 'butter', 'and', 'ice', 'cream', ',', 'the', 'calorie-heavy', 'U.S.', 'diet', 'is', '40', '%', 'fat', ',', 'and', 'most', 'of', 'that', 'is', 'saturated', 'fat', '--', 'the', 'insidious', 'kind', ',', 'says', 'Dr.', 'Keys', ',', 'that', 'increases', 'blood', 'cholesterol', ',', 'damages', 'arteries', ',', 'and', 'leads', 'to', 'coronary', 'disease', '.', 'Obesity', ':', 'a', 'malnutrition', '.', 'Throughout', 'much', 'of', 'the', 'world', ',', 'food', 'is', 'still', 'so', 'scarce', 'that', 'half', 'of', 'the', 'earth', "'s", 'population', 'has', 'trouble', 'getting', 'the', '1,600', 'calories', 'a', 'day', 'necessary', 'to', 'sustain', 'life', '.', 'The', 'deficiency', 'diseases', '--', 'scurvy', ',', 'tropical', 'sprue', ',', 'pellagra', '--', 'run', 'rampant', '.', 'In', 'West', 'Africa', ',', 'for', 'example', ',', 'where', 'meat', 'is', 'a', 'luxury', 'and', 'babies', 'must', 'be', 'weaned', 'early', 'to', 'make', 'room', 'at', 'the', 'breast', 'for', 'later', 'arrivals', ',', 'a', 'childhood', 'menace', 'is', 'kwashiorkor', ',', 'or', '``', 'Red', 'Johnny', '``', ',', 'a', 'growth-stunting', 'protein', 'deficiency', '(', 'signs', ':', 'reddish', 'hair', ',', 'bloated', 'belly', ')', 'that', 'k

ills', 'more', 'than', 'half', 'its', 'victims', ',', 'leaves', 'the',
'rest', 'prey', 'for', 'parasites', 'and', 'lingering', 'tropical', 'di
sease', '.', 'In', 'the', 'well-fed', 'U.S.', ',', 'deficiency', 'disea
ses', 'have', 'virtually', 'vanished', 'in', 'the', 'past', '20', 'year
s', '.', 'Today', ',', 'as', 'Harrison', "'s", 'Principles', 'Of', 'Int
ernal', 'Medicine', ',', 'a', 'standard', 'internist', "'s", 'text',
',', 'puts', 'it', ',', '``', 'The', 'most', 'common', 'form', 'of', 'm
alnutrition', 'is', 'caloric', 'excess', 'or', 'obesity', '``', '.', 'P
uritan', 'New', 'England', 'regarded', 'obesity', 'as', 'a', 'flagran
t', 'symbol', 'of', 'intemperance', ',', 'and', 'thus', 'a', 'sin',
',', 'Says', 'Keys', ':', '``', 'Maybe', 'if', 'the', 'idea', 'got', 'a
round', 'again', 'that', 'obesity', 'is', 'immoral', ',', 'the', 'fat',
'man', 'would', 'start', 'to', 'think', '``', '.', 'Morals', 'aside',
',', 'the', 'fat', 'man', 'has', 'plenty', 'to', 'worry', 'about', '--
', 'over', 'and', 'above', 'the', 'fact', 'that', 'no', 'one', 'any',
'longer', 'loves', 'him', '.', 'The', 'simple', 'mechanical', 'strain',
'of', 'overweight', ',', 'says', 'New', 'York', "'s", 'Dr.', 'Norman',
'Jolliffe', ',', 'can', 'overburden', 'and', 'damage', 'the', 'heart',
'``', 'for', 'much', 'the', 'same', 'reason', 'that', 'a', 'Chevrolet',
'engine', 'in', 'a', 'Cadillac', 'body', 'would', 'wear', 'out', 'soone
r', 'than', 'if', 'it', 'were', 'in', 'a', 'body', 'for', 'which', 'i
t', 'was', 'built', '``', '.', 'The', 'fat', 'man', 'has', 'trouble',
'buying', 'life', 'insurance', 'or', 'has', 'to', 'pay', 'higher', 'pre
miums', '.', 'He', 'has', '--', 'for', 'unclear', 'reasons', '--', 'a',
'25', '%', 'higher', 'death', 'rate', 'from', 'cancer', '.', 'He', 'i
s', 'particularly', 'vulnerable', 'to', 'diabetes', '.', 'He', 'may',
'find', 'even', 'moderate', 'physical', 'exertion', 'uncomfortable',
',', 'because', 'excess', 'body', 'fat', 'hampers', 'his', 'breathing',
'and', 'restricts', 'his', 'muscular', 'movement', '.', 'Physiologicall
y', ',', 'people', 'overeate', 'because', 'what', 'Dr.', 'Jolliffe', 'ca
lls', 'the', '``', 'appestat', '``', 'is', 'set', 'too', 'high', '.',
'The', 'appestat', ',', 'which', 'adjusts', 'the', 'appetite', 'to', 'k
eep', 'weight', 'constant', ',', 'is', 'located', ',', 'says', 'Jolliff
e', ',', 'in', 'the', 'hypothalamus', '--', 'near', 'the', 'body',
"'s", 'temperature', ',', 'sleep', 'and', 'water-balance', 'controls',
',', 'Physical', 'exercise', 'raises', 'the', 'appestat', '.', 'So', 'd
oes', 'cold', 'weather', '.', 'In', 'moderate', 'doses', ',', 'alcohol',
'narcotizes', 'the', 'appestat', 'and', 'enhances', 'appetite',
'(', 'the', 'original', 'reason', 'for', 'the', 'cocktail', ')', ';;',

;', 'but', 'because', 'liquor', 'has', 'a', 'high', 'caloric', 'value', '--', '100', 'calories', 'per', 'oz', '.', '--', 'the', 'heavy', 'drinker', 'is', 'seldom', 'hungry', '.', 'In', 'rare', 'cases', ',', 'diseases', 'such', 'as', 'encephalitis', 'or', 'a', 'pituitary', 'tumor', 'may', 'damage', 'the', 'appetate', 'permanently', ',', 'destroying', 'nearly', 'all', 'sense', 'of', 'satiety', '.', 'Food', 'for', 'frustration', '.', 'Far', 'more', 'frequently', ',', 'overeating', 'is', 'the', 'result', 'of', 'a', 'psychological', 'compulsion', '.', 'It', 'may', 'be', 'fostered', 'by', 'frustration', ',', 'depression', ',', 'insecurity', '--', 'or', ',', 'in', 'children', ',', 'simply', 'by', 'the', 'desire', 'to', 'stop', 'an', 'anxious', 'mother', "'s", 'nagging', '.', 'Some', 'families', 'place', 'undue', 'emphasis', 'on', 'food', ':', 'conversations', 'center', 'on', 'it', ',', 'and', 'rich', 'delicacies', 'are', 'offered', 'as', 'rewards', ',', 'withheld', 'as', 'punishment', '.', 'The', 'result', 'says', 'Jolliffe', ':', '``The', 'child', 'gains', 'the', 'feeling', 'that', 'food', 'is', 'the', 'purpose', 'of', 'life', '``', '.', 'Food', 'may', 'act', 'as', 'a', 'sedative', ',', 'giving', 'temporary', 'emotional', 'solace', ',', 'just', 'as', ',', 'for', 'some', 'people', ',', 'alcohol', 'does', '.', 'Report', 'Dr.', 'Keys', ':', '``A', 'fairly', 'common', 'experience', 'for', 'us', 'is', 'the', 'wife', 'who', 'finds', 'her', 'husband', 'staying', 'out', 'more', 'and', 'more', '.', 'He', 'may', 'be', 'interested', 'in', 'another', 'woman', ',', 'or', 'just', 'like', 'being', 'with', 'the', 'boys', '.', 'So', 'she', 'fishes', 'around', 'in', 'the', 'cupboard', 'and', 'hauls', 'out', 'a', 'chocolate', 'cake', '.', 'It', "'s", 'a', 'matter', 'of', 'boredom', ',', 'and', 'the', 'subconscious', 'feeling', 'that', 'she', 'is', 'entitled', 'to', 'something', ',', 'because', 'she', "'s", 'being', 'deprived', 'of', 'something', 'else', '``', '.', 'For', 'the', 'army', 'of', 'compulsive', 'eaters', '--', 'from', 'the', 'nibblers', 'and', 'the', 'gobblers', 'to', 'the', 'downright', 'gluttons', '--', 'reducing', 'is', 'a', 'war', 'with', 'the', 'will', 'that', 'is', 'rarely', 'won', '.', 'Physiologist', 'Keys', 'flatly', 'dismisses', 'such', 'appetite', 'depressants', 'as', 'the', 'amphetamines', '(', 'Benzedrine', ',', 'Dexedrine', ')', 'as', 'dangerous', '``', 'crutches', 'for', 'a', 'weak', 'will', '``', '.', 'Keys', 'has', 'no', 'such', 'objections', 'to', 'Metrecal', ',', 'Quaker', 'Oats', "'s", 'Quota', 'and', 'other', '900-calorie', 'milk', 'formulas', 'that', 'are', 'currently', 'winning', 'favor', 'from', 'dieters', '.', '``', 'Metrecal', 'is', 'a', 'pretty', 'complete', 'food', '``', ',', 'h

e', 'says', '.', '``', 'It', 'contains', 'large', 'amounts', 'of', 'protein', ',', 'vitamins', 'and', 'minerals', '.', 'In', 'the', 'quantity', 'of', '900', 'calories', 'a', 'day', ',', 'anyone', 'will', 'lose', 'weight', 'on', 'it', '--', '20', ',', '30', 'or', '40', 'lbs.', '``', '.', 'But', 'Keys', 'worries', 'that', 'the', 'Metrecal', 'drinker', 'will', 'never', 'make', 'either', 'the', 'psychological', 'or', 'physiological', 'adjustment', 'to', 'the', 'idea', 'of', 'eating', 'smaller', 'portions', 'of', 'food', '.', 'That', 'remarkable', 'cholesterol', '.', 'Despite', 'his', 'personal', 'distaste', 'for', 'obesity', '(', '``', 'disgusting', '``', ')', ',', 'Dr.', 'Keys', 'has', 'only', 'an', 'incidental', 'interest', 'in', 'how', 'much', 'Americans', 'eat', '.', 'What', 'concerns', 'him', 'much', 'more', 'is', 'the', 'relationship', 'of', 'diet', 'to', 'the', 'nation', "'s", 'No', '.', '1', 'killer', ':', 'coronary', 'artery', 'disease', ',', 'which', 'accounts', 'for', 'more', 'than', 'half', 'of', 'all', 'heart', 'fatalities', 'and', 'kills', '500,000', 'Americans', 'a', 'year', '--', 'twice', 'the', 'toll', 'from', 'all', 'varieties', 'of', 'cancer', ',', 'five', 'times', 'the', 'deaths', 'from', 'automobile', 'accidents', '.', 'Cholesterol', ',', 'the', 'cornerstone', 'of', 'Dr.', 'Keys', "'s", 'theory', ',', 'is', 'a', 'mysterious', 'yellowish', ',', 'waxy', 'substance', ',', 'chemically', 'a', 'crystalline', 'alcohol', '.', 'Scientists', 'assume', 'that', 'cholesterol', '(', 'from', 'the', 'Greek', 'chole', ',', 'meaning', 'bile', ',', 'and', 'sterios', ',', 'meaning', 'solid', ')', 'is', 'somehow', 'necessary', 'for', 'the', 'formation', 'of', 'brain', 'cells', ',', 'since', 'it', 'accounts', 'for', 'about', '2', '%', 'of', 'the', 'brain', "'s", 'total', 'solid', 'weight', '.', 'They', 'know', 'it', 'is', 'the', 'chief', 'ingredient', 'in', 'gallstones', '.', 'They', 'suspect', 'it', 'plays', 'a', 'role', 'in', 'the', 'production', 'of', 'adrenal', 'hormones', ',', 'and', 'they', 'believe', 'it', 'is', 'essential', 'to', 'the', 'transport', 'of', 'fats', 'throughout', 'the', 'circulatory', 'system', '.', 'But', 'they', 'can', 'not', 'fully', 'explain', 'the', 'process', 'of', 'its', 'manufacture', 'by', 'the', 'human', 'liver', '.', 'Although', 'the', 'fatty', 'protein', 'molecules', ',', 'carried', 'in', 'the', 'blood', 'and', 'partly', 'composed', 'of', 'cholesterol', ',', 'are', 'water', 'soluble', ',', 'cholesterol', 'itself', 'is', 'insoluble', ',', 'and', 'can', 'not', 'be', 'destroyed', 'by', 'the', 'body', '.', '``', 'A', 'remarkable', 'substance', '``', ',', 'says', 'Dr.', 'Keys', ',', '``', 'quite', 'apart', 'from', 'its', 'tendency', 'to', 'be', 'deposited', 'in', 'the', 'walls',

'of', 'arteries', '``', '``', 'When', 'thus', 'deposited', '``', 'Keys', 'says', 'that', 'cholesterol', 'is', 'mainly', 'responsible', 'for', 'the', 'arterial', 'blockages', 'that', 'culminate', 'in', 'heart', 'attacks', '``', 'Explains', 'Keys', ':', 'As', 'the', 'fatty', 'protein', 'molecules', 'travel', 'in', 'the', 'bloodstream', '``', 'they', 'are', 'deposited', 'in', 'the', 'intima', '``', 'or', 'inner', 'wall', 'of', 'a', 'coronary', 'artery', '``', 'The', 'proteins', 'and', 'fats', 'are', 'burned', 'off', '``', 'and', 'the', 'cholesterol', 'is', 'left', 'behind', '``', 'As', 'cholesterol', 'piles', 'up', '``', 'it', 'narrows', '``', 'irritates', 'and', 'damages', 'the', 'artery', '``', 'encouraging', 'formation', 'of', 'calcium', 'deposits', 'and', 'slowing', 'circulation', '``', 'Eventually', '``', 'says', 'Keys', '``', 'one', 'of', 'two', 'things', 'happens', '``', 'A', 'clot', 'forms', 'at', 'the', 'site', '``', 'seals', 'off', 'the', 'flow', 'of', 'blood', 'to', 'the', 'heart', 'and', 'provokes', 'a', 'heart', 'attack', '``', 'Or', '``', 'more', 'commonly', '``', 'thinks', 'Keys', '``', 'the', 'deposits', 'themselves', 'get', 'so', 'big', 'that', 'they', 'choke', 'off', 'the', 'artery', '``', 's', 'flow', 'to', 'the', 'point', 'that', 'an', 'infarct', 'occurs', ':', 'the', 'heart', 'muscle', 'is', 'suffocated', '``', 'cells', 'supplied', 'by', 'the', 'artery', 'die', '``', 'and', 'the', 'heart', 'is', 'permanently', '``', 'perhaps', 'fatally', 'injured', '``', 'Fats', '&', 'coronaries', '``', 'Ordinarily', '``', 'the', 'human', 'liver', 'synthesizes', 'only', 'enough', 'cholesterol', 'to', 'satisfy', 'the', 'body', '``', 's', 'needs', '--', 'for', 'transportation', 'of', 'fats', 'and', 'for', 'production', 'of', 'bile', '``', 'Even', 'eggs', 'and', 'other', 'cholesterol-rich', 'foods', '``', 'eaten', 'in', 'normal', 'amounts', '``', 'says', 'Dr.', 'Keys', '``', 'do', 'not', 'materially', 'affect', 'the', 'amount', 'of', 'cholesterol', 'in', 'the', 'blood', '``', 'But', 'fatty', 'foods', 'do', '``', 'During', 'World', 'War', '2', '``', 'doctors', 'in', 'The', 'Netherlands', 'and', 'Scandinavia', 'noted', 'a', 'curious', 'fact', ':', 'despite', 'the', 'stresses', 'of', 'Nazi', 'occupation', '``', 'the', 'death', 'rate', 'from', 'coronary', 'artery', 'disease', 'was', 'slowly', 'dropping', '``', 'Not', 'until', 'long', 'after', 'the', 'war', '--', '1950', '``', 'in', 'fact', '--', 'did', 'they', 'get', 'a', 'hint', 'of', 'the', 'reason', '``', 'That', 'year', '``', 'Sweden', '``', 's', 'Hagvin', 'Malmros', 'showed', 'that', 'the', 'sinking', 'death', 'rate', 'neatly', 'coincided', 'with', 'increasingly', 'severe', 'restrictions', 'on', 'fatty', 'foods', '``', 'That', 'same', 'year', 'the', 'University', 'of', 'California', '``', 's', 'Dr.', 'Laur

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ance', 'Kinsell', ',', 'timing', 'oxidation', 'rates', 'of', 'blood',
'fats', ',', 'stumbled', 'onto', 'the', 'discovery', 'that', 'many', 'v
egetable', 'fats', 'cause', 'blood', 'cholesterol', 'levels', 'to', 'dr
op', 'radically', ',', 'while', 'animal', 'fats', 'cause', 'them', 't
o', 'rise', '.', 'Here', 'Keys', 'and', 'others', ',', 'such', 'as', 'D
r.', 'A.', 'E.', 'Ahrens', 'of', 'the', 'Rockefeller', 'Institute',
',', 'took', 'over', 'to', 'demonstrate', 'the', 'chemical', 'differenc
e', 'between', 'vegetable', 'and', 'animal', 'fats', '--', 'and', 'eve
n', 'between', 'different', 'varieties', 'of', 'each', '.', 'All', 'nat
ural', 'food', 'fats', 'fall', 'into', 'one', 'of', 'three', 'categorie
s', '--', 'saturated', ',', 'mono-unsaturated', 'and', 'poly-unsaturate
d', '.', 'The', 'degree', 'of', 'saturation', 'depends', 'on', 'the',
'number', 'of', 'hydrogen', 'atoms', 'on', 'the', 'fat', 'molecule',
',', 'Saturated', 'fats', 'can', 'accommodate', 'no', 'more', 'hydrogen
s', '.', 'Mono-unsaturated', 'fats', 'have', 'room', 'for', 'two', 'mor
e', 'hydrogens', 'on', 'each', 'molecule', ',', 'and', 'the', 'poly-uns
aturated', 'fat', 'molecule', 'has', 'room', 'for', 'at', 'least', 'fou
r', 'hydrogens', '.', 'The', 'three', 'fats', 'have', 'similar', 'calor
ic', 'values', '(', 'about', '265', 'calories', 'per', 'oz', '.', ')',
',', 'but', 'each', 'exerts', 'a', 'radically', 'different', 'influenc
e', 'on', 'blood', 'cholesterol', '.']

```

NameError

Traceback (most recent call l

ast)

<ipython-input-28-7b50aa64d22b> in **<module>**

5 print(tokenizedstr)

6

----> 7 tagged = nltk.pos_tag(tokenizestr)

8 print(tagged)

NameError: name 'tokenizestr' is not defined

In [29]: *#POS tagging*

str1 = str

tokenizedstr=nltk.word_tokenize(str1)

print(tokenizedstr)

```
tagged = nltk.pos_tag(tokenizedstr)
print(tagged)
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['The', 'reading', 'public', ',', 'the', 'theatergoing', 'public', ',', 'the', 'skindiving', 'public', ',', 'the', 'horse-playing', 'public', '--', 'all', 'these', 'and', 'others', 'fill', 'substantial', 'roles', 'in', 'U.S.', 'life', ',', 'but', 'none', 'is', 'so', 'varied', ',', 'vast', 'and', 'vigilant', 'as', 'the', 'eating', 'public', '.', 'The', 'Department', 'of', 'Agriculture', 'averaged', 'out', 'U.S.', 'food', 'consumption', 'last', 'year', 'at', '1,488', 'lbs', '.', 'per', 'person', ',', 'which', ',', 'allowing', 'for', 'the', '17', 'million', 'Americans', 'that', 'John', 'Kennedy', 'said', 'go', 'to', 'bed', 'hungry', 'every', 'night', ',', 'means', 'that', 'certain', 'gluttons', 'on', 'the', 'upper', 'end', 'must', 'somehow', 'down', '8', 'lbs', '.', 'or', 'more', 'a', 'day', '.', 'That', 'mother', 'hen', 'of', 'the', 'weight-height', 'tables', ',', 'the', 'Metropolitan', 'Life', 'Insurance', 'Company', 'clucks', 'that', '48', 'million', 'Americans', 'are', 'overweight', '.', 'Through', 'previous', 'centuries', ',', 'eating', 'changed', 'by', 'nearly', 'imperceptible', 'degrees', ',', 'and', 'mostly', 'toward', 'just', 'getting', 'enough', '.', 'Now', 'big', 'forces', 'buffet', 'food', '.', 'For', 'the', 'first', 'time', 'in', 'history', ',', 'the', 'U.S.', 'has', 'produced', 'a', 'society', 'in', 'which', 'less', 'than', 'one-tenth', 'of', 'the', 'people', 'turn', 'out', 'so', 'much', 'food', 'that', 'the', 'Government', "'s", 'most', 'embarrassing', 'problem', 'is', 'how', 'to', 'dispose', 'inconspicuously', 'of', '100', 'million', 'tons', 'of', 'surplus', 'farm', 'produce', '.', 'In', 'this', 'same', 'society', ',', 'the', 'plain', 'citizen', 'can', 'with', 'an', 'average', 'of', 'only', 'one-fifth', 'his', 'income', 'buy', 'more', 'calories', 'than', 'he', 'can', 'consume', '.', 'Refrigeration', ',', 'automated', 'processing', 'and', 'packaging', 'conspire', 'to', 'defy', 'season', 'and', 'banish', 'spoilage', '.', 'And', 'in', 'the', 'wake', 'of', 'the', 'new', 'affluence', 'and', 'the', 'new', 'techniques', 'of', 'processing', 'comes', 'a', 'new', 'American', 'interest', 'in', 'how', 'what', 'people', 'eat', 'affects', 'their', 'health', '.', 'To', 'eat', 'is', 'human', ',', 'the', 'nation', 'is', 'learning', 'to', 'think', ',', 'to', 'survive', 'divine', '.', 'Fads', ',', 'facts', 'Not', 'all', 'the', 'concern', 'for', 'health', 'is', 'well', 'directed', '.', 'From', 'the', 'fusty', 'panaceas', 'of', 'spinach', ',', 'eggs', 'and', 'prunes', ',', 'the', 'U.S.', 'has', 'progressed',
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'to', 'curds', ',', 'concentrates', 'and', 'capsules', '.', 'Each', 'year', ',', 'reports', 'the', 'American', 'Medical', 'Association', ',', 'ten', 'million', 'Americans', 'spend', '\$', '900', 'million', 'on', 'vitamins', ',', 'tonics', 'and', 'other', 'food', 'supplements', '.', 'At', 'juice', 'bars', 'in', 'Los', 'Angeles', '"', '35', "'", 'health', "'", 'stores', ',', 'a', 'new', 'sensation', 'is', 'a', 'pink', ',', 'high-protein', 'cocktail', ',', 'concocted', 'of', 'dried', 'eggs', ',', 'powdered', 'milk', 'and', 'cherry-flavored', 'No-Cal', ',', 'which', 'sells', 'for', '59-cents', 'per', '8-oz', '.', 'glass', '.', 'Grocery', 'stores', 'sell', 'dozens', 'of', 'foods', 'that', 'boast', 'of', 'having', 'almost', 'no', 'food', 'value', 'at', 'all', '.', 'But', 'a', 'big', 'part', 'of', 'the', 'public', 'wants', 'to', 'know', 'facts', 'about', 'diet', 'and', 'health', ',', 'and', 'a', 'big', 'group', 'of', 'U.S.', 'scientists', 'wants', 'to', 'supply', 'them', '.', 'The', 'man', 'most', 'firmly', 'at', 'grips', 'with', 'the', 'problem', 'is', 'the', 'University', 'of', 'Minnesota', "'s", 'Physiologist', 'Ancel', 'Keys', ',', '57', ',', 'inventor', 'of', 'the', 'wartime', 'K', '(', 'for', 'Keys', ')', 'ration', 'and', 'author', 'of', 'last', 'year', "'s", 'bestselling', 'Eat', 'Well', 'And', 'Stay', 'Well', '.', 'From', 'his', 'birch-paneled', 'office', 'in', 'the', 'Laboratory', 'of', 'Physiological', 'Hygiene', ',', 'under', 'the', 'university', "'s", 'football', 'stadium', 'in', 'Minneapolis', '(', "'", 'We', 'get', 'a', 'rumble', 'on', 'every', 'touchdown', "'", ')', ',', 'blocky', ',', 'grey-haired', 'Dr.', 'Keys', 'directs', 'an', 'ambitious', ',', '\$', '200,000-a-year', 'experiment', 'on', 'diet', ',', 'which', 'spans', 'three', 'continents', 'and', 'seven', 'nations', 'and', 'is', 'still', 'growing', '.', 'Pursuing', 'it', ',', 'he', 'has', 'logged', '500,000', 'miles', ',', 'suffered', 'indescribable', 'digestive', 'indignities', ',', 'and', 'meticulously', 'collected', 'physiological', 'data', 'on', 'the', 'health', 'and', 'eating', 'habits', 'of', '10,000', 'individuals', ',', 'from', 'Bantu', 'tribesmen', 'to', 'Italian', 'contadini', '.', 'He', 'has', 'measured', 'the', 'skinfolds', '(', 'the', 'fleshy', 'areas', 'under', 'the', 'shoulder', 'blades', ')', 'of', 'Neapolitan', 'firemen', ',', 'studied', 'the', 'metabolism', 'of', 'Finnish', 'woodcutters', ',', 'analyzed', 'the', "'", 'mealie-meal', "'", 'eaten', 'by', 'Capetown', 'coloreds', ',', 'and', 'experimented', 'on', 'Minneapolis', 'businessmen', '.', 'And', 'fats', '.', 'Keys', "'s", 'findings', ',', 'though', 'far', 'from', 'complete', ',', 'are', 'likely', 'to', 'smash', 'many', 'an', 'eating', 'cliche', '.', 'Vitamins', ',', 'egg

s', 'and', 'milk', 'begin', 'to', 'look', 'like', 'foods', 'to', 'hold', 'down', 'on', '(', 'though', 'mothers', '"', 'milk', 'is', 'still', 'the', 'ticket', ')', '.', 'Readings', 'of', 'the', 'number', 'of', 'milligrams', 'of', 'cholesterol', 'in', 'the', 'blood', ',', 'which', 'seem', 'to', 'have', 'value', 'in', 'predicting', 'heart', 'attacks', ',', 'are', 'becoming', 'as', 'routine', 'as', 'the', 'electrocardiogram', ',', 'which', 'can', 'show', 'that', 'the', 'heart', 'has', 'suffered', 'a', 'symptomatic', 'attack', '.', 'Already', 'many', 'an', 'American', 'knows', 'his', 'count', ',', 'and', 'rejoices', 'or', 'worries', 'depending', 'on', 'whether', 'it', 'is', 'nearer', '180', '(', 'safe', ')', 'or', '250', '(', 'dangerous', ')', '.', 'Out', 'of', 'cholesterol', 'come', 'Keys', "'s", 'main', 'messages', 'so', 'far', ':', 'Americans', 'eat', 'too', 'much', '.', 'The', 'typical', 'U.S.', 'daily', 'menu', ',', 'says', 'Dr.', 'Keys', ',', 'contains', '3,000', 'calories', ',', 'should', 'contain', '2,300', '.', 'And', 'extra', 'weight', 'increases', 'the', 'risk', 'of', 'cancer', ',', 'diabetes', ',', 'artery', 'disease', 'and', 'heart', 'attack', '.', 'Americans', 'eat', 'too', 'much', 'fat', '.', 'With', 'meat', ',', 'milk', ',', 'butter', 'and', 'ice', 'cream', ',', 'the', 'calorie-heavy', 'U.S.', 'diet', 'is', '40', '%', 'fat', ',', 'and', 'most', 'of', 'that', 'is', 'saturated', 'fat', '--', 'the', 'insidious', 'kind', ',', 'says', 'Dr.', 'Keys', ',', 'that', 'increases', 'blood', 'cholesterol', ',', 'damages', 'arteries', ',', 'and', 'leads', 'to', 'coronary', 'disease', '.', 'Obesity', ':', 'a', 'malnutrition', '.', 'Throughout', 'much', 'of', 'the', 'world', ',', 'food', 'is', 'still', 'so', 'scarce', 'that', 'half', 'of', 'the', 'earth', "'s", 'population', 'has', 'trouble', 'getting', 'the', '1,600', 'calories', 'a', 'day', 'necessary', 'to', 'sustain', 'life', '.', 'The', 'deficiency', 'diseases', '--', 'scurvy', ',', 'tropical', 'sprue', ',', 'pellagra', '--', 'run', 'rampant', '.', 'In', 'West', 'Africa', ',', 'for', 'example', ',', 'where', 'meat', 'is', 'a', 'luxury', 'and', 'babies', 'must', 'be', 'weaned', 'early', 'to', 'make', 'room', 'at', 'the', 'breast', 'for', 'later', 'arrivals', ',', 'a', 'childhood', 'menace', 'is', 'kwashiorkor', ',', 'or', '``', 'Red', 'Johnny', '``', 'a', 'growth-stunting', 'protein', 'deficiency', '(', 'signs', ':', 'reddish', 'hair', ',', 'bloated', 'belly', ')', 'that', 'kills', 'more', 'than', 'half', 'its', 'victims', ',', 'leaves', 'the', 'rest', 'prey', 'for', 'parasites', 'and', 'lingering', 'tropical', 'disease', '.', 'In', 'the', 'well-fed', 'U.S.', ',', 'deficiency', 'diseases', 'have', 'virtually', 'vanished', 'in', 'the', 'past', '20', 'year

s', '.', 'Today', ',', 'as', 'Harrison', "'s", 'Principles', 'Of', 'Internal', 'Medicine', ',', 'a', 'standard', 'internist', "'s", 'text', ',', 'puts', 'it', ',', 'The', 'most', 'common', 'form', 'of', 'malnutrition', 'is', 'caloric', 'excess', 'or', 'obesity', '...', 'Puritan', 'New', 'England', 'regarded', 'obesity', 'as', 'a', 'flagrant', 'symbol', 'of', 'intemperance', ',', 'and', 'thus', 'a', 'sin', '...', 'Says', 'Keys', ':', 'Maybe', 'if', 'the', 'idea', 'got', 'a round', 'again', 'that', 'obesity', 'is', 'immoral', ',', 'the', 'fat', 'man', 'would', 'start', 'to', 'think', '...', 'Morals', 'aside', ',', 'the', 'fat', 'man', 'has', 'plenty', 'to', 'worry', 'about', '--', 'over', 'and', 'above', 'the', 'fact', 'that', 'no', 'one', 'any', 'longer', 'loves', 'him', '...', 'The', 'simple', 'mechanical', 'strain', 'of', 'overweight', ',', 'says', 'New', 'York', "'s", 'Dr.', 'Norman', 'Jolliffe', ',', 'can', 'overburden', 'and', 'damage', 'the', 'heart', '...', 'for', 'much', 'the', 'same', 'reason', 'that', 'a', 'Chevrolet', 'engine', 'in', 'a', 'Cadillac', 'body', 'would', 'wear', 'out', 'sooner', 'than', 'if', 'it', 'were', 'in', 'a', 'body', 'for', 'which', 'it', 'was', 'built', '...', 'The', 'fat', 'man', 'has', 'trouble', 'buying', 'life', 'insurance', 'or', 'has', 'to', 'pay', 'higher', 'premiums', '...', 'He', 'has', '--', 'for', 'unclear', 'reasons', '--', 'a', '25', '%', 'higher', 'death', 'rate', 'from', 'cancer', '...', 'He', 'is', 'particularly', 'vulnerable', 'to', 'diabetes', '...', 'He', 'may', 'find', 'even', 'moderate', 'physical', 'exertion', 'uncomfortable', ',', 'because', 'excess', 'body', 'fat', 'hampers', 'his', 'breathing', 'and', 'restricts', 'his', 'muscular', 'movement', '...', 'Physiologically', ',', 'people', 'overeat', 'because', 'what', 'Dr.', 'Jolliffe', 'calls', 'the', '...', 'appetate', '...', 'is', 'set', 'too', 'high', '...', 'The', 'appetate', ',', 'which', 'adjusts', 'the', 'appetite', 'to', 'keep', 'weight', 'constant', ',', 'is', 'located', ',', 'says', 'Jolliffe', ',', 'in', 'the', 'hypothalamus', '--', 'near', 'the', 'body', "'s", 'temperature', ',', 'sleep', 'and', 'water-balance', 'controls', '...', 'Physical', 'exercise', 'raises', 'the', 'appetate', '...', 'So', 'does', 'cold', 'weather', '...', 'In', 'moderate', 'doses', ',', 'alcohol', 'narcotizes', 'the', 'appetate', 'and', 'enhances', 'appetite', '(', 'the', 'original', 'reason', 'for', 'the', 'cocktail', ')', '...', 'but', 'because', 'liquor', 'has', 'a', 'high', 'caloric', 'value', '--', '100', 'calories', 'per', 'oz', '...', '--', 'the', 'heavy', 'drinker', 'is', 'seldom', 'hungry', '...', 'In', 'rare', 'cases', ',', 'diseases', 'such', 'as', 'encephalitis', 'or', 'a', 'pituitary', 'tumor',

'may', 'damage', 'the', 'appetate', 'permanently', ',', 'destroying',
'nearly', 'all', 'sense', 'of', 'satiety', '.', 'Food', 'for', 'frustra
tion', '.', 'Far', 'more', 'frequently', ',', 'overeating', 'is', 'th
e', 'result', 'of', 'a', 'psychological', 'compulsion', '.', 'It', 'ma
y', 'be', 'fostered', 'by', 'frustration', ',', 'depression', ',', 'ins
ecurity', '--', 'or', ',', 'in', 'children', ',', 'simply', 'by', 'th
e', 'desire', 'to', 'stop', 'an', 'anxious', 'mother', "'s", 'nagging',
'.', 'Some', 'families', 'place', 'undue', 'emphasis', 'on', 'food',
'.', 'conversations', 'center', 'on', 'it', ',', 'and', 'rich', 'delica
cies', 'are', 'offered', 'as', 'rewards', ',', 'withheld', 'as', 'punis
hment', '.', 'The', 'result', 'says', 'Jolliffe', ':', '``', 'The', 'ch
ild', 'gains', 'the', 'feeling', 'that', 'food', 'is', 'the', 'purpos
e', 'of', 'life', '``', '.', 'Food', 'may', 'act', 'as', 'a', 'sedativ
e', ',', 'giving', 'temporary', 'emotional', 'solace', ',', 'just', 'a
s', ',', 'for', 'some', 'people', ',', 'alcohol', 'does', '.', 'Report
s', 'Dr.', 'Keys', ':', '``', 'A', 'fairly', 'common', 'experience', 'f
or', 'us', 'is', 'the', 'wife', 'who', 'finds', 'her', 'husband', 'stay
ing', 'out', 'more', 'and', 'more', '.', 'He', 'may', 'be', 'intereste
d', 'in', 'another', 'woman', ',', 'or', 'just', 'like', 'being', 'wit
h', 'the', 'boys', '.', 'So', 'she', 'fishes', 'around', 'in', 'the',
'cupboard', 'and', 'hauls', 'out', 'a', 'chocolate', 'cake', '.', 'It',
's', 'a', 'matter', 'of', 'boredom', ',', 'and', 'the', 'subconsciou
s', 'feeling', 'that', 'she', 'is', 'entitled', 'to', 'something', ',',
'because', 'she', "'s", 'being', 'deprived', 'of', 'something', 'else',
'``', '.', 'For', 'the', 'army', 'of', 'compulsive', 'eaters', '--', 'f
rom', 'the', 'nibblers', 'and', 'the', 'gobblers', 'to', 'the', 'downri
ght', 'gluttons', '--', 'reducing', 'is', 'a', 'war', 'with', 'the', 'w
ill', 'that', 'is', 'rarely', 'won', '.', 'Physiologist', 'Keys', 'flat
ly', 'dismisses', 'such', 'appetite', 'depressants', 'as', 'the', 'amph
etamines', '(', 'Benzedrine', ',', 'Dexedrine', ')', 'as', 'dangerous',
'``', 'crutches', 'for', 'a', 'weak', 'will', '``', '.', 'Keys', 'has',
'no', 'such', 'objections', 'to', 'Metrecal', ',', 'Quaker', 'Oats',
's', 'Quota', 'and', 'other', '900-calorie', 'milk', 'formulas', 'tha
t', 'are', 'currently', 'winning', 'favor', 'from', 'dieters', '.', '``
'', 'Metrecal', 'is', 'a', 'pretty', 'complete', 'food', '``', ',', 'h
e', 'says', '.', '``', 'It', 'contains', 'large', 'amounts', 'of', 'pro
tein', ',', 'vitamins', 'and', 'minerals', '.', 'In', 'the', 'quantit
y', 'of', '900', 'calories', 'a', 'day', ',', 'anyone', 'will', 'lose',
'weight', 'on', 'it', '--', '20', ',', '30', 'or', '40', 'lbs.', '``',

('.', 'But', 'Keys', 'worries', 'that', 'the', 'Metrecal', 'drinker', 'will', 'never', 'make', 'either', 'the', 'psychological', 'or', 'physiological', 'adjustment', 'to', 'the', 'idea', 'of', 'eating', 'smaller', 'portions', 'of', 'food', '.', 'That', 'remarkable', 'cholesterol', '.', 'Despite', 'his', 'personal', 'distaste', 'for', 'obesity', '(', 'disgusting', ')', 'Dr.', 'Keys', 'has', 'only', 'an', 'incidental', 'interest', 'in', 'how', 'much', 'Americans', 'eat', '.', 'What', 'concerns', 'him', 'much', 'more', 'is', 'the', 'relationship', 'of', 'diet', 'to', 'the', 'nation', "'s", 'No', '.', '1', 'killer', ':', 'coronary', 'artery', 'disease', 'which', 'accounts', 'for', 'more', 'than', 'half', 'of', 'all', 'heart', 'fatalities', 'and', 'kills', '500,000', 'Americans', 'a', 'year', '---', 'twice', 'the', 'toll', 'from', 'all', 'varieties', 'of', 'cancer', 'five', 'times', 'the', 'deaths', 'from', 'automobile', 'accidents', '.', 'Cholesterol', 'the', 'cornerstone', 'of', 'Dr.', 'Keys', "'s", 'theory', 'is', 'a', 'mysterious', 'yellowish', 'waxy', 'substance', 'chemically', 'a', 'crystalline', 'alcohol', '.', 'Scientists', 'assume', 'that', 'cholesterol', '(', 'from', 'the', 'Greek', 'chole', 'meaning', 'bile', 'and', 'sterios', 'meaning', 'solid', ')', 'is', 'somehow', 'necessary', 'for', 'the', 'formation', 'of', 'brain', 'cells', 'since', 'it', 'accounts', 'for', 'about', '2', '%', 'of', 'the', 'brain', "'s", 'total', 'solid', 'weight', '.', 'They', 'know', 'it', 'is', 'the', 'chief', 'ingredient', 'in', 'gallstones', 'They', 'suspect', 'it', 'plays', 'a', 'role', 'in', 'the', 'production', 'of', 'adrenal', 'hormones', 'and', 'they', 'believe', 'it', 'is', 'essential', 'to', 'the', 'transport', 'of', 'fats', 'throughout', 'the', 'circulatory', 'system', '.', 'But', 'they', 'can', 'not', 'fully', 'explain', 'the', 'process', 'of', 'its', 'manufacture', 'by', 'the', 'human', 'liver', '.', 'Although', 'the', 'fatty', 'protein', 'molecules', 'carried', 'in', 'the', 'blood', 'and', 'partly', 'composed', 'of', 'cholesterol', 'are', 'water', 'soluble', 'cholesterol', 'itself', 'is', 'insoluble', 'and', 'can', 'not', 'be', 'destroyed', 'by', 'the', 'body', 'A', 'remarkable', 'substance', 'says', 'Dr.', 'Keys', 'quite', 'apart', 'from', 'its', 'tendency', 'to', 'be', 'deposited', 'in', 'the', 'walls', 'of', 'arteries', 'When', 'thus', 'deposited', 'Keys', 'says', 'that', 'cholesterol', 'is', 'mainly', 'responsible', 'for', 'the', 'arterial', 'blockages', 'that', 'culminate', 'in', 'heart', 'attacks', '.', 'Explains', 'Keys', ':', 'As', 'the', 'fatty', 'protein', 'm

olecules', 'travel', 'in', 'the', 'bloodstream', ',', 'they', 'are', 'deposited', 'in', 'the', 'intima', ',', 'or', 'inner', 'wall', 'of', 'a', 'coronary', 'artery', '...', 'The', 'proteins', 'and', 'fats', 'are', 'burned', 'off', ',', 'and', 'the', 'cholesterol', 'is', 'left', 'behind', '...', 'As', 'cholesterol', 'piles', 'up', ',', 'it', 'narrows', ',', 'irritates', 'and', 'damages', 'the', 'artery', ',', 'encouraging', 'formation', 'of', 'calcium', 'deposits', 'and', 'slowing', 'circulation', '...', 'Eventually', ',', 'says', 'Keys', ',', 'one', 'of', 'two', 'things', 'happens', '...', 'A', 'clot', 'forms', 'at', 'the', 'site', ',', 'seals', 'off', 'the', 'flow', 'of', 'blood', 'to', 'the', 'heart', 'and', 'provokes', 'a', 'heart', 'attack', '...', 'Or', '(', 'more', 'commonly', ',', 'thinks', 'Keys', ')', 'the', 'deposits', 'themselves', 'get', 'so', 'big', 'that', 'they', 'choke', 'off', 'the', 'artery', '"s", 'flow', 'to', 'the', 'point', 'that', 'an', 'infarct', 'occurs', ':', 'the', 'heart', 'muscle', 'is', 'suffocated', ',', 'cells', 'supplied', 'by', 'the', 'artery', 'die', ',', 'and', 'the', 'heart', 'is', 'permanently', ',', 'perhaps', 'fatally', 'injured', '...', 'Fats', '&', 'coronaries', '...', 'Ordinarily', ',', 'the', 'human', 'liver', 'synthesizes', 'only', 'enough', 'cholesterol', 'to', 'satisfy', 'the', 'body', '"s", 'needs', '--', 'for', 'transportation', 'of', 'fats', 'and', 'for', 'production', 'of', 'bile', '...', 'Even', 'eggs', 'and', 'other', 'cholesterol-rich', 'foods', ',', 'eaten', 'in', 'normal', 'amounts', ',', 'says', 'Dr.', 'Keys', ',', 'do', 'not', 'materially', 'affect', 'the', 'amount', 'of', 'cholesterol', 'in', 'the', 'blood', '...', 'But', 'fatty', 'foods', 'do', '...', 'During', 'World', 'War', '2', ',', 'doctors', 'in', 'The', 'Netherlands', 'and', 'Scandinavia', 'noted', 'a', 'curious', 'fact', ':', 'despite', 'the', 'stresses', 'of', 'Nazi', 'occupation', ',', 'the', 'death', 'rate', 'from', 'coronary', 'artery', 'disease', 'was', 'slowly', 'dropping', '...', 'Not', 'until', 'long', 'after', 'the', 'war', '--', '1950', ',', 'in', 'fact', '--', 'did', 'they', 'get', 'a', 'hint', 'of', 'the', 'reason', '...', 'That', 'year', ',', 'Sweden', '"s", 'Haqvinn', 'Malmros', 'showed', 'that', 'the', 'sinking', 'death', 'rate', 'neatly', 'coincided', 'with', 'increasingly', 'severe', 'restrictions', 'on', 'fatty', 'foods', '...', 'That', 'same', 'year', 'the', 'University', 'of', 'California', '"s", 'Dr.', 'Laurance', 'Kinsell', ',', 'timing', 'oxidation', 'rates', 'of', 'blood', 'fats', ',', 'stumbled', 'onto', 'the', 'discovery', 'that', 'many', 'vegetable', 'fats', 'cause', 'blood', 'cholesterol', 'levels', 'to', 'drop', 'radically', ',', 'while', 'animal', 'fats', 'cause', 'them', 't

o', 'rise', '.', 'Here', 'Keys', 'and', 'others', ',', 'such', 'as', 'Dr.', 'A.', 'E.', 'Ahrens', 'of', 'the', 'Rockefeller', 'Institute', ',', 'took', 'over', 'to', 'demonstrate', 'the', 'chemical', 'difference', 'between', 'vegetable', 'and', 'animal', 'fats', '--', 'and', 'even', 'between', 'different', 'varieties', 'of', 'each', '.', 'All', 'natural', 'food', 'fats', 'fall', 'into', 'one', 'of', 'three', 'categories', '--', 'saturated', ',', 'mono-unsaturated', 'and', 'poly-unsaturated', '.', 'The', 'degree', 'of', 'saturation', 'depends', 'on', 'the', 'number', 'of', 'hydrogen', 'atoms', 'on', 'the', 'fat', 'molecule', '.', 'Saturated', 'fats', 'can', 'accommodate', 'no', 'more', 'hydrogen', 's', '.', 'Mono-unsaturated', 'fats', 'have', 'room', 'for', 'two', 'more', 'hydrogens', 'on', 'each', 'molecule', ',', 'and', 'the', 'poly-unsaturated', 'fat', 'molecule', 'has', 'room', 'for', 'at', 'least', 'four', 'hydrogens', '.', 'The', 'three', 'fats', 'have', 'similar', 'caloric', 'values', '(', 'about', '265', 'calories', 'per', 'oz', '.', ')', ',', 'but', 'each', 'exerts', 'a', 'radically', 'different', 'influence', 'on', 'blood', 'cholesterol', '.']

[('The', 'DT'), ('reading', 'NN'), ('public', 'NN'), (',', ','), ('the', 'DT'), ('theatergoing', 'VBG'), ('public', 'JJ'), (',', ','), ('the', 'DT'), ('skindiving', 'VBG'), ('public', 'JJ'), (',', ','), ('the', 'DT'), ('horse-playing', 'JJ'), ('public', 'NN'), ('--', ':'), ('all', 'DT'), ('these', 'DT'), ('and', 'CC'), ('others', 'NNS'), ('fill', 'VBP'), ('substantial', 'JJ'), ('roles', 'NNS'), ('in', 'IN'), ('U.S.', 'NNP'), ('life', 'NN'), (',', ','), ('but', 'CC'), ('none', 'NN'), ('is', 'VBZ'), ('so', 'RB'), ('varied', 'JJ'), (',', ','), ('vast', 'JJ'), ('and', 'CC'), ('vigilant', 'JJ'), ('as', 'IN'), ('the', 'DT'), ('eating', 'VBG'), ('public', 'JJ'), ('.', '.'), ('The', 'DT'), ('Department', 'NNP'), ('of', 'IN'), ('Agriculture', 'NNP'), ('averaged', 'VBD'), ('out', 'RP'), ('U.S.', 'NNP'), ('food', 'NN'), ('consumption', 'NN'), ('last', 'JJ'), ('year', 'NN'), ('at', 'IN'), ('1,488', 'CD'), ('lbs', 'NN'), ('.', '.'), ('per', 'IN'), ('person', 'NN'), (',', ','), ('which', 'WDT'), (',', ','), ('allowing', 'VBG'), ('for', 'IN'), ('the', 'DT'), ('17', 'CD'), ('million', 'CD'), ('Americans', 'NNPS'), ('that', 'WDT'), ('John', 'NNP'), ('Kennedy', 'NNP'), ('said', 'VBD'), ('go', 'VB'), ('to', 'TO'), ('bed', 'VB'), ('hungry', 'JJ'), ('every', 'DT'), ('night', 'NN'), (',', ','), ('means', 'VBZ'), ('that', 'IN'), ('certain', 'JJ'), ('gluttons', 'NNS'), ('on', 'IN'), ('the', 'DT'), ('upper', 'JJ'), ('end', 'NN'), ('must', 'MD'), ('somehow', 'VB'), ('down', 'RP'), ('8', 'CD'), ('lbs', 'NN'), ('.', '.'), ('or', 'CC'), ('more', 'JJR'), ('a', 'D

T'), ('day', 'NN'), ('.', '.'), ('That', 'IN'), ('mother', 'NN'), ('hen', 'NN'), ('of', 'IN'), ('the', 'DT'), ('weight-height', 'JJ'), ('tables', 'NNS'), ('.', '.'), ('the', 'DT'), ('Metropolitan', 'NNP'), ('Life', 'NNP'), ('Insurance', 'NNP'), ('Co.', 'NNP'), ('.', '.'), ('clucks', 'VBZ'), ('that', 'IN'), ('48', 'CD'), ('million', 'CD'), ('Americans', 'NNPS'), ('are', 'VBP'), ('overweight', 'VBN'), ('.', '.'), ('Through', 'IN'), ('previous', 'JJ'), ('centuries', 'NNS'), ('.', '.'), ('eating', 'VBG'), ('changed', 'VBN'), ('by', 'IN'), ('nearly', 'RB'), ('imperceptible', 'JJ'), ('degrees', 'NNS'), ('.', '.'), ('and', 'CC'), ('mostly', 'RB'), ('toward', 'IN'), ('just', 'RB'), ('getting', 'VBG'), ('enough', 'RB'), ('.', '.'), ('Now', 'RB'), ('big', 'JJ'), ('forces', 'NNS'), ('buffet', 'VBD'), ('food', 'NN'), ('.', '.'), ('For', 'IN'), ('the', 'DT'), ('first', 'JJ'), ('time', 'NN'), ('in', 'IN'), ('history', 'NN'), ('.', '.'), ('the', 'DT'), ('U.S.', 'NNP'), ('has', 'VBZ'), ('produced', 'VBN'), ('a', 'DT'), ('society', 'NN'), ('in', 'IN'), ('which', 'WDT'), ('less', 'JJR'), ('than', 'IN'), ('one-tenth', 'NN'), ('of', 'IN'), ('the', 'DT'), ('people', 'NNS'), ('turn', 'VBP'), ('out', 'RP'), ('so', 'RB'), ('much', 'JJ'), ('food', 'NN'), ('that', 'IN'), ('the', 'DT'), ('Government', 'NNP'), ('s', 'POS'), ('most', 'JJS'), ('embarrassing', 'NN'), ('problem', 'NN'), ('is', 'VBZ'), ('how', 'WRB'), ('to', 'TO'), ('dispose', 'VB'), ('inconspicuously', 'RB'), ('of', 'IN'), ('100', 'CD'), ('million', 'CD'), ('tons', 'NNS'), ('of', 'IN'), ('surplus', 'NN'), ('farm', 'NN'), ('produce', 'NN'), ('.', '.'), ('In', 'IN'), ('this', 'DT'), ('same', 'JJ'), ('society', 'NN'), ('.', '.'), ('the', 'DT'), ('plain', 'NN'), ('citizen', 'NN'), ('can', 'MD'), ('with', 'IN'), ('an', 'DT'), ('average', 'NN'), ('of', 'IN'), ('only', 'JJ'), ('one-fifth', 'JJ'), ('his', 'PRP\$'), ('income', 'NN'), ('buy', 'VB'), ('more', 'JJR'), ('calories', 'NNS'), ('than', 'IN'), ('he', 'PRP'), ('can', 'MD'), ('consume', 'VB'), ('.', '.'), ('Refrigeration', 'NNP'), ('.', '.'), ('automated', 'VBD'), ('processing', 'NN'), ('and', 'CC'), ('packaging', 'NN'), ('conspire', 'NN'), ('to', 'TO'), ('defy', 'VB'), ('season', 'NN'), ('and', 'CC'), ('banish', 'JJ'), ('spoilage', 'NN'), ('.', '.'), ('And', 'CC'), ('in', 'IN'), ('the', 'DT'), ('wake', 'NN'), ('of', 'IN'), ('the', 'DT'), ('new', 'JJ'), ('affluence', 'NN'), ('and', 'CC'), ('the', 'DT'), ('new', 'JJ'), ('techniques', 'NNS'), ('of', 'IN'), ('processing', 'NN'), ('comes', 'VBZ'), ('a', 'DT'), ('new', 'JJ'), ('American', 'JJ'), ('interest', 'NN'), ('in', 'IN'), ('how', 'WRB'), ('what', 'WP'), ('people', 'NNS'), ('eat', 'VBP'), ('affects', 'VBZ'), ('their', 'PRP\$'), ('health', 'NN'), ('.', '.'), ('To', 'TO'),

('eat', 'VB'), ('is', 'VBZ'), ('human', 'JJ'), (',', ', ', ', '), ('the', 'DT'), ('nation', 'NN'), ('is', 'VBZ'), ('learning', 'VBG'), ('to', 'TO'), ('think', 'VB'), (',', ', ', ', '), ('to', 'TO'), ('survive', 'VB'), ('divine', 'NN'), ('.', '. '), ('Fads', 'NNP'), (',', ', ', ', '), ('facts', 'VBZ'), ('Not', 'RB'), ('all', 'PDT'), ('the', 'DT'), ('concern', 'NN'), ('for', 'IN'), ('health', 'NN'), ('is', 'VBZ'), ('well', 'RB'), ('directed', 'VBN'), ('.', '. '), ('From', 'IN'), ('the', 'DT'), ('fusty', 'JJ'), ('panaceas', 'NNS'), ('of', 'IN'), ('spinach', 'NN'), (',', ', ', ', '), ('eggs', 'NNS'), ('and', 'CC'), ('prunes', 'NNS'), (',', ', ', ', '), ('the', 'DT'), ('U.S.', 'NNP'), ('has', 'VBZ'), ('progressed', 'VBN'), ('to', 'TO'), ('curds', 'NNS'), (',', ', ', ', '), ('concentrates', 'NNS'), ('and', 'CC'), ('capsules', 'NNS'), ('.', '. '), ('Each', 'DT'), ('year', 'NN'), (',', ', ', ', '), ('reports', 'VBZ'), ('the', 'DT'), ('American', 'NNP'), ('Medical', 'NNP'), ('Association', 'NNP'), (',', ', ', ', '), ('ten', 'CD'), ('million', 'CD'), ('Americans', 'NNPS'), ('spend', 'VBP'), ('\$', '\$'), ('900', 'CD'), ('million', 'CD'), ('on', 'IN'), ('vitamins', 'NNS'), (',', ', ', ', '), ('tonics', 'NNS'), ('and', 'CC'), ('other', 'JJ'), ('food', 'NN'), ('supplements', 'NNS'), ('.', '. '), ('At', 'IN'), ('juice', 'NN'), ('bars', 'NNS'), ('in', 'IN'), ('Los', 'NNP'), ('Angeles', 'NNP'), ('"', 'POS'), ('35', 'CD'), ('`', '`', '`'), ('health', 'NN'), ('`', '`', '`'), ('stores', 'NNS'), (',', ', ', ', '), ('a', 'DT'), ('new', 'JJ'), ('sensation', 'NN'), ('is', 'VBZ'), ('a', 'DT'), ('pink', 'NN'), (',', ', ', ', '), ('high-protein', 'JJ'), ('cocktail', 'NN'), (',', ', ', ', '), ('concocted', 'VBN'), ('of', 'IN'), ('dried', 'JJ'), ('eggs', 'NNS'), (',', ', ', ', '), ('powdered', 'VBN'), ('milk', 'NN'), ('and', 'CC'), ('cherry-flavored', 'JJ'), ('No-Cal', 'NNP'), (',', ', ', ', '), ('which', 'WDT'), ('sells', 'VBZ'), ('for', 'IN'), ('59-cents', 'NNS'), ('per', 'IN'), ('8-oz', 'NN'), ('.', '. '), ('glass', 'NN'), ('.', '. '), ('Grocery', 'NNP'), ('stores', 'NNS'), ('sell', 'VBP'), ('dozens', 'NNS'), ('of', 'IN'), ('foods', 'NNS'), ('that', 'IN'), ('boast', 'NN'), ('of', 'IN'), ('having', 'VBG'), ('almost', 'RB'), ('no', 'DT'), ('food', 'NN'), ('value', 'NN'), ('at', 'IN'), ('all', 'DT'), ('.', '. '), ('But', 'CC'), ('a', 'DT'), ('big', 'JJ'), ('part', 'NN'), ('of', 'IN'), ('the', 'DT'), ('public', 'JJ'), ('wants', 'VBZ'), ('to', 'TO'), ('know', 'VB'), ('facts', 'NNS'), ('about', 'IN'), ('diet', 'JJ'), ('and', 'CC'), ('health', 'NN'), (',', ', ', ', '), ('and', 'CC'), ('a', 'DT'), ('big', 'JJ'), ('group', 'NN'), ('of', 'IN'), ('U.S.', 'NNP'), ('scientists', 'NNS'), ('wants', 'VBZ'), ('to', 'TO'), ('supply', 'VB'), ('them', 'PRP'), ('.', '. '), ('The', 'DT'), ('man', 'NN'), ('most', 'JJ), ('firmly', 'RB'), ('at', 'IN'),

('grips', 'NNS'), ('with', 'IN'), ('the', 'DT'), ('problem', 'NN'), ('is', 'VBZ'), ('the', 'DT'), ('University', 'NNP'), ('of', 'IN'), ('Minnesota', 'NNP'), ('s', 'POS'), ('Physiologist', 'NNP'), ('Ance', 'NNP'), ('Keys', 'NNP'), (',', ','), ('57', 'CD'), (',', ','), ('inventor', 'NN'), ('of', 'IN'), ('the', 'DT'), ('wartime', 'NN'), ('K', 'NNP'), (('(', '('), ('for', 'IN'), ('Keys', 'NNP'), (')', ')'), ('ration', 'NN'), ('and', 'CC'), ('author', 'NN'), ('of', 'IN'), ('last', 'JJ'), ('year', 'NN'), ('s', 'POS'), ('bestselling', 'NN'), ('Eat', 'NNP'), ('Well', 'NNP'), ('And', 'CC'), ('Stay', 'NNP'), ('Well', 'NNP'), ('.', '.'), ('From', 'IN'), ('his', 'PRP\$'), ('birch-paneled', 'JJ'), ('office', 'NN'), ('in', 'IN'), ('the', 'DT'), ('Laboratory', 'NNP'), ('of', 'IN'), ('Physiological', 'NNP'), ('Hygiene', 'NNP'), (',', ','), ('under', 'IN'), ('the', 'DT'), ('university', 'NN'), ('s', 'POS'), ('football', 'NN'), ('stadium', 'NN'), ('in', 'IN'), ('Minneapolis', 'NNP'), (('(', '('), ('`', '`'), ('We', 'PRP'), ('get', 'VBP'), ('a', 'DT'), ('rumble', 'NN'), ('on', 'IN'), ('every', 'DT'), ('touchdown', 'IN'), ('`', '`'), (')', ')'), (',', ','), ('blocky', 'JJ'), (',', ','), ('grey-haired', 'JJ'), ('Dr.', 'NNP'), ('Keys', 'NNP'), ('directs', 'VBZ'), ('an', 'DT'), ('ambitious', 'JJ'), (',', ','), ('\$', '\$'), ('200,000-a-year', 'JJ'), ('experiment', 'NN'), ('on', 'IN'), ('diet', 'NN'), (',', ','), ('which', 'WDT'), ('spans', 'VBZ'), ('three', 'CD'), ('continents', 'NNS'), ('and', 'CC'), ('seven', 'CD'), ('nations', 'NNS'), ('and', 'CC'), ('is', 'VBZ'), ('still', 'RB'), ('growing', 'VBG'), ('.', '.'), ('Pursuing', 'VBG'), ('it', 'PRP'), (',', ','), ('he', 'PRP'), ('has', 'VBZ'), ('logged', 'VBN'), ('500,000', 'CD'), ('miles', 'NNS'), (',', ','), ('suffered', 'VBD'), ('indescribable', 'JJ'), ('digestive', 'JJ'), ('indignities', 'NNS'), (',', ','), ('and', 'CC'), ('meticulously', 'RB'), ('collected', 'JJ'), ('physiological', 'JJ'), ('data', 'NNS'), ('on', 'IN'), ('the', 'DT'), ('health', 'NN'), ('and', 'CC'), ('eating', 'VBG'), ('habits', 'NNS'), ('of', 'IN'), ('10,000', 'CD'), ('individuals', 'NNS'), (',', ','), ('from', 'IN'), ('Bantu', 'NNP'), ('tribesmen', 'NNS'), ('to', 'TO'), ('Italian', 'JJ'), ('contadini', 'NN'), ('.', '.'), ('He', 'PRP'), ('has', 'VBZ'), ('measured', 'VBN'), ('the', 'DT'), ('skinfolts', 'NNS'), (('(', '('), ('the', 'DT'), ('fleshy', 'NN'), ('areas', 'NNS'), ('under', 'IN'), ('the', 'DT'), ('shoulder', 'NN'), ('blades', 'NNS'), (')', ')'), ('of', 'IN'), ('Neapolitan', 'NNP'), ('firemen', 'NNS'), (',', ','), ('studied', 'VBD'), ('the', 'DT'), ('metabolism', 'NN'), ('of', 'IN'), ('Finnish', 'JJ'), ('woodcutters', 'NNS'), (',', ','), ('analyzed', 'VBD'), ('the', 'DT'), ('

``', ``'), ('mealie-meal', 'JJ'), ('``', ``'), ('eaten', 'VBN'), ('b
 y', 'IN'), ('Capetown', 'NNP'), ('coloreds', 'NNS'), (',', ','), ('an
 d', 'CC'), ('experimented', 'VBD'), ('on', 'IN'), ('Minneapolis', 'NN
 P'), ('businessmen', 'NNS'), ('.', '.'), ('And', 'CC'), ('fats', 'NN
 S'), ('.', '.'), ('Keys', 'NNP'), ('"s', 'POS'), ('findings', 'NNS'),
 (',', ','), ('though', 'IN'), ('far', 'RB'), ('from', 'IN'), ('complet
 e', 'JJ'), (',', ','), ('are', 'VBP'), ('likely', 'JJ'), ('to', 'TO'),
 ('smash', 'VB'), ('many', 'JJ'), ('an', 'DT'), ('eating', 'JJ'), ('clie
 he', 'NN'), ('.', '.'), ('Vitamins', 'NNS'), (',', ','), ('eggs', 'NN
 S'), ('and', 'CC'), ('milk', 'NN'), ('begin', 'VBP'), ('to', 'TO'), ('l
 ook', 'VB'), ('like', 'IN'), ('foods', 'NNS'), ('to', 'TO'), ('hold',
 'VB'), ('down', 'RP'), ('on', 'IN'), (('(', '('), ('though', 'IN'), ('mo
 thers', 'NNS'), ('"', 'POS'), ('milk', 'NN'), ('is', 'VBZ'), ('still',
 'RB'), ('the', 'DT'), ('ticket', 'NN'), (')', ')'), ('.', '.'), ('Readi
 ngs', 'NNS'), ('of', 'IN'), ('the', 'DT'), ('number', 'NN'), ('of', 'I
 N'), ('milligrams', 'NNS'), ('of', 'IN'), ('cholesterol', 'NN'), ('in',
 'IN'), ('the', 'DT'), ('blood', 'NN'), (',', ','), ('which', 'WDT'),
 ('seem', 'VBP'), ('to', 'TO'), ('have', 'VB'), ('value', 'NN'), ('in',
 'IN'), ('predicting', 'VBG'), ('heart', 'NN'), ('attacks', 'NNS'),
 (',', ','), ('are', 'VBP'), ('becoming', 'VBG'), ('as', 'RB'), ('routin
 e', 'JJ'), ('as', 'IN'), ('the', 'DT'), ('electrocardiogram', 'NN'),
 (',', ','), ('which', 'WDT'), ('can', 'MD'), ('show', 'VB'), ('that',
 'IN'), ('the', 'DT'), ('heart', 'NN'), ('has', 'VBZ'), ('suffered', 'VB
 N'), ('a', 'DT'), ('symptomatic', 'JJ'), ('attack', 'NN'), ('.', '.'),
 ('Already', 'RB'), ('many', 'JJ'), ('an', 'DT'), ('American', 'JJ'),
 ('knows', 'VBZ'), ('his', 'PRP\$'), ('count', 'NN'), (',', ','), ('and',
 'CC'), ('rejoices', 'NNS'), ('or', 'CC'), ('worries', 'NNS'), ('dependi
 ng', 'VBG'), ('on', 'IN'), ('whether', 'IN'), ('it', 'PRP'), ('is', 'VB
 Z'), ('nearer', 'JJ'), ('180', 'CD'), (('(', '('), ('safe', 'JJ'), (')',
 ')'), ('or', 'CC'), ('250', 'CD'), (('(', '('), ('dangerous', 'JJ'),
 (')', ')'), ('.', '.'), ('Out', 'IN'), ('of', 'IN'), ('cholesterol', 'N
 N'), ('come', 'VBP'), ('Keys', 'NNP'), ('"s', 'POS'), ('main', 'JJ'),
 ('messages', 'NNS'), ('so', 'RB'), ('far', 'RB'), (':', ':'), ('America
 ns', 'NNPS'), ('eat', 'VBP'), ('too', 'RB'), ('much', 'JJ'), ('.',
 '.'), ('The', 'DT'), ('typical', 'JJ'), ('U.S.', 'NNP'), ('daily', 'J
 J'), ('menu', 'NNS'), (',', ','), ('says', 'VBZ'), ('Dr.', 'NNP'), ('Ke
 ys', 'NNP'), (',', ','), ('contains', 'VBZ'), ('3,000', 'CD'), ('calori
 es', 'NNS'), (',', ','), ('should', 'MD'), ('contain', 'VB'), ('2,300',
 'CD'), ('.', '.'), ('And', 'CC'), ('extra', 'JJ'), ('weight', 'NN'),

('increases', 'VBZ'), ('the', 'DT'), ('risk', 'NN'), ('of', 'IN'), ('ca
 ncer', 'NN'), (',', ','), ('diabetes', 'VBZ'), (',', ','), ('artery',
 'JJ'), ('disease', 'NN'), ('and', 'CC'), ('heart', 'NN'), ('attack', 'N
 N'), ('.', '.'), ('Americans', 'NNS'), ('eat', 'VBP'), ('too', 'RB'),
 ('much', 'JJ'), ('fat', 'NN'), ('.', '.'), ('With', 'IN'), ('meat', 'N
 N'), (',', ','), ('milk', 'NN'), (',', ','), ('butter', 'NN'), ('and',
 'CC'), ('ice', 'NN'), ('cream', 'NN'), (',', ','), ('the', 'DT'), ('cal
 orie-heavy', 'JJ'), ('U.S.', 'NNP'), ('diet', 'NN'), ('is', 'VBZ'), ('4
 0', 'CD'), ('%', 'NN'), ('fat', 'NN'), (',', ','), ('and', 'CC'), ('mos
 t', 'JJS'), ('of', 'IN'), ('that', 'DT'), ('is', 'VBZ'), ('saturated',
 'VBN'), ('fat', 'JJ'), ('--', ':'), ('the', 'DT'), ('insidious', 'JJ'),
 ('kind', 'NN'), (',', ','), ('says', 'VBZ'), ('Dr.', 'NNP'), ('Keys',
 'NNP'), (',', ','), ('that', 'WDT'), ('increases', 'VBZ'), ('blood', 'N
 N'), ('cholesterol', 'NN'), (',', ','), ('damages', 'NNS'), ('arterie
 s', 'NNS'), (',', ','), ('and', 'CC'), ('leads', 'VBZ'), ('to', 'TO'),
 ('coronary', 'JJ'), ('disease', 'NN'), ('.', '.'), ('Obesity', 'NN'),
 (':', ':'), ('a', 'DT'), ('malnutrition', 'NN'), ('.', '.'), ('Througho
 ut', 'IN'), ('much', 'JJ'), ('of', 'IN'), ('the', 'DT'), ('world', 'N
 N'), (',', ','), ('food', 'NN'), ('is', 'VBZ'), ('still', 'RB'), ('so',
 'RB'), ('scarce', 'JJ'), ('that', 'IN'), ('half', 'NN'), ('of', 'IN'),
 ('the', 'DT'), ('earth', 'NN'), ('s', 'POS'), ('population', 'NN'),
 ('has', 'VBZ'), ('trouble', 'NN'), ('getting', 'VBG'), ('the', 'DT'),
 ('1,600', 'CD'), ('calories', 'NNS'), ('a', 'DT'), ('day', 'NN'), ('nec
 essary', 'JJ'), ('to', 'TO'), ('sustain', 'VB'), ('life', 'NN'), ('.',
 '.'), ('The', 'DT'), ('deficiency', 'NN'), ('diseases', 'VBZ'), ('--',
 ':'), ('scurvy', 'NN'), (',', ','), ('tropical', 'JJ'), ('sprue', 'N
 N'), (',', ','), ('pellagra', 'NN'), ('--', ':'), ('run', 'VB'), ('ramp
 ant', 'JJ'), ('.', '.'), ('In', 'IN'), ('West', 'NNP'), ('Africa', 'NN
 P'), (',', ','), ('for', 'IN'), ('example', 'NN'), (',', ','), ('wher
 e', 'WRB'), ('meat', 'NN'), ('is', 'VBZ'), ('a', 'DT'), ('luxury', 'N
 N'), ('and', 'CC'), ('babies', 'NNS'), ('must', 'MD'), ('be', 'VB'),
 ('weaned', 'VBN'), ('early', 'JJ'), ('to', 'TO'), ('make', 'VB'), ('roo
 m', 'NN'), ('at', 'IN'), ('the', 'DT'), ('breast', 'NN'), ('for', 'I
 N'), ('later', 'JJ'), ('arrivals', 'NNS'), (',', ','), ('a', 'DT'), ('c
 hildhood', 'NN'), ('menace', 'NN'), ('is', 'VBZ'), ('kwashiorkor', 'VB
 N'), (',', ','), ('or', 'CC'), ('`', '`'), ('Red', 'JJ'), ('Johnny',
 'NNP'), ('`', '`'), (',', ','), ('a', 'DT'), ('growth-stunting', 'J
 J'), ('protein', 'NN'), ('deficiency', 'NN'), ('(', '('), ('signs', 'NN
 S'), (':', ':'), ('reddish', 'JJ'), ('hair', 'NN'), (',', ','), ('bloat

ed', 'VBN'), ('belly', 'RB'), ('', '''), ('that', 'WDT'), ('kills', 'VBZ'), ('more', 'JJR'), ('than', 'IN'), ('half', 'PDT'), ('its', 'PRP\$'), ('victims', 'NNS'), ('', '''), ('leaves', 'VBZ'), ('the', 'DT'), ('rest', 'NN'), ('prey', 'NN'), ('for', 'IN'), ('parasites', 'NNS'), ('and', 'CC'), ('lingering', 'VBG'), ('tropical', 'JJ'), ('disease', 'NN'), ('.', '''), ('In', 'IN'), ('the', 'DT'), ('well-fed', 'JJ'), ('U.S.', 'NNP'), ('', '''), ('deficiency', 'NN'), ('diseases', 'NNS'), ('have', 'VBP'), ('virtually', 'RB'), ('vanished', 'VBN'), ('in', 'IN'), ('the', 'DT'), ('past', 'JJ'), ('20', 'CD'), ('years', 'NNS'), ('.', '''), ('.', '''), ('Today', 'NN'), ('', '''), ('as', 'IN'), ('Harrison', 'NNP'), ('s', 'POS'), ('Principles', 'NNP'), ('of', 'IN'), ('Internal', 'NNP'), ('Medicine', 'NNP'), ('', '''), ('a', 'DT'), ('standard', 'JJ'), ('internist', 'NN'), ('s', 'POS'), ('text', 'NN'), ('', '''), ('puts', 'VBZ'), ('it', 'PRP'), ('', '''), (''', '''), ('The', 'DT'), ('most', 'RBS'), ('common', 'JJ'), ('form', 'NN'), ('of', 'IN'), ('malnutrition', 'NN'), ('is', 'VBZ'), ('caloric', 'JJ'), ('excess', 'NN'), ('or', 'CC'), ('obesity', 'NN'), (''', '''), ('.', '''), ('Puritan', 'NNP'), ('New', 'NNP'), ('England', 'NNP'), ('regarded', 'VBD'), ('obesity', 'NN'), ('as', 'IN'), ('a', 'DT'), ('flagrant', 'JJ'), ('symbol', 'NN'), ('of', 'IN'), ('intemperance', 'NN'), ('', '''), ('and', 'CC'), ('thus', 'RB'), ('a', 'DT'), ('sin', 'NN'), ('.', '''), ('Says', 'VBZ'), ('Keys', 'NNP'), (':', ':'), (''', '''), ('Maybe', 'RB'), ('if', 'IN'), ('the', 'DT'), ('idea', 'NN'), ('got', 'VBD'), ('around', 'RB'), ('again', 'RB'), ('that', 'IN'), ('obesity', 'NN'), ('is', 'VBZ'), ('immoral', 'JJ'), ('', '''), ('the', 'DT'), ('fat', 'JJ'), ('man', 'NN'), ('would', 'MD'), ('start', 'VB'), ('to', 'TO'), ('think', 'VB'), (''', '''), ('.', '''), ('Morals', 'NNS'), ('aside', 'RB'), ('', '''), ('the', 'DT'), ('fat', 'JJ'), ('man', 'NN'), ('has', 'VBZ'), ('plenty', 'VBN'), ('to', 'TO'), ('worry', 'VB'), ('about', 'RB'), ('--', ':'), ('over', 'IN'), ('and', 'CC'), ('above', 'IN'), ('the', 'DT'), ('fact', 'NN'), ('that', 'IN'), ('no', 'DT'), ('one', 'NN'), ('any', 'DT'), ('longer', 'JJR'), ('loves', 'VBZ'), ('him', 'PRP'), ('.', '''), ('The', 'DT'), ('simple', 'JJ'), ('mechanical', 'JJ'), ('strain', 'NN'), ('of', 'IN'), ('overweight', 'NN'), ('', '''), ('says', 'VBZ'), ('New', 'NNP'), ('York', 'NNP'), ('s', 'POS'), ('Dr.', 'NNP'), ('Norman', 'NNP'), ('Jolliffe', 'NNP'), ('', '''), ('can', 'MD'), ('overburden', 'VB'), ('and', 'CC'), ('damage', 'VB'), ('the', 'DT'), ('heart', 'NN'), (''', '''), ('for', 'IN'), ('much', 'RB'), ('the', 'DT'), ('same', 'JJ'), ('reason', 'NN'), ('that', 'IN'), ('a', 'DT'), ('Chevrolet', 'NNP'),

('engine', 'NN'), ('in', 'IN'), ('a', 'DT'), ('Cadillac', 'NNP'), ('bod
 y', 'NN'), ('would', 'MD'), ('wear', 'VB'), ('out', 'RP'), ('sooner',
 'JJR'), ('than', 'IN'), ('if', 'IN'), ('it', 'PRP'), ('were', 'VBD'),
 ('in', 'IN'), ('a', 'DT'), ('body', 'NN'), ('for', 'IN'), ('which', 'WD
 T'), ('it', 'PRP'), ('was', 'VBD'), ('built', 'VBN'), ('``', ``'),
 ('.', '.'), ('The', 'DT'), ('fat', 'JJ'), ('man', 'NN'), ('has', 'VB
 Z'), ('trouble', 'NN'), ('buying', 'VBG'), ('life', 'NN'), ('insuranc
 e', 'NN'), ('or', 'CC'), ('has', 'VBZ'), ('to', 'TO'), ('pay', 'VB'),
 ('higher', 'JJR'), ('premiums', 'NNS'), ('.', '.'), ('He', 'PRP'), ('ha
 s', 'VBZ'), ('--', ':'), ('for', 'IN'), ('unclear', 'JJ'), ('reasons',
 'NNS'), ('--', ':'), ('a', 'DT'), ('25', 'CD'), ('%', 'NN'), ('higher',
 'JJR'), ('death', 'NN'), ('rate', 'NN'), ('from', 'IN'), ('cancer', 'N
 N'), ('.', '.'), ('He', 'PRP'), ('is', 'VBZ'), ('particularly', 'RB'),
 ('vulnerable', 'JJ'), ('to', 'TO'), ('diabetes', 'NNS'), ('.', '.'),
 ('He', 'PRP'), ('may', 'MD'), ('find', 'VB'), ('even', 'RB'), ('moderat
 e', 'JJ'), ('physical', 'JJ'), ('exertion', 'NN'), ('uncomfortable', 'J
 J'), ('.', '.'), ('because', 'IN'), ('excess', 'JJ'), ('body', 'NN'),
 ('fat', 'JJ'), ('hampers', 'NNS'), ('his', 'PRP\$'), ('breathing', 'N
 N'), ('and', 'CC'), ('restricts', 'VBZ'), ('his', 'PRP\$'), ('muscular',
 'JJ'), ('movement', 'NN'), ('.', '.'), ('Physiologically', 'NNP'),
 ('.', '.'), ('people', 'NNS'), ('overeate', 'VBP'), ('because', 'IN'),
 ('what', 'WP'), ('Dr.', 'NNP'), ('Jolliffe', 'NNP'), ('calls', 'VBZ'),
 ('the', 'DT'), ('``', ``'), ('appestat', 'JJ'), ('``', ``'), ('is',
 'VBZ'), ('set', 'VBN'), ('too', 'RB'), ('high', 'JJ'), ('.', '.'), ('Th
 e', 'DT'), ('appestat', 'NN'), ('.', '.'), ('which', 'WDT'), ('adjust
 s', 'VBZ'), ('the', 'DT'), ('appetite', 'NN'), ('to', 'TO'), ('keep',
 'VB'), ('weight', 'NN'), ('constant', 'NN'), ('.', '.'), ('is', 'VBZ'),
 ('located', 'VBN'), ('.', '.'), ('says', 'VBZ'), ('Jolliffe', 'NNP'),
 ('.', '.'), ('in', 'IN'), ('the', 'DT'), ('hypothalamus', 'NN'), ('--',
 ':'), ('near', 'IN'), ('the', 'DT'), ('body', 'NN'), ('s', 'POS'), ('t
 emperature', 'NN'), ('.', '.'), ('sleep', 'JJ'), ('and', 'CC'), ('water
 -balance', 'NN'), ('controls', 'NNS'), ('.', '.'), ('Physical', 'JJ'),
 ('exercise', 'NN'), ('raises', 'VBZ'), ('the', 'DT'), ('appestat', 'N
 N'), ('.', '.'), ('So', 'RB'), ('does', 'VBZ'), ('cold', 'VB'), ('weath
 er', 'NN'), ('.', '.'), ('In', 'IN'), ('moderate', 'JJ'), ('doses', 'NN
 S'), ('.', '.'), ('alcohol', 'NN'), ('narcotizes', 'VBZ'), ('the', 'D
 T'), ('appestat', 'NN'), ('and', 'CC'), ('enhances', 'NNS'), ('appetit
 e', 'RB'), ('('), ('the', 'DT'), ('original', 'JJ'), ('reason', 'N
 N'), ('for', 'IN'), ('the', 'DT'), ('cocktail', 'NN'), ('('), (')'),

(';', ':'), (';', ':'), ('but', 'CC'), ('because', 'IN'), ('liquor', 'N'), ('has', 'VBZ'), ('a', 'DT'), ('high', 'JJ'), ('caloric', 'NN'), ('value', 'NN'), ('--', ':'), ('100', 'CD'), ('calories', 'NNS'), ('per', 'IN'), ('oz', 'NN'), ('.', '.'), ('--', ':'), ('the', 'DT'), ('heavy', 'JJ'), ('drinker', 'NN'), ('is', 'VBZ'), ('seldom', 'RB'), ('hungry', 'JJ'), ('.', '.'), ('In', 'IN'), ('rare', 'JJ'), ('cases', 'NNS'), ('.', '.'), ('diseases', 'NNS'), ('such', 'JJ'), ('as', 'IN'), ('encephalitis', 'NN'), ('or', 'CC'), ('a', 'DT'), ('pituitary', 'JJ'), ('tumor', 'NN'), ('may', 'MD'), ('damage', 'VB'), ('the', 'DT'), ('appetite', 'NN'), ('permanently', 'RB'), ('.', '.'), ('destroying', 'VBG'), ('nearly', 'RB'), ('all', 'DT'), ('sense', 'NN'), ('of', 'IN'), ('satiety', 'NN'), ('.', '.'), ('Food', 'NNP'), ('for', 'IN'), ('frustration', 'N'), ('.', '.'), ('Far', 'NNP'), ('more', 'RBR'), ('frequently', 'RB'), ('.', '.'), ('overeating', 'VBG'), ('is', 'VBZ'), ('the', 'DT'), ('result', 'NN'), ('of', 'IN'), ('a', 'DT'), ('psychological', 'JJ'), ('compulsion', 'NN'), ('.', '.'), ('It', 'PRP'), ('may', 'MD'), ('be', 'VB'), ('fostered', 'VBN'), ('by', 'IN'), ('frustration', 'NN'), ('.', '.'), ('depression', 'NN'), ('.', '.'), ('insecurity', 'NN'), ('--', ':'), ('or', 'CC'), ('.', '.'), ('in', 'IN'), ('children', 'NNS'), ('.', '.'), ('simply', 'RB'), ('by', 'IN'), ('the', 'DT'), ('desire', 'NN'), ('to', 'TO'), ('stop', 'VB'), ('an', 'DT'), ('anxious', 'JJ'), ('mother', 'NN'), ('s', 'POS'), ('nagging', 'NN'), ('.', '.'), ('Some', 'DT'), ('families', 'NNS'), ('place', 'VBP'), ('undue', 'JJ'), ('emphasis', 'NN'), ('on', 'IN'), ('food', 'NN'), (':', ':'), ('conversations', 'NNS'), ('center', 'VBP'), ('on', 'IN'), ('it', 'PRP'), ('.', '.'), ('and', 'CC'), ('rich', 'JJ'), ('delicacies', 'NNS'), ('are', 'VBP'), ('offered', 'VBN'), ('as', 'IN'), ('rewards', 'NNS'), ('.', '.'), ('withheld', 'VBD'), ('as', 'IN'), ('punishment', 'NN'), ('.', '.'), ('The', 'DT'), ('result', 'NN'), ('says', 'VBZ'), ('Jolliffe', 'NNP'), (':', ':'), ('.', '.'), ('The', 'DT'), ('child', 'NN'), ('gains', 'NNS'), ('the', 'DT'), ('feeling', 'NN'), ('that', 'IN'), ('food', 'NN'), ('is', 'VBZ'), ('the', 'DT'), ('purpose', 'NN'), ('of', 'IN'), ('life', 'NN'), ('.', '.'), ('Food', 'NNP'), ('may', 'MD'), ('act', 'VB'), ('as', 'IN'), ('a', 'DT'), ('sedative', 'JJ'), ('.', '.'), ('giving', 'VBG'), ('temporary', 'JJ'), ('emotional', 'JJ'), ('solace', 'NN'), ('.', '.'), ('just', 'RB'), ('as', 'IN'), ('.', '.'), ('for', 'IN'), ('some', 'DT'), ('people', 'NNS'), ('.', '.'), ('alcohol', 'NN'), ('does', 'VBZ'), ('.', '.'), ('Reports', 'VB'), ('Dr.', 'NNP'), ('Keys', 'NNP'), (':', ':'), ('A', 'DT'), ('fairly', 'RB'),

('common', 'JJ'), ('experience', 'NN'), ('for', 'IN'), ('us', 'PRP'),
 ('is', 'VBZ'), ('the', 'DT'), ('wife', 'NN'), ('who', 'WP'), ('finds',
 'VBZ'), ('her', 'PRP\$'), ('husband', 'NN'), ('staying', 'VBG'), ('out',
 'RP'), ('more', 'JJR'), ('and', 'CC'), ('more', 'RBR'), ('.', '.'), ('H
 e', 'PRP'), ('may', 'MD'), ('be', 'VB'), ('interested', 'JJ'), ('in',
 'IN'), ('another', 'DT'), ('woman', 'NN'), ('.', '.'), ('or', 'CC'),
 ('just', 'RB'), ('like', 'IN'), ('being', 'VBG'), ('with', 'IN'), ('th
 e', 'DT'), ('boys', 'NNS'), ('.', '.'), ('So', 'IN'), ('she', 'PRP'),
 ('fishes', 'VBZ'), ('around', 'RB'), ('in', 'IN'), ('the', 'DT'), ('cup
 board', 'NN'), ('and', 'CC'), ('hauls', 'VB'), ('out', 'RP'), ('a', 'D
 T'), ('chocolate', 'NN'), ('cake', 'NN'), ('.', '.'), ('It', 'PRP'),
 ('s', 'VBZ'), ('a', 'DT'), ('matter', 'NN'), ('of', 'IN'), ('boredom',
 'NN'), ('.', '.'), ('and', 'CC'), ('the', 'DT'), ('subconscious', 'J
 J'), ('feeling', 'NN'), ('that', 'IN'), ('she', 'PRP'), ('is', 'VBZ'),
 ('entitled', 'VBN'), ('to', 'TO'), ('something', 'NN'), ('.', '.'), ('b
 ecause', 'IN'), ('she', 'PRP'), ('s', 'VBZ'), ('being', 'VBG'), ('depr
 ived', 'VBN'), ('of', 'IN'), ('something', 'NN'), ('else', 'RB'), ('`
 `', '`'), ('.', '.'), ('For', 'IN'), ('the', 'DT'), ('army', 'NN'),
 ('of', 'IN'), ('compulsive', 'JJ'), ('eaters', 'NNS'), ('--', ':'), ('f
 rom', 'IN'), ('the', 'DT'), ('nibblers', 'NNS'), ('and', 'CC'), ('the',
 'DT'), ('gobblers', 'NNS'), ('to', 'TO'), ('the', 'DT'), ('downright',
 'NN'), ('gluttons', 'NNS'), ('--', ':'), ('reducing', 'VBG'), ('is', 'V
 BZ'), ('a', 'DT'), ('war', 'NN'), ('with', 'IN'), ('the', 'DT'), ('wil
 l', 'MD'), ('that', 'WDT'), ('is', 'VBZ'), ('rarely', 'RB'), ('won', 'V
 BN'), ('.', '.'), ('Physiologist', 'JJ'), ('Keys', 'NNP'), ('flatly',
 'RB'), ('dismisses', 'VBZ'), ('such', 'JJ'), ('appetite', 'JJ'), ('depr
 essants', 'NNS'), ('as', 'IN'), ('the', 'DT'), ('amphetamines', 'NNS'),
 ('(', '('), ('Benzedrine', 'NNP'), ('.', '.'), ('Dexedrine', 'NNP'),
 (')', ')'), ('as', 'IN'), ('dangerous', 'JJ'), ('`', '`'), ('crutche
 s', 'NNS'), ('for', 'IN'), ('a', 'DT'), ('weak', 'JJ'), ('will', 'MD'),
 ('`', '`'), ('.', '.'), ('Keys', 'NNP'), ('has', 'VBZ'), ('no', 'D
 T'), ('such', 'JJ'), ('objections', 'NNS'), ('to', 'TO'), ('Metrecal',
 'NNP'), ('.', '.'), ('Quaker', 'NNP'), ('Oats', 'NNP'), ('s', 'POS'),
 ('Quota', 'NNP'), ('and', 'CC'), ('other', 'JJ'), ('900-calorie', 'J
 J'), ('milk', 'NN'), ('formulas', 'NNS'), ('that', 'WDT'), ('are', 'VB
 P'), ('currently', 'RB'), ('winning', 'VBG'), ('favor', 'NN'), ('from',
 'IN'), ('dieters', 'NNS'), ('.', '.'), ('`', '`'), ('Metrecal', 'NN
 P'), ('is', 'VBZ'), ('a', 'DT'), ('pretty', 'RB'), ('complete', 'JJ'),
 ('food', 'NN'), ('`', '`'), ('.', '.'), ('he', 'PRP'), ('says', 'VB

Z'), (',', '.'), (''', '''), ('It', 'PRP'), ('contains', 'VBZ'), ('la
 rge', 'JJ'), ('amounts', 'NNS'), ('of', 'IN'), ('protein', 'NN'), (',',
 ','), ('vitamins', 'NNS'), ('and', 'CC'), ('minerals', 'NNS'), (',',
 '.'), ('In', 'IN'), ('the', 'DT'), ('quantity', 'NN'), ('of', 'IN'),
 ('900', 'CD'), ('calories', 'NNS'), ('a', 'DT'), ('day', 'NN'), (',',
 ','), ('anyone', 'NN'), ('will', 'MD'), ('lose', 'VB'), ('weight', 'N
 N'), ('on', 'IN'), ('it', 'PRP'), ('--', ':'), ('20', 'CD'), (',',
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 '''), (',', '.'), ('But', 'CC'), ('Keys', 'NNP'), ('worries', 'VBZ'),
 ('that', 'IN'), ('the', 'DT'), ('Metrecal', 'NNP'), ('drinker', 'NN'),
 ('will', 'MD'), ('never', 'RB'), ('make', 'VB'), ('either', 'CC'), ('th
 e', 'DT'), ('psychological', 'JJ'), ('or', 'CC'), ('physiological', 'J
 J'), ('adjustment', 'NN'), ('to', 'TO'), ('the', 'DT'), ('idea', 'NN'),
 ('of', 'IN'), ('eating', 'VBG'), ('smaller', 'JJR'), ('portions', 'NN
 S'), ('of', 'IN'), ('food', 'NN'), (',', '.'), ('That', 'DT'), ('remark
 able', 'JJ'), ('cholesterol', 'NN'), (',', '.'), ('Despite', 'IN'), ('h
 is', 'PRP\$'), ('personal', 'JJ'), ('distaste', 'NN'), ('for', 'IN'),
 ('obesity', 'NN'), (('(', '('), (''', '''), ('disgusting', 'VBG'), ('`
 ', '''), (')', ')'), (',', ','), ('Dr.', 'NNP'), ('Keys', 'NNP'), ('h
 as', 'VBZ'), ('only', 'RB'), ('an', 'DT'), ('incidental', 'JJ'), ('inte
 rest', 'NN'), ('in', 'IN'), ('how', 'WRB'), ('much', 'JJ'), ('American
 s', 'NNPS'), ('eat', 'NN'), (',', '.'), ('What', 'WP'), ('concerns', 'V
 BZ'), ('him', 'PRP'), ('much', 'RB'), ('more', 'RBR'), ('is', 'VBZ'),
 ('the', 'DT'), ('relationship', 'NN'), ('of', 'IN'), ('diet', 'NN'),
 ('to', 'TO'), ('the', 'DT'), ('nation', 'NN'), ('s', 'POS'), ('No', 'N
 NP'), (',', '.'), ('1', 'CD'), ('killer', 'NN'), (':', ':'), ('coronar
 y', 'JJ'), ('artery', 'NN'), ('disease', 'NN'), (',', ',', ','), ('which',
 'WDT'), ('accounts', 'VBZ'), ('for', 'IN'), ('more', 'JJR'), ('than',
 'IN'), ('half', 'NN'), ('of', 'IN'), ('all', 'DT'), ('heart', 'NN'),
 ('fatalities', 'NNS'), ('and', 'CC'), ('kills', 'NNS'), ('500,000', 'C
 D'), ('Americans', 'NNPS'), ('a', 'DT'), ('year', 'NN'), ('--', ':'),
 ('twice', 'RB'), ('the', 'DT'), ('toll', 'NN'), ('from', 'IN'), ('all',
 'DT'), ('varieties', 'NNS'), ('of', 'IN'), ('cancer', 'NN'), (',',
 ','), ('five', 'CD'), ('times', 'NNS'), ('the', 'DT'), ('deaths', 'NN
 S'), ('from', 'IN'), ('automobile', 'NN'), ('accidents', 'NNS'), (',',
 '.'), ('Cholesterol', 'NNP'), (',', ',', ','), ('the', 'DT'), ('cornerston
 e', 'NN'), ('of', 'IN'), ('Dr.', 'NNP'), ('Keys', 'NNP'), ('s', 'PO
 S'), ('theory', 'NN'), (',', ',', ','), ('is', 'VBZ'), ('a', 'DT'), ('myster
 ious', 'JJ'), ('yellowish', 'NN'), (',', ',', ','), ('waxy', 'JJ'), ('substa

nce', 'NN'), (',', ' '), ('chemically', 'RB'), ('a', 'DT'), ('crystalline', 'NN'), ('alcohol', 'NN'), ('.', '.'), ('Scientists', 'NNS'), ('assume', 'VBP'), ('that', 'IN'), ('cholesterol', 'NN'), (('(', '('), ('from', 'IN'), ('the', 'DT'), ('Greek', 'JJ'), ('chole', 'NN'), (',', ' '), ('meaning', 'VBG'), ('bile', 'NN'), (',', ' '), ('and', 'CC'), ('sterios', 'NNS'), (',', ' '), ('meaning', 'VBG'), ('solid', 'JJ'), (',', ' '), ('is', 'VBZ'), ('somehow', 'JJ'), ('necessary', 'JJ'), ('for', 'IN'), ('the', 'DT'), ('formation', 'NN'), ('of', 'IN'), ('brain', 'NN'), ('cells', 'NNS'), (',', ' '), ('since', 'IN'), ('it', 'PRP'), ('accounts', 'VBZ'), ('for', 'IN'), ('about', 'RB'), ('2', 'CD'), ('%', 'NN'), ('of', 'IN'), ('the', 'DT'), ('brain', 'NN'), ('s', 'POS'), ('total', 'JJ'), ('solid', 'JJ'), ('weight', 'NN'), ('.', '.'), ('They', 'PRP'), ('know', 'VBP'), ('it', 'PRP'), ('is', 'VBZ'), ('the', 'DT'), ('chief', 'JJ'), ('ingredient', 'NN'), ('in', 'IN'), ('gallstones', 'NNS'), ('.', '.'), ('They', 'PRP'), ('suspect', 'VBP'), ('it', 'PRP'), ('plays', 'VBZ'), ('a', 'DT'), ('role', 'NN'), ('in', 'IN'), ('the', 'DT'), ('production', 'NN'), ('of', 'IN'), ('adrenal', 'JJ'), ('hormones', 'NNS'), (',', ' '), ('and', 'CC'), ('they', 'PRP'), ('believe', 'VBP'), ('it', 'PRP'), ('is', 'VBZ'), ('essential', 'JJ'), ('to', 'TO'), ('the', 'DT'), ('transport', 'NN'), ('of', 'IN'), ('fats', 'NNS'), ('throughout', 'IN'), ('the', 'DT'), ('circulatory', 'NN'), ('system', 'NN'), ('.', '.'), ('But', 'CC'), ('they', 'PRP'), ('can', 'MD'), ('not', 'RB'), ('fully', 'RB'), ('explain', 'VB'), ('the', 'DT'), ('process', 'NN'), ('of', 'IN'), ('its', 'PRP\$'), ('manufacture', 'NN'), ('by', 'IN'), ('the', 'DT'), ('human', 'JJ'), ('liver', 'NN'), ('.', '.'), ('Although', 'IN'), ('the', 'DT'), ('fatty', 'JJ'), ('protein', 'NN'), ('molecules', 'NNS'), (',', ' '), ('carried', 'VBD'), ('in', 'IN'), ('the', 'DT'), ('blood', 'NN'), ('and', 'CC'), ('partly', 'RB'), ('composed', 'VBN'), ('of', 'IN'), ('cholesterol', 'NN'), (',', ' '), ('are', 'VBP'), ('water', 'NN'), ('soluble', 'JJ'), (',', ' '), ('cholesterol', 'VB'), ('itself', 'PRP'), ('is', 'VBZ'), ('insoluble', 'JJ'), (',', ' '), ('and', 'CC'), ('can', 'MD'), ('not', 'RB'), ('be', 'VB'), ('destroyed', 'VBN'), ('by', 'IN'), ('the', 'DT'), ('body', 'NN'), ('.', '.'), (''', '''), ('A', 'DT'), ('remarkable', 'JJ'), ('substance', 'NN'), (''', '''), (',', ' '), ('says', 'VBZ'), ('Dr.', 'NNP'), ('Keys', 'NNP'), (',', ' '), (''', '''), ('quite', 'RB'), ('apart', 'RB'), ('from', 'IN'), ('its', 'PRP\$'), ('tendency', 'NN'), ('to', 'TO'), ('be', 'VB'), ('deposited', 'VBN'), ('in', 'IN'), ('the', 'DT'), ('walls', 'NNS'), ('of', 'IN'), ('arteries', 'NNS'), (''', '''), ('.', '.'), ('When', 'WRB'),

('thus', 'RB'), ('deposited', 'VBN'), (',', ','), ('Keys', 'NNP'), ('sa
 ys', 'VBZ'), ('that', 'IN'), ('cholesterol', 'NN'), ('is', 'VBZ'), ('ma
 inly', 'RB'), ('responsible', 'JJ'), ('for', 'IN'), ('the', 'DT'), ('ar
 terial', 'JJ'), ('blockages', 'NNS'), ('that', 'WDT'), ('culminate', 'V
 BP'), ('in', 'IN'), ('heart', 'NN'), ('attacks', 'NNS'), (',', ','),
 ('Explains', 'NNS'), ('Keys', 'NNS'), (':', ':'), ('As', 'IN'), ('the',
 'DT'), ('fatty', 'JJ'), ('protein', 'NN'), ('molecules', 'NNS'), ('trav
 el', 'VBP'), ('in', 'IN'), ('the', 'DT'), ('bloodstream', 'NN'), (',',
 ','), ('they', 'PRP'), ('are', 'VBP'), ('deposited', 'VBN'), ('in', 'I
 N'), ('the', 'DT'), ('intima', 'NN'), (',', ','), ('or', 'CC'), ('inne
 r', 'VB'), ('wall', 'NN'), ('of', 'IN'), ('a', 'DT'), ('coronary', 'J
 J'), ('artery', 'NN'), (',', ','), ('The', 'DT'), ('proteins', 'NNS'),
 ('and', 'CC'), ('fats', 'NNS'), ('are', 'VBP'), ('burned', 'VBN'), ('of
 f', 'RP'), (',', ','), ('and', 'CC'), ('the', 'DT'), ('cholesterol', 'N
 N'), ('is', 'VBZ'), ('left', 'VBN'), ('behind', 'RB'), (',', ','), ('A
 s', 'IN'), ('cholesterol', 'NN'), ('piles', 'VBZ'), ('up', 'RP'), (',',
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 S'), ('and', 'CC'), ('damages', 'NNS'), ('the', 'DT'), ('artery', 'N
 N'), (',', ','), ('encouraging', 'VBG'), ('formation', 'NN'), ('of', 'I
 N'), ('calcium', 'NN'), ('deposits', 'NNS'), ('and', 'CC'), ('slowing',
 'VBG'), ('circulation', 'NN'), (',', ','), ('Eventually', 'RB'), (',',
 ','), ('says', 'VBZ'), ('Keys', 'NNP'), (',', ','), ('one', 'CD'), ('o
 f', 'IN'), ('two', 'CD'), ('things', 'NNS'), ('happens', 'VBZ'), (',',
 ','), ('A', 'DT'), ('clot', 'NN'), ('forms', 'NNS'), ('at', 'IN'), ('th
 e', 'DT'), ('site', 'NN'), (',', ','), ('seals', 'NNS'), ('off', 'IN'),
 ('the', 'DT'), ('flow', 'NN'), ('of', 'IN'), ('blood', 'NN'), ('to', 'T
 O'), ('the', 'DT'), ('heart', 'NN'), ('and', 'CC'), ('provokes', 'VB'),
 ('a', 'DT'), ('heart', 'NN'), ('attack', 'NN'), (',', ','), ('Or', 'C
 C'), (('(', '('), ('more', 'JJR'), ('commonly', 'RB'), (',', ','), ('thi
 nks', 'VBZ'), ('Keys', 'NNP'), (')', ')'), ('the', 'DT'), ('deposits',
 'NNS'), ('themselves', 'PRP'), ('get', 'VBP'), ('so', 'RB'), ('big', 'J
 J'), ('that', 'IN'), ('they', 'PRP'), ('choke', 'VBD'), ('off', 'RP'),
 ('the', 'DT'), ('artery', 'NN'), ('s', 'POS'), ('flow', 'NN'), ('to',
 'TO'), ('the', 'DT'), ('point', 'NN'), ('that', 'IN'), ('an', 'DT'),
 ('infarct', 'JJ'), ('occurs', 'NN'), (':', ':'), ('the', 'DT'), ('hear
 t', 'NN'), ('muscle', 'NN'), ('is', 'VBZ'), ('suffocated', 'VBN'),
 (',', ','), ('cells', 'NNS'), ('supplied', 'VBN'), ('by', 'IN'), ('th
 e', 'DT'), ('artery', 'NN'), ('die', 'NN'), (',', ','), ('and', 'CC'),
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(',', ','), ('perhaps', 'RB'), ('fatally', 'RB'), ('injured', 'VBN'),
 ('.', '.'), ('Fats', 'NNP'), ('&', 'CC'), ('coronaries', 'NNS'), ('.',
 '.'), ('Ordinarily', 'RB'), ('', ',', ','), ('the', 'DT'), ('human', 'JJ'),
 ('liver', 'NN'), ('synthesizes', 'VBZ'), ('only', 'RB'), ('enough', 'R
 B'), ('cholesterol', 'NN'), ('to', 'TO'), ('satisfy', 'VB'), ('the', 'D
 T'), ('body', 'NN'), ('''s', 'POS'), ('needs', 'NNS'), ('--', ':'), ('fo
 r', 'IN'), ('transportation', 'NN'), ('of', 'IN'), ('fats', 'NNS'), ('a
 nd', 'CC'), ('for', 'IN'), ('production', 'NN'), ('of', 'IN'), ('bile',
 'NN'), ('.', '.'), ('Even', 'RB'), ('eggs', 'NNS'), ('and', 'CC'), ('ot
 her', 'JJ'), ('cholesterol-rich', 'JJ'), ('foods', 'NNS'), ('', ',', ','),
 ('eaten', 'RB'), ('in', 'IN'), ('normal', 'JJ'), ('amounts', 'NNS'),
 ('', ',', ','), ('says', 'VBZ'), ('Dr.', 'NNP'), ('Keys', 'NNP'), ('', ',',
 ','), ('do', 'VBP'), ('not', 'RB'), ('materially', 'RB'), ('affect', 'V
 BP'), ('the', 'DT'), ('amount', 'NN'), ('of', 'IN'), ('cholesterol', 'N
 N'), ('in', 'IN'), ('the', 'DT'), ('blood', 'NN'), ('.', '.'), ('But',
 'CC'), ('fatty', 'JJ'), ('foods', 'NNS'), ('do', 'VBP'), ('.', '.'),
 ('During', 'IN'), ('World', 'NNP'), ('War', 'NNP'), ('2', 'CD'), ('', ',',
 ','), ('', ',', ','), ('doctors', 'NNS'), ('in', 'IN'), ('The', 'DT'), ('Ne
 therlands', 'NNP'), ('and', 'CC'), ('Scandinavia', 'NNP'), ('noted', 'V
 BD'), ('a', 'DT'), ('curious', 'JJ'), ('fact', 'NN'), (':', ':'), ('des
 pite', 'IN'), ('the', 'DT'), ('stresses', 'NNS'), ('of', 'IN'), ('Naz
 i', 'NNP'), ('occupation', 'NN'), ('', ',', ','), ('the', 'DT'), ('death',
 'NN'), ('rate', 'NN'), ('from', 'IN'), ('coronary', 'JJ'), ('artery',
 'NN'), ('disease', 'NN'), ('was', 'VBD'), ('slowly', 'RB'), ('droppin
 g', 'VBG'), ('.', '.'), ('Not', 'RB'), ('until', 'IN'), ('long', 'RB'),
 ('after', 'IN'), ('the', 'DT'), ('war', 'NN'), ('--', ':'), ('1950', 'C
 D'), ('', ',', ','), ('in', 'IN'), ('fact', 'NN'), ('--', ':'), ('did', 'VB
 D'), ('they', 'PRP'), ('get', 'VB'), ('a', 'DT'), ('hint', 'NN'), ('o
 f', 'IN'), ('the', 'DT'), ('reason', 'NN'), ('.', '.'), ('That', 'DT'),
 ('year', 'NN'), ('', ',', ','), ('Sweden', 'NNP'), ('''s', 'POS'), ('Haqvi
 n', 'NNP'), ('Malmros', 'NNP'), ('showed', 'VBD'), ('that', 'IN'), ('th
 e', 'DT'), ('sinking', 'VBG'), ('death', 'NN'), ('rate', 'NN'), ('neatl
 y', 'RB'), ('coincided', 'VBN'), ('with', 'IN'), ('increasingly', 'R
 B'), ('severe', 'JJ'), ('restrictions', 'NNS'), ('on', 'IN'), ('fatty',
 'JJ'), ('foods', 'NNS'), ('.', '.'), ('That', 'DT'), ('same', 'JJ'),
 ('year', 'NN'), ('the', 'DT'), ('University', 'NNP'), ('of', 'IN'), ('C
 alifornia', 'NNP'), ('''s', 'POS'), ('Dr.', 'NNP'), ('Laurance', 'NNP'),
 ('Kinsell', 'NNP'), ('', ',', ','), ('timing', 'VBG'), ('oxidation', 'NN'),
 ('rates', 'NNS'), ('of', 'IN'), ('blood', 'NN'), ('fats', 'NNS'), ('', ',',

,'), ('stumbled', 'VBD'), ('onto', 'IN'), ('the', 'DT'), ('discovery', 'NN'), ('that', 'IN'), ('many', 'JJ'), ('vegetable', 'JJ'), ('fats', 'NNS'), ('cause', 'VBP'), ('blood', 'NN'), ('cholesterol', 'NN'), ('levels', 'NNS'), ('to', 'TO'), ('drop', 'VB'), ('radically', 'RB'), (',', ','), ('while', 'IN'), ('animal', 'JJ'), ('fats', 'NNS'), ('cause', 'VBP'), ('them', 'PRP'), ('to', 'TO'), ('rise', 'VB'), ('.', '.'), ('Here', 'RB'), ('Keys', 'NNP'), ('and', 'CC'), ('others', 'NNS'), (',', ','), ('such', 'JJ'), ('as', 'IN'), ('Dr.', 'NNP'), ('A.', 'NNP'), ('E.', 'NNP'), ('Ahrens', 'NNP'), ('of', 'IN'), ('the', 'DT'), ('Rockefeller', 'NNP'), ('Institute', 'NNP'), (',', ','), ('took', 'VBD'), ('over', 'RP'), ('to', 'TO'), ('demonstrate', 'VB'), ('the', 'DT'), ('chemical', 'NN'), ('difference', 'NN'), ('between', 'IN'), ('vegetable', 'JJ'), ('and', 'CC'), ('animal', 'JJ'), ('fats', 'NNS'), ('--', ':'), ('and', 'CC'), ('even', 'RB'), ('between', 'IN'), ('different', 'JJ'), ('varieties', 'NNS'), ('of', 'IN'), ('each', 'DT'), ('.', '.'), ('All', 'DT'), ('natural', 'JJ'), ('food', 'NN'), ('fats', 'NNS'), ('fall', 'VBP'), ('into', 'IN'), ('one', 'CD'), ('of', 'IN'), ('three', 'CD'), ('categories', 'NNS'), ('--', ':'), ('saturated', 'VBD'), (',', ','), ('mono-unsaturated', 'JJ'), ('and', 'CC'), ('poly-unsaturated', 'JJ'), ('.', '.'), ('The', 'DT'), ('degree', 'NN'), ('of', 'IN'), ('saturation', 'NN'), ('depends', 'VBZ'), ('on', 'IN'), ('the', 'DT'), ('number', 'NN'), ('of', 'IN'), ('hydrogen', 'NN'), ('atoms', 'NNS'), ('on', 'IN'), ('the', 'DT'), ('fat', 'JJ'), ('molecule', 'NN'), ('.', '.'), ('Saturated', 'VBN'), ('fats', 'NNS'), ('can', 'MD'), ('accommodate', 'VB'), ('no', 'DT'), ('more', 'JJR'), ('hydrogens', 'NNS'), ('.', '.'), ('Mono-unsaturated', 'JJ'), ('fats', 'NNS'), ('have', 'VBP'), ('room', 'NN'), ('for', 'IN'), ('two', 'CD'), ('more', 'JJR'), ('hydrogens', 'NNS'), ('on', 'IN'), ('each', 'DT'), ('molecule', 'NN'), (',', ','), ('and', 'CC'), ('the', 'DT'), ('poly-unsaturated', 'JJ'), ('fat', 'NN'), ('molecule', 'NN'), ('has', 'VBZ'), ('room', 'NN'), ('for', 'IN'), ('at', 'IN'), ('least', 'JJS'), ('four', 'CD'), ('hydrogens', 'NNS'), ('.', '.'), ('The', 'DT'), ('three', 'CD'), ('fats', 'NNS'), ('have', 'VBP'), ('similar', 'JJ'), ('caloric', 'NN'), ('values', 'NNS'), (('(', '('), ('about', 'IN'), ('265', 'CD'), ('calories', 'NNS'), ('per', 'IN'), ('oz', 'NN'), ('.', '.'), (')', ')'), (',', ','), ('but', 'CC'), ('each', 'DT'), ('exerts', 'VBZ'), ('a', 'DT'), ('radically', 'RB'), ('different', 'JJ'), ('influence', 'NN'), ('on', 'IN'), ('blood', 'NN'), ('cholesterol', 'NN'), ('.', '.')]]

In [30]:

```
#Stemming
from nltk.stem import PorterStemmer
stemmer = PorterStemmer()
print("Original Sentence:",str1)
print("\n")

str1 = [stemmer.stem(token) for token in str1.split(" ")]
print("Stemmed Sentence:")
print(" ".join(str1))
```

Original Sentence: The reading public , the theatergoing public , the skindiving public , the horse-playing public -- all these and others fill substantial roles in U.S. life , but none is so varied , vast and vigilant as the eating public . The Department of Agriculture averaged out U.S. food consumption last year at 1,488 lbs. per person , which , allowing for the 17 million Americans that John Kennedy said go to bed hungry every night , means that certain gluttons on the upper end must somehow down 8 lbs. or more a day . That mother hen of the weight-height tables , the Metropolitan Life Insurance Co. , clucks that 48 million Americans are overweight . Through previous centuries , eating changed by nearly imperceptible degrees , and mostly toward just getting enough . Now big forces buffet food . For the first time in history , the U.S. has produced a society in which less than one-tenth of the people turn out so much food that the Government's most embarrassing problem is how to dispose inconspicuously of 100 million tons of surplus farm produce . In this same society , the plain citizen can with an average of only one-fifth his income buy more calories than he can consume . Refrigeration , automated processing and packaging conspire to defy season and banish spoilage . And in the wake of the new affluence and the new techniques of processing comes a new American interest in how what people eat affects their health . To eat is human , the nation is learning to think , to survive divine . Fads , facts Not all the concern for health is well directed . From the fusty panaceas of spinach , eggs and prunes , the U.S. has progressed to curds , concentrates and capsules . Each year , reports the American Medical Association , ten million Americans spend \$900 million on vitamins , tonics and other food supplements . At juice bars in Los Angeles' 35 `` health '' stores , a new sensation is a pink , high-protein cocktail , concocted of dried eggs , powdered milk and cherry-flavored No-Cal , which sells for 59-cents per 8-oz. glass .

Grocery stores sell dozens of foods that boast of having almost no food value at all . But a big part of the public wants to know facts about diet and health , and a big group of U.S. scientists wants to supply the m . The man most firmly at grips with the problem is the University of Minnesota's Physiologist Ancel Keys , 57 , inventor of the wartime K (for Keys) ration and author of last year's bestselling Eat Well And Stay Well . From his birch-paneled office in the Laboratory of Physiological Hygiene , under the university's football stadium in Minneapolis (`` We get a rumble on every touchdown '') , blocky , grey-haired Dr. Keys directs an ambitious , \$200,000-a-year experiment on diet , which spans three continents and seven nations and is still growing . Pursuing it , he has logged 500,000 miles , suffered indescribable digestive indignities , and meticulously collected physiological data on the health and eating habits of 10,000 individuals , from Bantu tribesmen to Italian contadini . He has measured the skinfolds (the fleshy areas under the shoulder blades) of Neapolitan firemen , studied the metabolism of Finnish woodcutters , analyzed the `` mealie-meal '' eaten by Capetown coloreds , and experimented on Minneapolis businessmen . And fats . Keys's findings , though far from complete , are likely to smash many an eating cliché . Vitamins , eggs and milk begin to look like foods to hold down on (though mothers' milk is still the ticket) . Readings of the number of milligrams of cholesterol in the blood , which seem to have value in predicting heart attacks , are becoming as routine as the electrocardiogram , which can show that the heart has suffered a symptomatic attack . Already many an American knows his count , and rejoices or worries depending on whether it is nearer 180 (safe) or 250 (dangerous) . Out of cholesterol come Keys's main messages so far : Americans eat too much . The typical U.S. daily menu , says Dr. Keys , contains 3,000 calories , should contain 2,300 . And extra weight increases the risk of cancer , diabetes , artery disease and heart attack . Americans eat too much fat . With meat , milk , butter and ice cream , the calorie-heavy U.S. diet is 40% fat , and most of that is saturated fat -- the insidious kind , says Dr. Keys , that increases blood cholesterol , damages arteries , and leads to coronary disease . Obesity : a malnutrition . Throughout much of the world , food is still so scarce that half of the earth's population has trouble getting the 1,600 calories a day necessary to sustain life . The deficiency diseases -- scurvy , tropical sprue , pellagra -- run rampant . In West Africa , for example , where meat is a luxury and babies must be weaned early to make room at the bre

ast for later arrivals , a childhood menace is kwashiorkor , or `` Red Johnny '' , a growth-stunting protein deficiency (signs : reddish hair , bloated belly) that kills more than half its victims , leaves the rest prey for parasites and lingering tropical disease . In the well-fed U.S. , deficiency diseases have virtually vanished in the past 20 years . Today , as Harrison's Principles Of Internal Medicine , a standard internist's text , puts it , `` The most common form of malnutrition is caloric excess or obesity '' . Puritan New England regarded obesity as a flagrant symbol of intemperance , and thus a sin . Says Keys : `` Maybe if the idea got around again that obesity is immoral , the fat man would start to think '' . Morals aside , the fat man has plenty to worry about -- over and above the fact that no one any longer loves him . The simple mechanical strain of overweight , says New York's Dr. Norman Jolliffe , can overburden and damage the heart `` for much the same reason that a Chevrolet engine in a Cadillac body would wear out sooner than if it were in a body for which it was built '' . The fat man has trouble buying life insurance or has to pay higher premiums . He has -- for unclear reasons -- a 25% higher death rate from cancer . He is particularly vulnerable to diabetes . He may find even moderate physical exertion uncomfortable , because excess body fat hampers his breathing and restricts his muscular movement . Physiologically , people overeat because what Dr. Jolliffe calls the `` appestat '' is set too high . The appestat , which adjusts the appetite to keep weight constant , is located , says Jolliffe , in the hypothalamus -- near the body's temperature , sleep and water-balance controls . Physical exercise raises the appestat . So does cold weather . In moderate doses , alcohol narcotizes the appestat and enhances appetite (the original reason for the cocktail) ; ; but because liquor has a high caloric value -- 100 calories per oz. -- the heavy drinker is seldom hungry . In rare cases , diseases such as encephalitis or a pituitary tumor may damage the appestat permanently , destroying nearly all sense of satiety . Food for frustration . Far more frequently , overeating is the result of a psychological compulsion . It may be fostered by frustration , depression , insecurity -- or , in children , simply by the desire to stop an anxious mother's nagging . Some families place undue emphasis on food : conversations center on it , and rich delicacies are offered as rewards , withheld as punishment . The result says Jolliffe : `` The child gains the feeling that food is the purpose of life '' . Food may act as a sedative , giving temporary emotional solace , just as , for some people , alcohol does . Reports D

r. Keys : `` A fairly common experience for us is the wife who finds her husband staying out more and more . He may be interested in another woman , or just like being with the boys . So she fishes around in the cupboard and hauls out a chocolate cake . It's a matter of boredom , and the subconscious feeling that she is entitled to something , because she's being deprived of something else '' . For the army of compulsive eaters -- from the nibblers and the gobblers to the downright gluttons -- reducing is a war with the will that is rarely won . Physiologist Keys flatly dismisses such appetite depressants as the amphetamines (Benzedrine , Dexedrine) as dangerous `` crutches for a weak will '' . Keys has no such objections to Metrecal , Quaker Oats's Quota and other 900-calorie milk formulas that are currently winning favor from dieters . `` Metrecal is a pretty complete food '' , he says . `` It contains large amounts of protein , vitamins and minerals . In the quantity of 900 calories a day , anyone will lose weight on it -- 20 , 30 or 40 lbs. '' . But Keys worries that the Metrecal drinker will never make either the psychological or physiological adjustment to the idea of eating smaller portions of food . That remarkable cholesterol . Despite his personal distaste for obesity (`` disgusting '') , Dr. Keys has only an incidental interest in how much Americans eat . What concerns him much more is the relationship of diet to the nation's No. 1 killer : coronary artery disease , which accounts for more than half of all heart fatalities and kills 500,000 Americans a year -- twice the toll from all varieties of cancer , five times the deaths from automobile accidents . Cholesterol , the cornerstone of Dr. Keys's theory , is a mysterious yellowish , waxy substance , chemically a crystalline alcohol . Scientists assume that cholesterol (from the Greek chole , meaning bile , and sterios , meaning solid) is somehow necessary for the formation of brain cells , since it accounts for about 2% of the brain's total solid weight . They know it is the chief ingredient in gallstones . They suspect it plays a role in the production of adrenal hormones , and they believe it is essential to the transport of fats throughout the circulatory system . But they cannot fully explain the process of its manufacture by the human liver . Although the fatty protein molecules , carried in the blood and partly composed of cholesterol , are water soluble , cholesterol itself is insoluble , and cannot be destroyed by the body . `` A remarkable substance '' , says Dr. Keys , `` quite apart from its tendency to be deposited in the walls of arteries '' . When thus deposited , Keys says that cholesterol is mainly responsible for the arterial blockages that cu

lminate in heart attacks . Explains Keys : As the fatty protein molecules travel in the bloodstream , they are deposited in the intima , or inner wall of a coronary artery . The proteins and fats are burned off , and the cholesterol is left behind . As cholesterol piles up , it narrows , irritates and damages the artery , encouraging formation of calcium deposits and slowing circulation . Eventually , says Keys , one of two things happens . A clot forms at the site , seals off the flow of blood to the heart and provokes a heart attack . Or (more commonly , thinks Keys) the deposits themselves get so big that they choke off the artery's flow to the point that an infarct occurs : the heart muscle is suffocated , cells supplied by the artery die , and the heart is permanently , perhaps fatally injured .

Fats & coronaries . Ordinarily , the human liver synthesizes only enough cholesterol to satisfy the body's needs -- for transportation of fats and for production of bile . Even eggs and other cholesterol-rich foods , eaten in normal amounts , says Dr. Keys , do not materially affect the amount of cholesterol in the blood . But fatty foods do . During World War 2 , , doctors in The Netherlands and Scandinavia noted a curious fact : despite the stresses of Nazi occupation , the death rate from coronary artery disease was slowly dropping . Not until long after the war -- 1950 , in fact -- did they get a hint of the reason . That year , Sweden's Hagvin Malmros showed that the sinking death rate neatly coincided with increasingly severe restrictions on fatty foods . That same year the University of California's Dr. Laurence Kinsell , timing oxidation rates of blood fats , stumbled onto the discovery that many vegetable fats cause blood cholesterol levels to drop radically , while animal fats cause them to rise . Here Keys and others , such as Dr. A. E. Ahrens of the Rockefeller Institute , took over to demonstrate the chemical difference between vegetable and animal fats -- and even between different varieties of each . All natural food fats fall into one of three categories -- saturated , mono-unsaturated and poly-unsaturated . The degree of saturation depends on the number of hydrogen atoms on the fat molecule . Saturated fats can accommodate no more hydrogens . Mono-unsaturated fats have room for two more hydrogens on each molecule , and the poly-unsaturated fat molecule has room for at least four hydrogens . The three fats have similar caloric values (about 265 calories per oz.) , but each exerts a radically different influence on blood cholesterol .

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health and eat habit of 10,000 individuals, from bantu tribesmen to italian contadini. He has measured the skinfold (the fleshy area under the shoulder blade) of neapolitan firemen, studied the metabolism of finnish wood cutters, analyzed the ``mealie-meal`` eaten by capetown coloreds, and experienced minneapolis businessmen. and fat. keys' findings, though far from complete, are like to smash many an old cliché. vitamin, egg and milk begin to look like food to hold down on (though mothers' milk is still the ticket). reads of the number of milligram of cholesterol in the blood, which seem to have value in predicting heart attack, are becoming as routine as the electrocardiogram, which can show that the heart has suffered a symptomatic attack. already many an american knows his count, and rejoices or worries depend on whether it is nearer 180 (safe) or 250 (danger). out of cholesterol comes keys' main message so far: americans eat too much. the typical u.s. daily menu, says dr. key, contains 3,000 calories, should contain 2,300. and extra weight increases the risk of cancer, diabetes, arteri diseases and heart attack. americans eat too much fat. with meat, milk, butter and ice cream, the calorie-heavy u.s. diet is 40% fat, and most of that is saturated fat -- the insidious kind, says dr. key, that increases blood cholesterol, damages arteries, and leads to coronary disease. obesity: a malnutrition. throughout much of the world, food is still so scarce that half of the earth's population has trouble getting the 1,600 calories a day necessary to sustain life. the deficiency diseases -- scurvy, tropical sprue, pellagra -- run rampant. In west africa, for example, where meat is a luxury and babies must be weaned early to make room at the breast for later arrivals, a childhood menace is kwashiorkor, or ``red johnny``, a growth-stunting protein deficiency (sign: reddish hair, bloated belly) that kills more than half its victims, leaving the rest prey for parasites and lingering tropical diseases. In the well-fed u.s., deficiency diseases have virtually vanished in the past 20 years. today, as harrison's principles of internal medicine, a standard internist's text, puts it, ``the most common form of malnutrition is caloric excess or obesity``. puritan new england regarded obesity as a flagrant symbol of intemperance, and thus a sin. says key: ``maybe if the idea got around again that obesity is immoral, the fat man would start to think.`` moral aside, the fat man has plenty to worry about -- over and above the fact that no one any longer loves him. the simple mechanical strain of overweight, says new york's dr. norman jolliffe, can overburden and damage the heart ``for much the same reason that a chevrolet engine in a cadillac body would wear out sooner than if it were in a body for which it was built``. the fat man has trouble buying life insurance or has

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