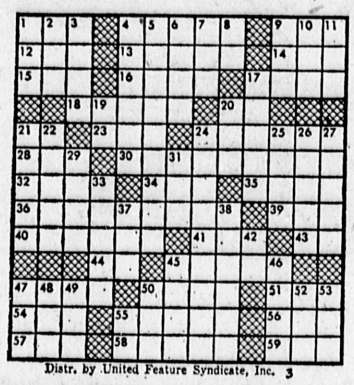
CROSSWORD PUZZLE

ACROSS

1-Evil
4-Hurry
9-Decay
12-Guido's high note
13-Up to
14-Hasten
15-Scottish cap
16-Stalk
17-Form
18-Put in a particular position
20-Maiden loved by Zeus
21-Parent (colloq.)
23-Knock
24-Roasted
28-Limb
30-Roundness
32-Expires
34-Click beetle
35-Graceful bird
36-Inhabitants
39-Suffix: like
40-Puffs up
41-Man's nickname
43-Conjunction
44-Printer's measure
45-Shuts noisily
47-Periods of time
50-Quarrel
51-Devoured
54-Republican party (init.)
55-Platform
56-Constellation
57-Poem
58-Anxieties
59-Abstract being

DOWN

1-Wager
2-A state (abbr.)
3-Wet
4-European cavalryman
5-People living in opposite portions of the earth
6-Let it stand
7-Man's nickname
8-Spanish article
9-Greek letter
10-Lubricate
11-Spread for drying
17-Frames of mind
19-Conjunction
20-Electrified particle
21-Spanish for "father"
22-Fairy in "The Tempest"
24-Fenced-in ground surrounding a dwelling
25-New Zealand bird
26-Babylonian hero
27-Units of force
29-Tableland
31-Measure of weight
33-Locations
37-Lair
38-Large edible fish (pl.)
42-Printer's measure
45-Box
46-Transaction
47-The self
48-Staff
49-Simian
50-Music: as written
52-Number
53-Dawn goddess
55-A state (abbr.)



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Inherited Metabolic Disorder Causes Brain Damage in Infants

By K. H. Sutherland, M.D.
L. A. County Health Officer

Phenylketonuria, ofter abbreviated to the letters PKU, is an inherited and rare metabolic disorder that causes damage to the infant brain in most cases that occur. On the basis of the prevalence of PKU found among the mentally defective confined to institutions in the United States, it is estimated that the disorder occurs about once in every 20 to 40 thousand babies that are born alive. Practically all of the children thus afflicted will be be mentally retarded in some degree unlss medical treatment of the condition is started in the first few weeks of life. Uncommon indeed is the untreated PKU baby that escapes this tragedy.

The disease was first described by a Norwegian physician in 1934 following the discovery of phenylpyruvic acid in the urine of two retarded children belonging to the same family. The simple and reliable ferric chloride urine test that he then employed in diagnosis is still in use today.

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THE TEST revealed that the disorder is caused by the lack of one of the many enzymes in the body. This enzyme (phenylalanine hydroxylase) is the substance that is needed to convert or metabolize phenylalanine, one of the essential amino acids found in protein foods, into another amino acid (tyrosine) so that it may eventually be utilized in the processes of digestion. When this chemical change is blocked, abnormal amounts of phenylalanine accumulate in the blood and this, in ways not yet understood, nearly always affects the brain.

Infants afflicted with PKU are apparently protected from the disease before birth and are born physically, mentally, and biochemically normal. However, in the first few days of life phenylalanine from milk starts to build u pin the blood and, some 2 to 6 weeks later, spills over into the urine in the form of phenylpyruvic acid.

Studies show that about half of the untreated infants with this disorder suffer from vomitting, about a third are very irritable, and about one-fifth develop a skin rash (infantile eczema). The most characteristic symptom of all is a musty odor, which is probably due to the presence of phenylpyruvic acid both in the urine and in perspiration. Convulsions may also appear during the first year.

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MENTAL development may appear normal up to 3 or 4 months of age but a slowing up may then be noticeable and small skills previously acquired may be lost. By the age of 2 or 3 years, mental deficiency in untreated PKU children is usually quite obvious; as a matter of fact, less than one-half per cent have a normal mentality at this age.

There is no specific drug for prevention or cure of the disease, but in 1951 experiments in diet therapy were successfully conducted on a PKU child by a German scientist. Further research soon established the fact that a diet low in phenylalanine started in early infancy prevented the mental deficiency caused by PKU. While not a cure, it was certainly the next best thing.

It is now known that the sooner the diet is started in the PKU child the less likely it is that intelligence will be impaired. There is little evidence of mental improvement when dietary treatment is delayed beyond 3 years of age, although the extent of the brain damage already done—which varies considerably for reasons unknown — has some bearing on the results of dietary treatment in the older child.

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THE DIET may be safely discontinued when there are no longer significant gains in the mental level, but is usually recommended into the school years. In those cases where intelligence tests show a reversal, the diet is reinstated.

Within the last 2 or 3 years a nationwide screening program was started in which many health departments and private physicians test the urine of infants as young as 2 weeks of age, and this "wet diaper test" is routinely done in well baby clinics maintained by the Los Angeles County Health Dept. All positive urine tests must then be confirmed by blood studies.

While PKU is but one of more than 70 known causes of mental retardation, it is of particular interest because an opportunity is provided to avert the tragedy before it occurs. Because of its rarity few cases will be found, but, as one physician stated, it is certain that no early case will ever be discovered unless someone looks for it.