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1.1.1: Effective Curricular Planning and Delivery

Project Works

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PROJECT WORK

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CONCEPT : GROUPS

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Groups

1 Definition

The idea of a group has evolved from a concrete measure of symmetry of a mathematical object to an abstract algebraic structure in its own right. The work of Lagrange, Galois and others on groups was motivated by studying the symmetries of the roots of a polynomial equation.

The symmetry of an object is specified by its structure-preserving mappings and the manner in which they compose with one another. It is this notion of a set with a composition which is the basis of the definition.

A *binary operation* on a set G (typically denoted by a symbol like $\circ$) is a function from $G \times G$ to G. We write the value of the function on the pair $(g,h) \in G \times G$ (the result of 'composing' g and h) as $g \circ h$.

A *group* is a set G with a binary operation $\circ$ satisfying the following conditions:

(G1) For all $g,h,k \in G$, we have $g \circ (h \circ k) = (g \circ h) \circ k$ (the *associative law*).

(G2) There is an element $e \in G$ such that $g \circ e = e \circ g = g$ for all $g \in G$.

(G3) For any $g \in G$, there exists $g' \in G$ such that $g \circ g' = g' \circ g = e$.

If it satisfies the additional condition

(G4) For all $g,h \in G$, we have $g \circ h = h \circ g$ (the *commutative law*),

it is said to be an *Abelian group*.

The set of symmetries of a mathematical object (suitably defined) always has the structure of a group, where the operation is composition. For the composition of two symmetries is a symmetry; the identity map is a symmetry; a symmetry is a one-to-one and onto map, and so has an inverse, which is also a symmetry; and composition of maps is always associative.

Symmetry groups can be generalised as follows. A *permutation group* is a set G of permutations (one-to-one and onto maps) of a set Ω which is closed under composition, contains the identity map, and contains the inverse of each of its elements. (A permutation group is a group: the associative law is again automatic.) Thus, each symmetry group is a permutation group. A lot of work has gone into deciding which permutation groups are symmetry groups of objects

Let G be a group. A *subgroup* of G is a non-empty subset which forms a group in its own right, with respect to the operation inherited from G. That is, H must satisfy the conditions

- for all $h_1, h_2 \in H$, we have $h_1 \circ h_2 \in H$ (the *closure law* – if this were not so, we would not have a well-defined operation on H);
- the identity of G is contained in H;
- the inverse of each element of H is in H.

In fact the second condition follows from the others, and all follow from the single condition

- for all $h_1, h_2 \in H$, we have $h_1 \circ h_2^{-1} \in H$.

We write $H \leq G$ to denote that H is a subgroup of G.

Let H be a subgroup of G. The relation $\sim_r$ on G defined by

$$x \sim_r y \quad \text{if and only if} \quad xy^{-1} \in H$$

is an equivalence relation on H. Its equivalence classes are caller *right cosets* of H in G, and are sets of the form

$$Hx = \{hx : h \in H\}.$$

The element x is called a *right coset representative* for the right coset Hx.

Dually, the relation $\sim_l$ given by

$$x \sim_l y \quad \text{if and only if} \quad x^{-1}y \in H$$

is an equivalence relation, whose equivalence classes are called *left cosets* of H in G, and have the form

$$xH = \{xh : h \in H\}.$$

The left and right cosets of a given subgroup may give different partitions of the group. But the number of elements in a coset of either type is equal to the number of elements in the subgroup. (For right cosets, the correspondence $h \leftrightarrow hx$ is a bijection between H and Hx. So the number of cosets of either type (the *index* of H in G) is equal to $|G|/|H|$. We deduce *Lagrange's Theorem*:

Theorem 2 *The order of a subgroup H of a finite group G divides the order of G.*

of particular types such as graphs or designs. (Every permutation group is the symmetry group of some suitably constructed object.)

Cayley's Theorem shows that, conversely, every group can be represented as a permutation group. The proof is as follows. (This argument is stated for finite groups but works more generally.) Let $G = \{g_1, g_2, \ldots, g_n\}$ be a group. The *Cayley table* of G is the $n \times n$ matrix with (i,j) entry k if $g_i \circ g_j = g_k$. It follows from the group axioms (G2) and (G3) that the Cayley table is a Latin square. Thus, each row is a permutation of $\{1, \ldots, n\}$. Now it can be checked that, if π_i is the permutation corresponding to the ith row, then $\pi_i \circ \pi_j = \pi_k$ if and only if $g_i \circ g_j = g_k$. (Here the operation on permutations is composition.) Thus the permutations form a group identical to G.

We say that a group G with operation $\circ$ and a group H with operation $*$ are *isomorphic* if there is a one-to-one correspondence from G to H so that, if g_1 corresponds to h_1 and g_2 to h_2, then $g_1 \circ g_2$ corresponds to $h_1 * h_2$. Isomorphic groups are 'the same' from an algebraic point of view, even though their elements may be quite different. Thus, Cayley's Theorem really states:

Theorem 1 *Every group is isomorphic to a permutation group.*

The *order* of a group is the number of elements in the group. It may be finite or infinite, but we will be mainly concerned with finite groups.

Two very different examples of groups, one infinite and abelian, the other finite and (almost always) non-abelian:

- the additive group $\mathbb{Z}$ of integers, with the operation of addition;
- the *symmetric group* S_n of degree n; its elements are all permutations of the set $\{1, \ldots, n\}$, and the operation is composition of permutations.

2 Subgroups: Lagrange and Sylow

From now on we suppress explicit mention of the group operation, and write $g_1 g_2$ instead of $g_1 \circ g_2$. This is especially appropriate when we think of the group operation as 'multiplication'. At the same time, we write the group identity as 1, and the inverse of g as g^{-1}.

[Sometimes instead we think of it as 'addition', and write $g_1 + g_2$. This is especially common when the group is abelian. In this case, we write the identity as 0, and the inverse of g as $-g$.]

The converse of Lagrange's Theorem is false; if $|G| = n$ and m divides n, there may be no subgroup of order m in G. One case where such a subgroup exists is given by *Sylow's Theorem*, one of the most important theorems in finite group theory.

Theorem 3 *Let G be a group of order $n = p^a \cdot b$, where p is prime and p does not divide b. Then*

(a) G contains a subgroup of order p^a;

(b) any two such subgroups P, Q are conjugate (that is, there exists $x \in G$ with $x^{-1}Px = Q$ – this implies that P and Q are isomorphic);

(c) the number of subgroups of order p^a is congruent to 1 mod p and divides b.

A subgroup whose order is the exact power of the prime p which divides G is called a *Sylow p-subgroup* of G.

3 Normal subgroups and homomorphisms

A subgroup H of G is said to be a *normal subgroup* if its left and right cosets coincide, that is, if $Hx = xH$ for all $x \in G$. This can be expressed in various equivalent ways, for example: H is a normal subgroup if and only if, for all $h \in H$ and $x \in G$, we have $x^{-1}hx \in H$. (The element $x^{-1}hx$ is called a *conjugate* of h.)

If H is a normal subgroup of G, then we can define an operation on the set G/H of (left or right) cosets of H in G by the rule

$$Hx \circ Hy = H(xy).$$

(Of course it is necessary to show that the definition doesn't depend on the choice of coset representatives x and y.) It can be shown that, with this operation, G/H is a group. This group is called the *factor group* or *quotient group* of G by H.

How do normal subgroups arise 'in nature'?

A *homomorphism* from a group G to a group H is a function $\theta : G \to H$ with the property that

$$\theta(g_1g_2) = \theta(g_1)\theta(g_2)$$

for all $g_1, g_2 \in G$.

Perhaps the most familiar example of a homomorphism is the function from the additive group $\mathbb{Z}$ of integers to the group $\mathbb{Z}/n\mathbb{Z}$ of integers modulo n, for some positive integer n, which maps each integer k to the congruence class k mod n.

Another example is the *sign map* from the symmetric group S_n to the multiplicative group $\{+1,-1\}$, which maps each permutation to its sign. The sign of a permutation $g \in S_n$ is $(-1)^{n-c(g)}$, where $c(g)$ is the number of cycles of g.)

The *kernel* of a homomorphism θ is the set

$$\mathrm{Ker}(\theta) = \{g \in G : \theta(g) = 1_H\}$$

of elements of G mapped to the identity element of H. The *image* is, as usual, the set

$$\mathrm{Im}(\theta) = \{\theta(g) : g \in G\}$$

of elements of H to which some element of G is mapped. These are described by the *Isomorphism Theorem*:

Theorem 4 *Let θ be a homomorphism from G to H. Then*

- $\mathrm{Ker}(\theta)$ *is a normal subgroup of G;*
- $\mathrm{Im}(\theta)$ *is a subgroup of H;*
- *the factor group* $G/\mathrm{Ker}(\theta)$ *is isomorphic to* $\mathrm{Im}(\theta)$.

Conversely, if H is a normal subgroup of G, then there is a 'canonical' homomorphism having H as its kernel and G/H as its image.

Thus we may say simply 'A normal subgroup is the kernel of a homomorphism.'

4 Simple groups: Jordan–Hölder

A group G always has two trivial normal subgroups, the whole group G and the identity $\{1\}$. It is called *simple* if it has no other normal subgroups, and *composite* otherwise.

An example of a simple group is the *cyclic group* C_p of prime order p, consisting of elements x^i for $i = 0, \ldots, p-1$, with composition $x^i x^j = x^{i+j \bmod p}$. By Lagrange's Theorem, this group has no non-trivial subgroups at all!

If G is composite, with a non-trivial normal subgroup H, then we can often reduce questions about G to questions about the smaller groups H and G/H. If either of these is composite, we can continue the process. Eventually we reach a series

$$\{1\} = G_0 \leq G_1 \leq \cdots \leq G_r = G$$

which cannot be further refined. Thus, for $i = 1, \ldots, r$, we have that G_{i-1} is a normal subgroup of G_i, and G_i/G_{i-1} is simple. Such a series is called a *composition series* of G, and the simple groups G_i/G_{i-1} are the *composition factors*. We are only interested in the composition factors up to isomorphism; they form a multiset, since a given simple group may be isomorphic to G_i/G_{i-1} for several values of i.

The *Jordan–Hölder Theorem* states:

Theorem 5 *Any two composition series of a finite group G give rise to the same multiset of composition factors.*

In a sense, this reduces the study of finite groups to two parts:

- determine the finite simple groups;
- determine how a given multiset of finite simple groups can be 'glued together' as the composition factors of a finite group.

To indicate just how far we are from a solution of the second problem, here are some computational results obtained recently by Besche, Eick and O'Brien. The number of groups of order 2000 or less is 49,910,529,484. Of these, more than 99% have order $1024 = 2^{10}$. However, for every group of order 2^{10}, the list of composition factors consists of a single group (the cyclic group of order 2) with multiplicity 10. There is a sense in which the most complicated groups are those of prime-power order; such a group has just one composition factor (cyclic of prime order) with the appropriate multiplicity.

However, the first part of the problem has been solved as a result of a major collaborative effort. We proceed to discuss this.

5 The Classification of Finite Simple Groups

The Classification of Finite Simple Groups, or CFSG for short, is probably the largest collaborative mathematical achievement ever. The first proof, covering an estimated 15000 pages in articles often not directly on CFSG at all, was announced in 1980. It was subsequently found to contain a major gap. The 'revisionism' programme was then launched to produce a self-contained proof; this was completed in the early 2000s. Work on a 'third-generation' proof is currently underway.

Even the detailed statement of the theorem cannot be given here. Essentially the result is as follows.

Theorem 6 *A finite simple group is of one of the following types:*

(a) a cyclic group of prime order;

(b) an alternating group A_n, for $n \geq 5$;

(c) a simple group of Lie type;

(d) one of 26 sporadic simple groups.

We have already seen the cyclic groups of prime order. Here is a brief description of the remaining groups.

The *alternating group* A_n consists of all even permutations of the set $\{1,\dots,n\}$. We saw earlier that it is the kernel of the sign homomorphism from the symmetric group S_n to C_2, so it is a normal subgroup of S_n. Galois showed that, for $n \geq 5$, the alternating group A_n is simple (so that the composition factors of S_n are A_n and C_2).

Groups of Lie type are harder to describe. They are closely related to certain matrix groups over finite fields. They fall into a number of families,of which the simplest consists of the projective special linear groups $\mathrm{PSL}(n,q) = \mathrm{SL}(n,q)/Z$, where $\mathrm{SL}(n,q)$ consists of all matrices of determinant 1, and Z is the normal subgroup consisting of scalar matrices. Further families correspond to other 'classical' groups (symplectic, orthogonal and unitary) over finite fields, and there are some 'exceptional' families constructed from exceptional Lie algebras or automorphisms of other groups. Carter's book [3] gives details.

The 26 sporadic groups have no uniform definition, but were constructed individually. See the ATLAS [4] for details.

6 Permutation groups

Another essay in this series describes aspects of permutation groups of relevance to design theory. Here we give some corollaries of CFSG for permutation groups.

First, a brief reminder about terminology. A *permutation group* on the set $\{1,\ldots,n\}$ is a subgroup of the symmetric group S_n (that is, a group whose elements are permutations and whose operation is composition). The number n is its *degree*. A permutation group G is

- *transitive* if, for any two points of $\{1,\ldots,n\}$, there is an element of G which maps the first to the second;
- *primitive* if, for any subset Y of $\{1,\ldots,n\}$ satisfying $1 < |Y| < n$, there is an element $g \in G$ with $Y \neq g(Y)$ and $Y \cap g(Y) \neq \emptyset$;
- *t-transitive* (for $1 \leq t \leq n$) if, given any two t-tuples of distinct points, there is an element of G which maps the first to the second.

Among the consequences of CFSG are the following:

- all finite t-transitive groups, for $t \geq 2$, are known (see the lists in [2]);
- for almost all positive integers n, the only primitive groups of degree n are the symmetric and alternating groups;
- primitive groups have small order (with known exceptions);
- there are only finitely many distance-transitive graphs of given valency (greater than 2).

Further details about many of these results appear in [2].

7 Computation

Most familiar programming languages and systems allow the user to handle integers, real numbers, and strings. Modern systems often extend this to vectors, complex numbers, etc. To deal with groups as easily, there are two systems available: GAP [5] and MAGMA [1].

A permutation group often arises in practice as the automorphism group of some structure (graph, design, etc.) The program of choice for testing isomorphism of graphs and other combinatorial objects, and for calculating their automorphism groups, is `nauty` [6]. The GAPshare package GRAPE includes an interface with `nauty`; the automorphism groups of graphs returned by the latter can be handled directly in GAP. The forthcoming package DESIGN will extend this functionality to designs.

In the remainder of this essay we sketch briefly how permutation groups are handled in a computer.

A group is usually input to the computer by giving a set of permutations which generate it. Now given a set of generators, the *orbit* of a point x (the set of all images of x under elements of G) can be computed by an algorithm similar to that for finding a connected component of a graph: starting with x, add in any point which is the image of an existing point under a generator until the resulting set is closed under all generators. The procedure implicitly finds coset representatives for the stabiliser of x: such a set consists of one element mapping x to each possible image.

Now *Schreier's Lemma* provides an algorithm which, given generators for a group and coset representatives for a subgroup, finds generators for the subgroup. So we can compute generators for the subgroup G_1 fixing x.

Continuing this process, we find a sequence

$$G = G_0 > G_1 > \cdots > G_d = \{1\}$$

of subgroups of G, where G_i is the stabiliser of points $x_1,\ldots,x_i$, for $1 \leq i \leq d$. At this point we can calculate the order of G and can test any permutation for membership in G. Moreover, an element of G is uniquely determined by the images of $x_1,\ldots,x_d$, so arbitrary elements of G can be represented in more compact form.

Using this representation, the packages enable the user to compute any group-theoretical properties of interest, including (but far from limited to) Sylow subgroups, composition factors, images of homomorphisms, etc.

It should be mentioned that groups can be handled in other ways too. Instead of permutation generators, we may give matrix generators, or abstract generators and defining relations.

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MATHS PROJECT WORK.

GROUP : II BSc(MPC).

TOPIC : Continuity.

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CONTINUITY

Definition: A function f is continuous at a point $x = a$ if

$$\lim_{x \to a} f(x) = f(a)$$

In other words, the function f is continuous at a if ALL three of the conditions below are true:

1. $f(a)$ is defined. (i.e., a is in the domain of f.)

2. $\lim\limits_{x \to a} f(x)$ exists. (i.e., both one-sided limits exist and are equal at a.)

3. $\lim\limits_{x \to a} f(x) = f(a)$.

If any one of the conditions is false, then we say that f is discontinuous at a, or that it has a discontinuity at a.

A consequence of this definition is that if we know a function f is continuous at a point $x = a$, then we also know that it has a limit at a, equal to $f(a)$.

A function f is said to be continuous from the right at a if

$$\lim_{x \to a^+} f(x) = f(a).$$

A function f is said to be continuous from the left at a if

$$\lim_{x \to a^-} f(x) = f(a).$$

A function f is said to be continuous on an interval if it is continuous at each and every point in the interval. Continuity at an endpoint, if one exists, means f is continuous from the right (for the left endpoint) or continuous from the left (for the right endpoint).

ex. $f(x) = 1/x$ is continuous on $(-\infty, 0)$ and on $(0, \infty)$.

ex. $f(x) = \sin x$ is continuous on $(-\infty, \infty)$.

ex. $f(x) = \csc x$ is continuous on $(0, \pi)$, $(\pi, 2\pi)$, $(2\pi, 3\pi)$, $(3\pi, 4\pi)$, …

Note: Usually, if we say a function is *continuous*, without specifying an interval, we mean that it is continuous everywhere on the real line, i.e. the set of all real numbers $(-\infty, \infty)$. Or that it is continuous at every point of its domain, if its domain does not include all real numbers.

Theorem:
(i.) Every polynomial function is continuous everywhere on $(-\infty, \infty)$.
(ii.) Every rational function is continuous everywhere it is defined, i.e., at every point in its domain. Its only discontinuities occur at the zeros of its denominator.

Corollary: If p is a polynomial and a is any number, then

$$\lim_{x \to a} p(x) = p(a).$$

Similarly, if r is a rational function and a is any number where r is defined, then

$$\lim_{x \to a} r(x) = r(a).$$

Fact: Every n-th root function, trigonometric, and exponential function is continuous everywhere within its domain.

Continuity of the algebraic combinations of functions

If f and g are both continuous at $x = a$ and c is any constant, then each of the following functions is also continuous at a:

1. $f + g$	(sum)
2. $f - g$	(difference)
3. cf	(constant multiple)
4. fg	(product)
5. f/g, if $g(a) \neq 0$	(quotient)

ex. $f(x) = x^3 - 2x + \sin x$ and $g(x) = x^2 \cos x$ are both continuous on $(-\infty, \infty)$.

Continuity of composite functions

If g is continuous at $x = a$, and f is continuous at $x = g(a)$, then the composite function $f \circ g$ given by $(f \circ g)(x) = f(g(x))$ is also continuous at a.

That is, the composite of two continuous functions is continuous.

Example: Since both $f(x) = x^2 + 1$ and $g(x) = \cos x$ are continuous on $(-\infty, \infty)$. Therefore, both

$$(f \circ g)(x) = \cos^2 x + 1, \text{ and}$$
$$(g \circ f)(x) = \cos(x^2 + 1)$$

are continuous on $(-\infty, \infty)$.

Discontinuities

Types of discontinuities:

- Removable discontinuity
- Infinite discontinuity
- Jump discontinuity

How to identify the type of a discontinuity?

Suppose f has a discontinuity at $x = a$, but is otherwise continuous on some interval containing a. Then it has

An infinite discontinuity at a if either (or both) of the two one-sided limits is ∞ or $-\infty$. (Therefore, $x = a$ is a vertical asymptote of f.)

ex. $f(x) = 1/x$, at $x = 0$.

A removable discontinuity at a if the two one-sided limits exist and are equal (i.e., the limit exists), but f is either undefined at a, or $\lim\limits_{x \to a} f(x) \neq f(a)$.

ex. $f(x) = (x^2 - 4) / (x - 2)$, at $x = 2$.

A jump discontinuity at a if the two one-sided limits are not equal (and neither is an infinite limit).

ex. $f(x) = \begin{cases} x^2 + 1, & x \leq 1 \\ 1 - x, & x > 1 \end{cases}$ at $x = 1$.

The Intermediate Value Theorem

Theorem: Suppose that f is continuous on the closed interval $[a, b]$ and let N be any number between $f(a)$ and $f(b)$, where $f(a) \neq f(b)$. Then there always exists a number c in the open interval (a, b) such that $f(c) = N$.

Application: Root-finding

If f is defined on $[a, b]$ and if either
(i.) $f(a) < 0$ and $f(b) > 0$, or
(ii.) $f(a) > 0$ and $f(b) < 0$,
then the equation $f(x) = 0$ has (at least one) a root on (a, b).

Proof: Let $N = 0$ be the intermediate value, which is between $f(a)$ and $f(b)$. Apply the Intermediate Value Theorem. The root will be at $x = c$.

Example: $x^3 - x + 1 = 0$ has a root on $(-2, -1)$.

Because $f(-2) = -5$ and $f(-1) = 1$.

Example: Prove that square roots of 2 are real numbers.
(Hint: they are the roots of $x^2 - 2 = 0$.)

Continuity (exercises with detailed solutions)

1. Verify that $f(x) = \sqrt{x}$ is continuous at x_0 for every $x_0 \geq 0$.

2. Verify that $f(x) = \dfrac{1}{x} - \dfrac{1}{x_0}$ is continuous at x_0 for every $x_0 \neq 0$.

3. Draw the graph and study the discontinuity points of $f(x) = [\sin x]$.

4. Draw the graph and study the discontinuity points of $f(x) = \sin x - [\sin x]$.

5. Draw the graph and study the discontinuity points of $f(x) = \dfrac{2x^2 - 5x - 3}{x^2 - 4x + 3}$.

6. Draw the graph and study the discontinuity points of $f(x) = \dfrac{x + 3}{3x^2 + x^3}$.

7. Find $k \in \mathbb{R}$ such that the function

$$f(x) = \begin{cases} 2x^2 + 4x, & \text{if } x \geq 1 \\ -x + k, & \text{if } x < 1 \end{cases}$$

is continuous on $\mathbb{R}$.

8. Find $a, b \in \mathbb{R}$ such that the function

$$f(x) = \begin{cases} \log(1 + x), & \text{if } -1 < x \leq 0 \\ a \sin x + b \cos x & \text{if } 0 < x < \frac{\pi}{2} \\ x & \text{if } x \geq \frac{\pi}{2} \end{cases}$$

is continuous on its domain.

9. Determine the domain and study the continuity of the function $f(x) = \dfrac{\log(1 + x^2)}{\sqrt{3 - \sin x}}$.

10. Draw the graph and study the continuity of the function

$$f(x) = \begin{cases} x \left[\dfrac{1}{x}\right], & \text{if } x \neq 0 \\ 1, & \text{if } x = 0. \end{cases}$$

11. Draw the graph and study the continuity of the function

$$f(x) = \begin{cases} x \sin \dfrac{1}{x}, & \text{if } x \neq 0 \\ 1, & \text{if } x = 0. \end{cases}$$

Solutions

1. In order to verify that $f(x) = \sqrt{x}$ is continuous at x_0, with $x_0 \geq 0$, we try to find an upper bound for $f(x)$ dependent on the difference $x - x_0$. We obtain
$$\sqrt{x} - \sqrt{x_0} = \frac{(\sqrt{x} - \sqrt{x_0})(\sqrt{x} - \sqrt{x_0})}{\sqrt{x} + \sqrt{x_0}} = \frac{x - x_0}{\sqrt{x} + \sqrt{x_0}}.$$
Since $\sqrt{x} \geq 0$ for every $x \geq 0$ we have
$$|\sqrt{x} - \sqrt{x_0}| = \frac{|x - x_0|}{\sqrt{x} + \sqrt{x_0}} \leq \frac{|x - x_0|}{\sqrt{x_0}}.$$
We now fix $\varepsilon > 0$, and we want to determine $\delta > 0$, such that if $|x - x_0| < \delta$ then $|f(x) - f(x_0)| < \varepsilon$. From the previous inequality we have that we must find $\delta > 0$, such that if $|x - x_0| < \delta$ then
$$\frac{|x - x_0|}{\sqrt{x_0}} < \varepsilon.$$
The last inequality is equivalent to $|x - x_0| < \sqrt{x_0}\varepsilon$, hence we choose $\delta \leq \sqrt{x_0}\varepsilon$.

2. As in exercise 1 we have to find an upper bound for $f(x) - f(x_0)$, dependent on the difference $x - x_0$ or with a function of $x - x_0$. We have
$$\frac{1}{x} - \frac{1}{x_0} = \frac{x_0 - x}{x x_0}.$$
If $x_0 > 0$ (when $x_0 < 0$ we proceed in the same way), then for every $x \in I =]x_0/2, 3/2x_0[$ we have
$$x \cdot x_0 > \frac{x_0}{2} \cdot x_0 = \frac{x_0^2}{2.} \quad \Rightarrow \quad \left|\frac{1}{x} - \frac{1}{x_0}\right| = \frac{|x_0 - x|}{x x_0} < 2\frac{|x_0 - x|}{x_0^2}.$$
Hence, fixed $\varepsilon > 0$, if we find $\delta > 0$ such that $|x - x_0| < \delta$ implies $2\frac{|x_0 - x|}{x_0^2} < \varepsilon$, we have finished. This condition is equivalent to $|x - x_0| < \varepsilon\frac{x_0^2}{2}$, and the last inequality is satisfied for every $x \in I$ if we take $\delta \leq \min\{\varepsilon\frac{x_0^2}{2}, \frac{x_0}{2}\}$.

3. Since $\sin x$ is 2π-periodic, f is also 2π-periodic. We then study f only on the interval $[-\pi, \pi]$. Since $[n] = n$ for every $n \in \mathbb{Z}$, then $f(x) = \sin x$ when $x = -\pi, -\pi/2, 0, \pi/2, \pi$. Furthermore $[y] = 0$ for every $y \in [0, 1[$, hence $f(x) = 0$ for every x such that $\sin x \in [0, 1[$, that is for every $x \in [0, \pi] \setminus \{\pi/2\}$.

   Similarly, since $[y] = -1$ for every $y \in [-1, 0[$, we have $f(x) = -1$ for every x such that $\sin x \in [-1, 0[$, that is for every $x \in]-\pi, 0[$.

   We can then draw the graph of f. At $\pm\pi$ and 0 has a discontinuity f of the first kind, indeed
$$\lim_{x \to \pm\pi^-} f(x) = 0, \qquad \lim_{x \to \pm\pi^+} f(x) = -1, \qquad \lim_{x \to 0^-} f(x) = -1, \qquad \lim_{x \to 0^+} f(x) = 0,$$
At $x_0 = \pi/2$ f we have
$$\lim_{x \to \frac{\pi}{2}} f(x) = 0 \quad \text{and} \quad f\left(\frac{\pi}{2}\right) = 1$$
hence we can extend f at $\pi/2$ to a continuous function.

4. f is 2π-periodic and we study it on $[-\pi, \pi]$. To draw its graph we observe that $f(n) = 0$, $\forall n \in \mathbb{Z}$, hence $f(x) = 0$ for every x such that $\sin x \in \mathbb{Z}$, that is when $x = -\pi, -\pi/2, 0, \pi/2, \pi$. Furthermore, since if $y \in]0, 1[$ we have $y - [y] = y$, then for every $x \in]0, \pi[\setminus\{\pi/2\}$, we have $f(x) = \sin x$. Since if $y \in]-1, 0[$ we have $y - [y] = y + 1$, for every $x \in]\pi, 0[\setminus\{-\pi/2\}$, we have $f(x) = \sin x + 1$. Hence in $x = \pi, 0, \pi/2, \pi$ f has a discontinuity of the first kind, indeed
$$\lim_{x \to \pm\pi^-} f(x) = 0, \qquad \lim_{x \to \pm\pi^+} f(x) = 1, \qquad \lim_{x \to 0^-} f(x) = 1, \qquad \lim_{x \to 0^+} f(x) = 0.$$

At $x = \frac{\pi}{2}$, f can be extended to a continuous function since

$$\lim_{x\to\frac{\pi}{2}} f(x) = 1, \quad \text{and} \quad f\left(\frac{\pi}{2}\right) = 0.$$

5. $\mathrm{dom}(f) = \mathbb{R}\setminus\{1,3\}$. Since the numerator vanishes when $x = 3$ we can simplify the fraction to obtain, for every $x \in \mathbb{R}\setminus\{1,3\}$

$$f(x) = \frac{(x-3)(2x+1)}{(x-3)(x-1)} = \frac{2x+1}{x-1} = 2 + \frac{3}{x-1}.$$

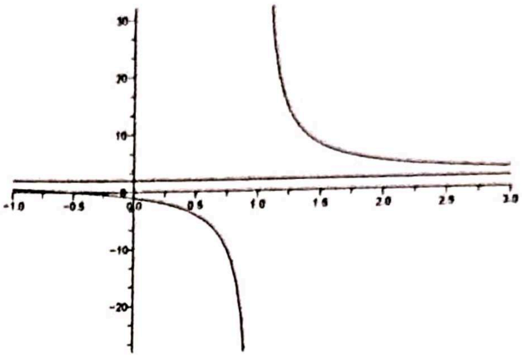
The graph of f can be obtained from the graph of $g(x) = 1/x$ with some translations and rescaling. At $x = 3$ we can extend f to a continuous function, indeed $3 \notin \mathrm{dom}(f)$ but

$$\lim_{x\to3} f(x) = \lim_{x\to3}\left(2 + \frac{3}{x-1}\right) = \frac{7}{2}.$$

When $x = 1$, we have

$$\lim_{x\to1^-} f(x) = -\infty, \qquad \lim_{x\to1^+} f(x) = +\infty.$$

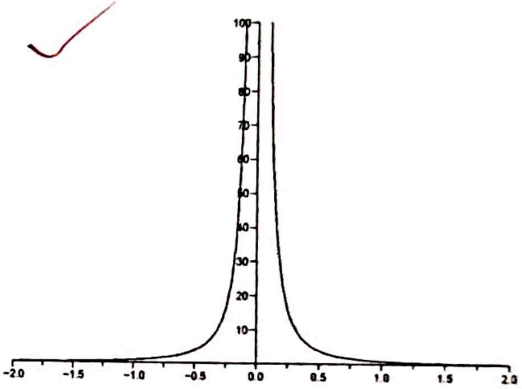
Thus $x = 1$ is a discontinuity point of the second kind.



6. $\mathrm{dom}(f) = \mathbb{R}\setminus\{-3,0\}$, and for every $x \in \mathrm{dom}(f)$ we have $f(x) = 1/x^2$. Hence we have

$$\lim_{x\to-3} f(x) = \frac{1}{9}, \quad \lim_{x\to0} f(x) = +\infty.$$

we can extend f in $x = -3$ to a continuous function; $x = 0$ is a discontinuity point of the second kind.



7. f is continuous for every $x \neq 1$, since it is a composition of continuous functions. Hence we just study the continuity of f in $x = 1$. f is continuous in $x = 1$ if both limits

$$\lim_{x\to1^-} f(x) = \lim_{x\to1^-}(-x+k) = k-1, \qquad \lim_{x\to1^+} f(x) = \lim_{x\to1^+}(2x^2+4x) = 6$$

are equal to $f(1) = 6$. We then impose $k - 1 = 6$ that is $k = 7$.

8. $\mathrm{dom}(f) =]-1,+\infty[$. Furthermore on $]-1,0[$, $]0,\frac{\pi}{2}[$, $]\frac{\pi}{2},+\infty[$ the function $f(x)$ is continuous because it is a composition of continuous functions. We then study the continuity of f at $x = 0$ and $x = \frac{\pi}{2}$.

We have

$$\lim_{x\to0^-} f(x) = \lim_{x\to0^-}\log(1+x) = 0, \quad \lim_{x\to0^-} f(x) = \lim_{x\to0^-}(a\sin x + b\cos x) = b.$$

Hence f is continuous at 0 if and only if $b = 0$. Furthermore

$$\lim_{x\to\frac{\pi}{2}^-} f(x) = \lim_{x\to\frac{\pi}{2}^-}(a\sin x + b\cos x) = a, \quad \lim_{x\to\frac{\pi}{2}^-} f(x) = \lim_{x\to\frac{\pi}{2}^-} x = \frac{\pi}{2},$$

hence f is continuous in $x = \pi/2$ if and only if $a = \pi/2$.

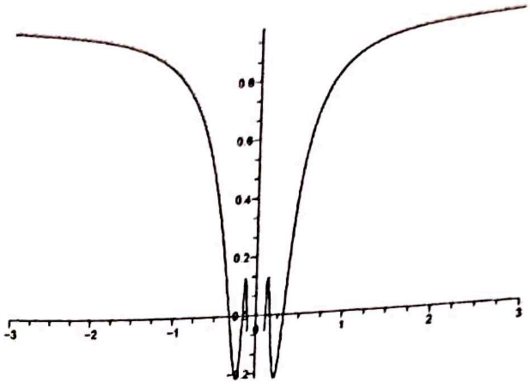
9. $\text{dom}(f) = \mathbb{R}$, indeed for every $x \in \mathbb{R}$ we have $1 + x^2 \geq 1 > 0$ and $3 - \sin x \geq 2 > 0$. For every $x \in \mathbb{R}$ f is continuous since it is a composition of continuous functions.

10. f is not continuous when $x = 1/n$, for every $n \in \mathbb{Z} \setminus \{0\}$. These points are discontinuities of the first kind. When $x \neq 1/n$, f is continuous.

11. f is continuous when $x \neq 0$; at 0 we have

$$\lim_{x \to 0} f(x) = 0, \qquad f(0) = 1.$$

hence we can extend f to a continuous function on the whole $\mathbb{R}$.



Lecturer in malthematics.

T.R.R. GOVT. DEGREE COLLEGE

KANDUKUR, Prakasam Dist.

2019 - 2020

DEPARTMENT OF English

Project Work

T.R.R. Government Degree College

English literature Project

Group :- 1 BA - E.E.P - [2019-2020]

Submitted by
Shaik. Sharfunnisa Begum
Talari. Varakumari
Daggumati. Sivakanya
Maddali. Swathi
K. Srilatha
Shaik. Muntaj Begum

Submitted to
P. Raj Gopala Babu sir
C. Ramu sir

Lecturer in english.

Old English

'd English (500AD - 1100AD) is one of the 3 stages, by
the English language is recognised. This was the language of
xons and it gradually came to be called Englise and the
here this was spoken was called Engla-land. However, today
transformed itself as Englond. This language exhibetd four
1. North Umbrian 2. Mercian 3. West saxon 4. kentish. Today
these dialects have merged to form unified English, it is
to see variation in the use of language in some areas.
'' is a book written during this period which is available
and can provide samples of old English.

of old English:

nglish was synthetic or fusional, rather than analytic or
g.

was Extensive use of Alliteration in old English poetry

Noun, Verb, Adjective and Pronoun were highly inflected.

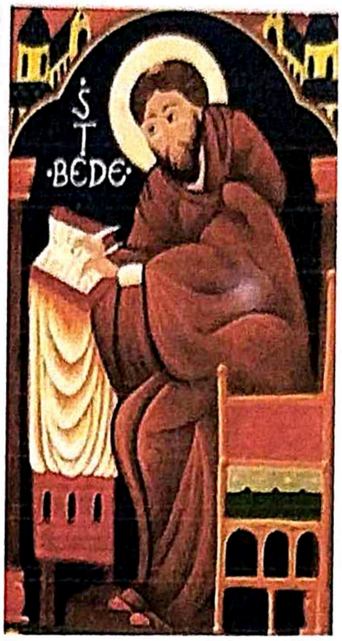
ently, word order was not rigid as in present-Day English.

Vocabulary of old English was overwhelmingly Germanic in
ter (approximately 85% of the vocabulary used in old
is no longer in use in Modern English).

ulf is one of the twelve
sh poets, known by name
e of four whose work is
to survive today. He
ly flourished in the 19th
with possible dates
g into the late 8th and

th centuries. He was born in England, United Kingdom and
away. Known for his religious compositions, cynewulf is
as one of the pre-eminent figures of Anglo-Saxon
poetry.

: The Poems of cynewulf -(1836]
Riddles of the Exeter Book
The Andreas [1906}
The Guthlac
Cynewulf's christ
The phoenix
The Harrowing of Hell
The Dream of the Rood
christ II etc.



e, also known as Saint Bede,

le Bede and Bede the vererable

English Benedictine monk

monastery of st. peter and

panion monastery of st. paul

kingdom of Northumbria

gles. He was born in 672 AD,

united kingdom and died on 26th may 735 AD, Jarrow,

kingdom

25 May (western churches) ; 27 May (orthodox church and

the General Roman Calendar from 1899- 1969).

on

mon (AD 657 - 684) is the
English poet whose name is known.
born and died at whit by,
kingdom. He was an Anglo- saxon
ed for the animals at the double
y of streonaeshalch during the
(657-680) of st. Hilda (614-680). He later became a zealous
and an accomplished and inspirational christian poet.
n is one of twelve Anglo saxon poets identified in medieval sources,
ne of only three of these for whom biographical information and
s of literary output have survived.

s.' His only known surviving work is "Caedmon's Hymn", the
line alliterative vernacular praise poem in honour of God.

ycliffe

Wycliffe was an English c philosopher, theologian, translator, reformer, priest and ary professor at the University ord. He was born at Hipswell, Kingdom 1320's and died t December 1384 at Lutterworth, ershire, England. He became an influential dissident within oman Catholic priesthood during the 14th century and is red an important predecessor to protestantism.

s: Wycliffe's Bible
The Last Age of the church (1356)
De Logica (1360)
De Mandatis Divinis (1375)
De civili Domino (1377)
Responsio (1377)
on the Truthfulness of Holy scripture (1378)
on the pastoral office (1378)
De apostasia (1379)
De Eucharistia (1379)
Objections to friars (1380).

Middle English (c. 1100 - 1450 AD)

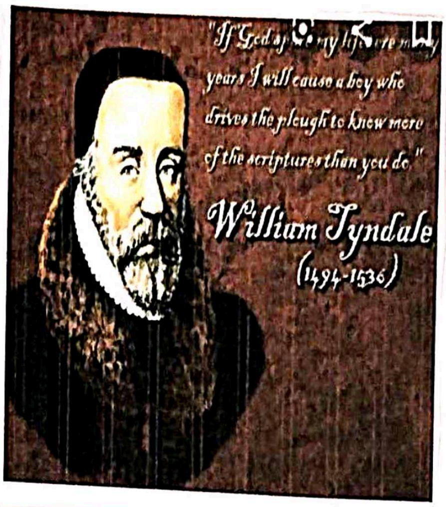
iddle English. was the result of Norman invasions or the
of French rulers under the leadership of William the conqueror,
f Normandy. Normans spoke Anglo-Norman which was a product
nanic languages. Anglo-Norman was highly influenced by
ind Anglo-saxon was similarly influenced through in a small
. Normans were affluent in comparision with the Anglo-saxons,
ecome the rulers. Thus it become both essential and fashionable
n their language. A combination of Anglo-Saxon and
Norman gave birth to Middle english.

s of Middle English

standardised, more dialectal variation in the written sources
simpler system of inflexions, especially in nouns and
ives
ased reliance on word-order and prepositions
asingly more mixed vocabulary (French, Latin, Scandanavian
development and popularity of the lyric form.

n Tyndale!

William Tyndale was born in North Nibley in 1494. He belonged
age of Middle English. He is also
as William Tindall, William Tynsdale,
Tindill, William Tyndall. He was
as Theologian. He passed on
6th, 1536, Vilvoorde.
s Executed.



of William Tyndale

e New Testament -[1526.]

ve books of Moses, called the pentateuch -[1580)

prologue unto the Epistle of paul to the Romans -(1526]

e obedience of a christian Man - [1528]

n Answer unto sir Thomas More's Dialogue - (1531]

he supper of the Lord - [1533)

A Brief Declaration of the sacraments -[1533]

The Exposition of the first Epistale of St. John - (1531]

Miles coverdale


Miles Coverdale

s coverdale was born in 1488,
n riding of yorkshire.
lescoverdale, first name also spelt
s, was an English ecclesiastical
mer chiefly known as Bible translator
her and briefly Bishop of exeter.

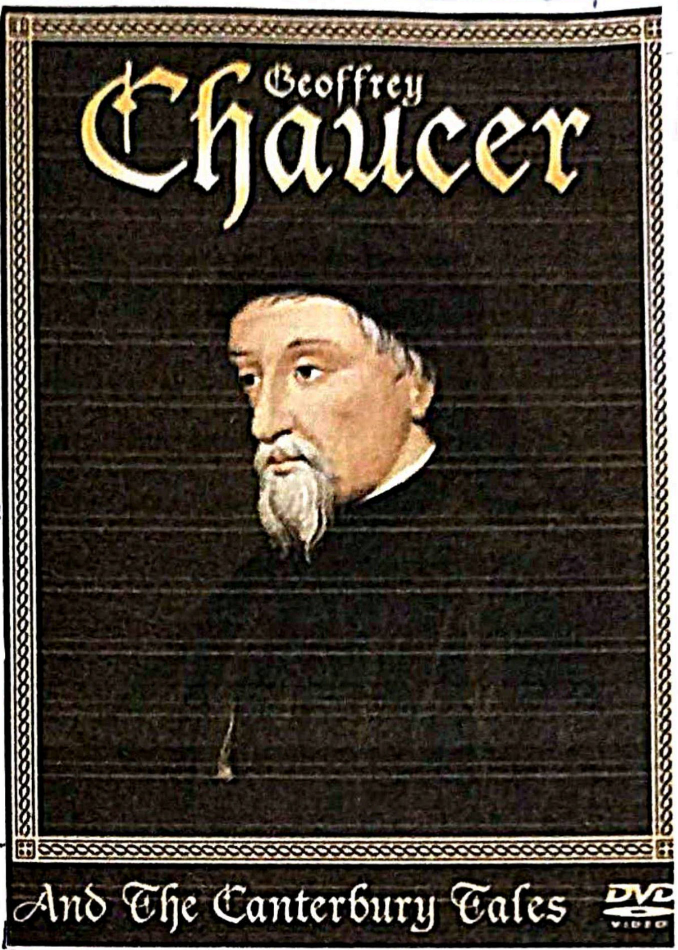
Regarding his probable birth country, Daniellcities,
n Bale, author of sixteenth century scriptorium, giving
as yorkshire.

He was educated in university of cambridge.
died on 20 January 1569, London, United kingdom.

Writings:-

ans ke folkekirke, order of the church in Denmark,
arson George, Bullinger, Heinrich - [1504-1575]
Verdmuller, otto -[1511-1552]
Coverdale Miles - [1488-1568]
Calvin, Jean - [1509-1564]
Gyrasmus, Desiderius.d -[1536]

chaucer

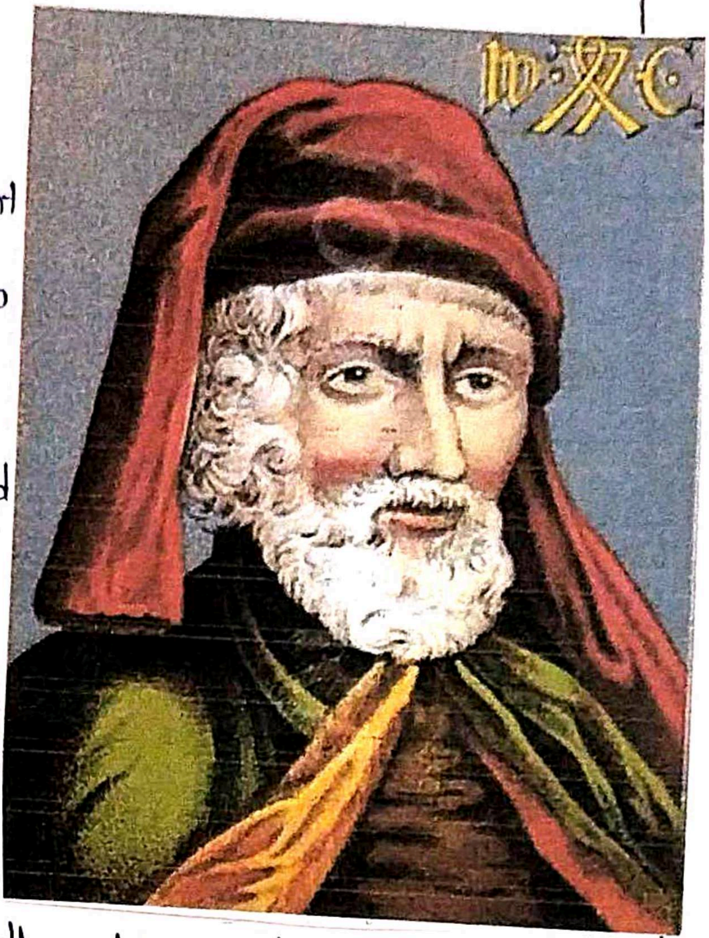


y chaucer was an English poet or. Widely seen as the greatest oet of the Middle ages, he is wn for his canterbury Tales. chauc styled the " Father of English . He was born in 1343, London, ingdom. He also gained fame as pher and Astronomer, composing olabe' for his 10-year-old son maintained a in the civil service as a Bureaucrat, Courtier, diplomat member of Parliament. He passed on 25th october 1400, united kingdom.

The Book of the Duchess -(1368]
The House of Fame -[1379-1380]
Anelida and Arcite - (1378]
parlement Of Foules -(1380]
Troilus and criseyde -[1385]
The legend of Good women -[1380]
The canterbury Tales -(1476)
A Treatise on the Astrolabe -(1391)

Caxton

caxton was an English merchant
and writer. He is thought to
first person to introduce a
press into England, in 1476 and
printer was the first English
of printed books. He was born
2 and died in c.1491 resting
Margaret's westminster.

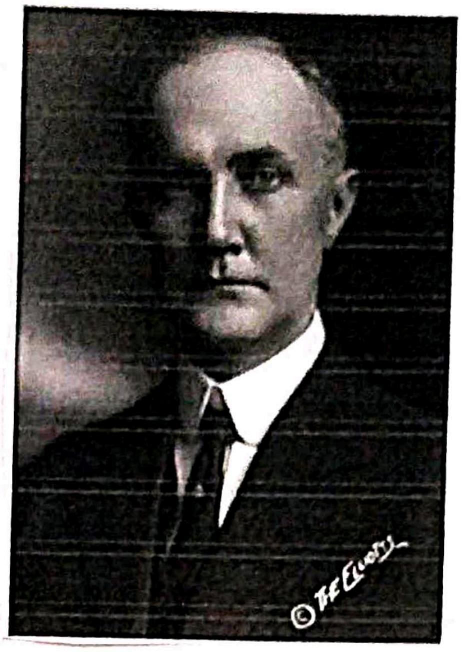


02, caxton was named among the 100 greatest Britons in
poll.

Works:

1. Recuyell of the Historyes of Troye-[1464]
2. Dictes and sayenges of the philosophres -[1477]
3. Brut chronicles. -[1528]

yatt


© T.F. Elliott

mos wyatt was a 16th century itician, ambassador and lyric ed with introducing the Sonnet Literature. He was born in Allington castle near Maidstone United Kingdom and died october 1542, clifton , Maybank, United Kingdom. He married Brooke and had Thomas wyatt the younger. educated at st. John's college, cambridge, University of cambridge

: "Whoso List to Hunt" .
"They Flee From Me"
"What No, Perdie"
"Lux, My Fair Falcon"
"Blame Not My Lute" and
"Tottel's Miscellany" etc.

TRR Govt. Degree College

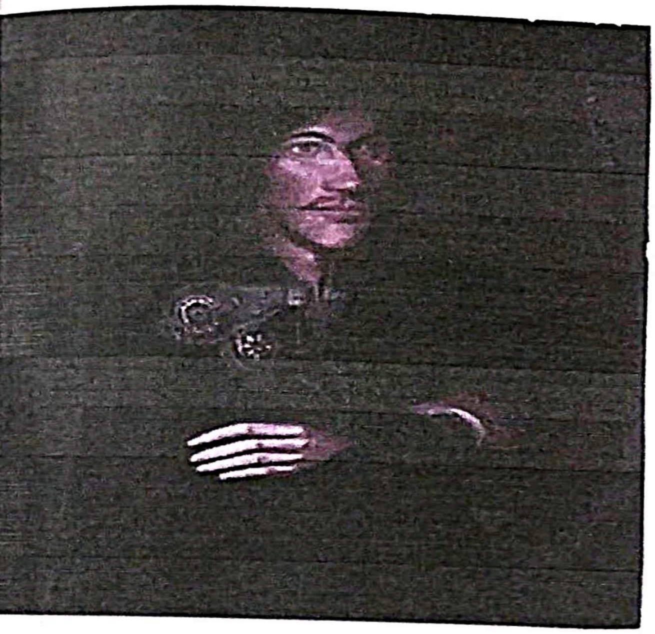
English literature Project work

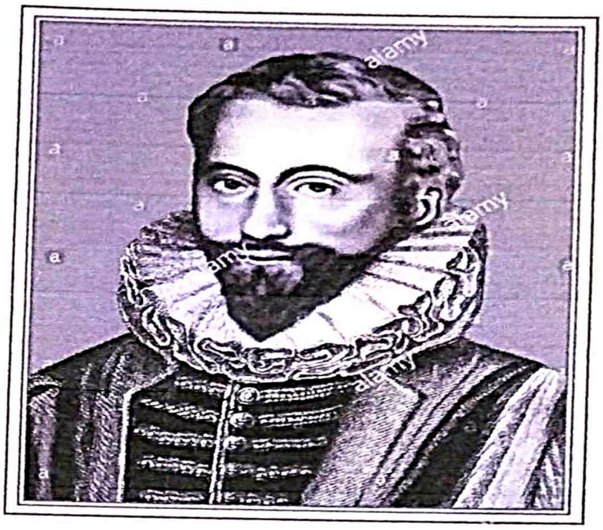
Class :- II BA (EEP) (2019-20)

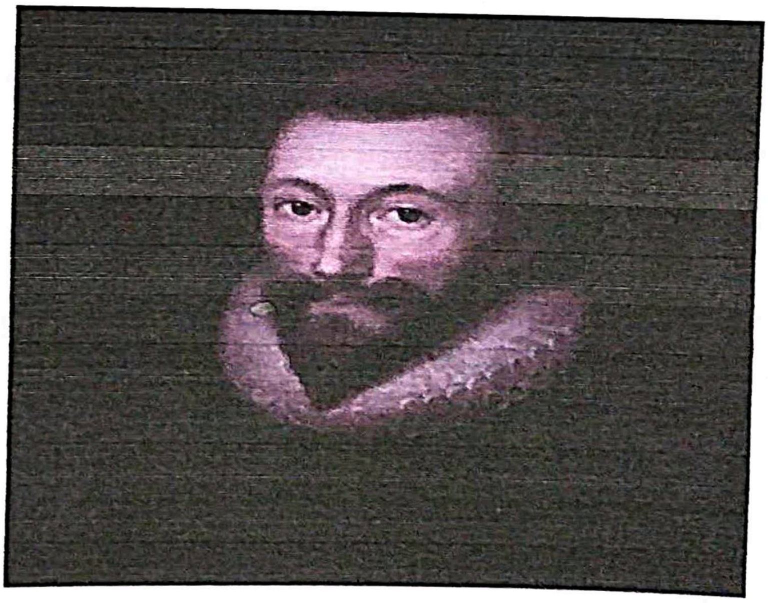
Submitted by :-	Submitted to
1. ManSoor	Rajgopal Sir
. Balabrahmaiah	Ramu Sir
. Madhusudhan	
Eswarreddy	
. Ashok	
Aneesh	
venkatrao	
Manmadh	
Mahesh	
Mahendra	

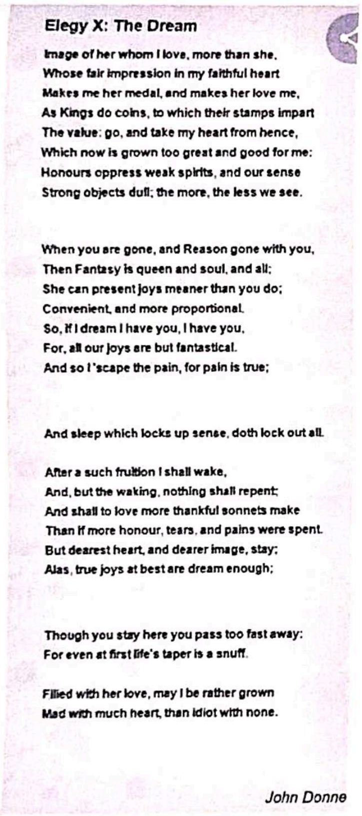
Lecturer

JOHN DONNE (1572 – 1631)









Elegy X: The Dream

Image of her whom I love, more than she,
Whose fair impression in my faithful heart
Makes me her medal, and makes her love me,
As Kings do coins, to which their stamps impart
The value: go, and take my heart from hence,
Which now is grown too great and good for me:
Honours oppress weak spirits, and our sense
Strong objects dull; the more, the less we see.

When you are gone, and Reason gone with you,
Then Fantasy is queen and soul, and all;
She can present joys meaner than you do;
Convenient, and more proportional.
So, if I dream I have you, I have you,
For, all our joys are but fantastical.
And so I 'scape the pain, for pain is true;

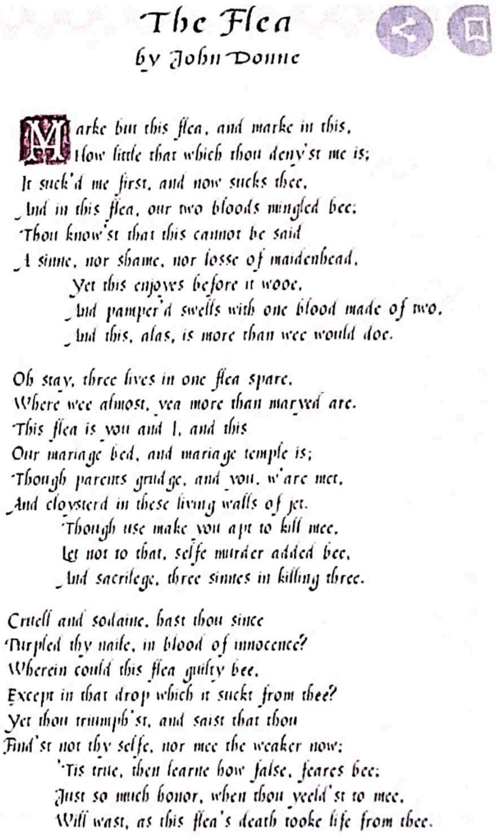
And sleep which locks up sense, doth lock out all.

After a such fruition I shall wake,
And, but the waking, nothing shall repent;
And shall to love more thankful sonnets make
Than if more honour, tears, and pains were spent.
But dearest heart, and dearer image, stay;
Alas, true joys at best are dream enough;

Though you stay here you pass too fast away:
For even at first life's taper is a snuff.

Filled with her love, may I be rather grown
Mad with much heart, than idiot with none.

John Donne



The Flea

by John Donne

Marke but this flea, and marke in this,
How little that which thou deny'st me is;
It suck'd me first, and now sucks thee,
And in this flea, our two bloods mingled bee;
Thou know'st that this cannot be said
A sinne, nor shame, nor losse of maidenhead,
Yet this enjoyes before it wooe,
And pamper'd swells with one blood made of two,
And this, alas, is more than wee would doe.

Oh stay, three lives in one flea spare,
Where wee almost, yea more than maryed are.
This flea is you and I, and this
Our mariage bed, and mariage temple is;
Though parents grudge, and you, w'are met,
And cloysterd in these living walls of jet.
Though use make you apt to kill mee,
Let not to that, selfe murder added bee,
And sacrilege, three sinnes in killing three.

Cruell and sodaine, hast thou since
Purpled thy naile, in blood of innocence?
Wherein could this flea guilty bee,
Except in that drop which it suckt from thee?
Yet thou triumph'st, and saist that thou
Find'st not thy selfe, nor mee the weaker now;
'Tis true, then learne how false, feares bee;
Just so much honor, when thou yeeld'st to mee,
Will wast, as this flea's death tooke life from thee.

Synopsis

The first two editions of John Donne's poems were published posthumously, in 1633 and 1635, after having circulated widely in manuscript copies. Readers continue to find stimulus in his fusion of witty argument with passion, his dramatic rendering of complex states of mind, and his ability to make common words yield up rich poetic meaning. Donne also wrote songs, sonnets and prose.

John Donne was born into a Catholic family in 1572, during a strong anti-Catholic period in England. ... At age 20, **Donne** began studying law at Lincoln's Inn and seemed destined for a legal or diplomatic career. During the 1590s, he spent much of his inheritance on women, books and travel. Jun 26, 2019

Birth Date: c. 1572
Education: University of Cambridge, Lincoln's Inn, University of Oxford
Death Date: March 31, 1631
Occupation: Poet

Edmund Spenser (1552-1599)

BORN

1552 or 1553

London, England

DIED

January 13, 1599

London, England

NOTABLE WORKS

- "The Faerie Queene"
- "The Shepheardes Calender"
- "Mutabilitie Cantos"
- "Amoretti"
- "Complaints"
- "A View of the Present State of Ireland"
- "Colin Clouts Come Home Again"

Edmund Spenser (/ˈspɛnsər/; 1552/1553 – 13 January 1599) was an English poet best known for *The Faerie Queene*, an epic poem and fantastical allegory celebrating the Tudor dynasty and Elizabeth I. He is recognized as one of the premier craftsmen of nascent Modern English verse, and is often considered one of the greatest poets in the English language. Edmund Spenser was born in East Smithfield, London, around the year 1552, though there is still some ambiguity as to the exact date of his birth. His parenthood is obscure, but he was probably the son of John Spenser, a journeyman clothmaker. As a young boy, he was educated in London at the Merchant Taylors' School and matriculated as a sizar at Pembroke College, Cambridge.[2][3] While at Cambridge he became a friend of Gabriel Harvey and later consulted him, despite their differing views on poetry. In 1578, he became for a short time secretary to John Young, Bishop of Rochester.[4] In 1579, he published *The Shepheardes Calender* and around the same time married his first wife, Machabyas Childe.[5] They had two children, Sylvanus (d.1638) and Katherine.[6]

In July 1580, Spenser went to Ireland in service of the newly appointed Lord Deputy, Arthur Grey, 14th Baron Grey de Wilton. Spenser served under Lord Gray with Walter Raleigh at the Siege of Smerwick massacre.[7] When Lord Grey was recalled to England, Spenser stayed on in Ireland, having acquired other official posts and lands in the Munster Plantation. Raleigh acquired other nearby Munster estates confiscated in the Second Desmond Rebellion. Some time between 1587 and 1589, Spenser acquired his main estate at Kilcolman, near Doneraile in North Cork.[8] He later bought a second holding to the south, at Rennie, on a rock overlooking the river Blackwater in North Cork. Its ruins are still visible today. A short distance away grew a tree, locally known as "Spenser's Oak" until it was destroyed in a lightning strike in the 1960s. Local legend has it that he penned some of *The Faerie Queene* under this tree.[9]

In 1590, Spenser brought out the first three books of his most famous work, *The Faerie Queene*, having travelled to London to publish and promote the work, with the likely assistance of Raleigh. He was successful enough to obtain a life pension of £50 a year from the Queen. He probably hoped to secure a place at court through his poetry, but his next significant publication boldly antagonised the queen's principal secretary, Lord Burghley (William Cecil), through its inclusion of the satirical *Mother Hubberd's Tale*.[10] He returned to Ireland.

In 1591, Spenser published a translation in verse of Joachim Du Bellay's sonnets, *Les Antiquités de Rome*, which had been published in 1558. Spenser's version, *Ruines of Rome: by Bellay*, may also have been influenced by Latin poems on the same subject, written by Jean or Janis Vitalis and published in 1576.[11]

By 1594, Spenser's first wife had died, and in that year he married a much younger Elizabeth Boyle, sister of Richard Boyle, 1st Earl of Cork. He addressed to her the sonnet sequence *Amoretti*. The marriage itself was celebrated in *Epithalamion*.[12] They had a son named Peregrine.[6]

In 1596, Spenser wrote a prose pamphlet titled *A View of the Present State of Ireland*. This piece, in the form of a dialogue, circulated in manuscript, remaining unpublished until the mid-seventeenth century. It is probable that it was kept out of print during the author's lifetime because of its inflammatory content. The pamphlet argued that Ireland would never be totally "pacified" by the English until its indigenous language and customs had been destroyed, if necessary by violence.[13]

In 1598, during the Nine Years' War, Spenser was driven from his home by the native Irish forces of Aodh Ó Néill. His castle at Kilcolman was burned, and Ben Jonson, who ave had private information, asserted that one of his infant children died in the [14]

year after being driven from his home, 1599, Spenser travelled to London, e he died at the age of forty-six – "for want of bread", according to Ben on – one of Jonson's more doubtful statements, since Spenser had a ent to him authorised by the government and was due his pension.[15] His was carried to his grave in Poets' Corner in Westminster Abbey by other , who threw many pens and pieces of poetry into his grave with many tears. econd wife survived him and remarried twice. His sister Sarah, who had npanied him to Ireland, married into the Travers family, and her descendants prominent landowners in Cork for centuries

Influences[edit]

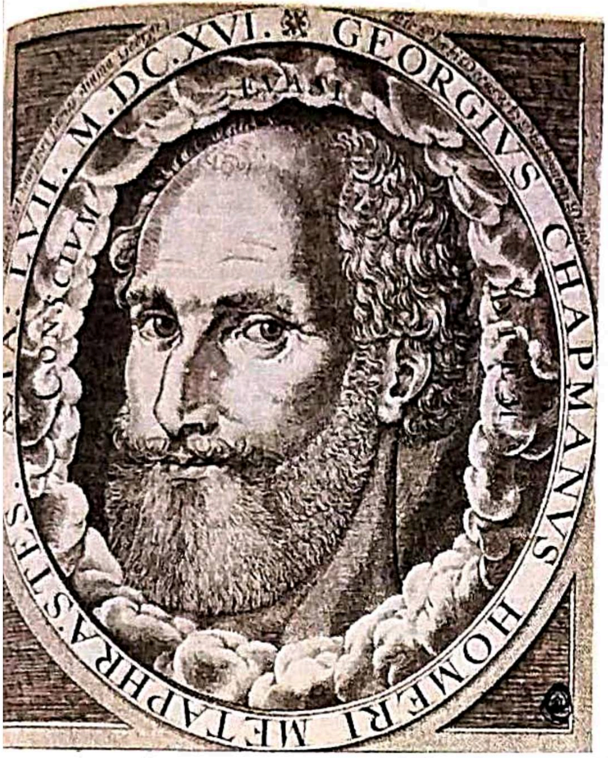
h Spenser was well read in classical literature, scholars have noted that his poetry ot rehash tradition, but rather is distinctly his. This individuality may have resulted, e extent, from a lack of comprehension of the classics. Spenser strove to emulate ncient Roman poets as Virgil and Ovid, whom he studied during his schooling, but of his best-known works are notably divergent from those of his cessors.[23] The language of his poetry is purposely archaic, reminiscent of earlier such as *The Canterbury Tales* of Geoffrey Chaucer and *Il niere* of Francesco Petrarca, whom Spenser greatly admired.

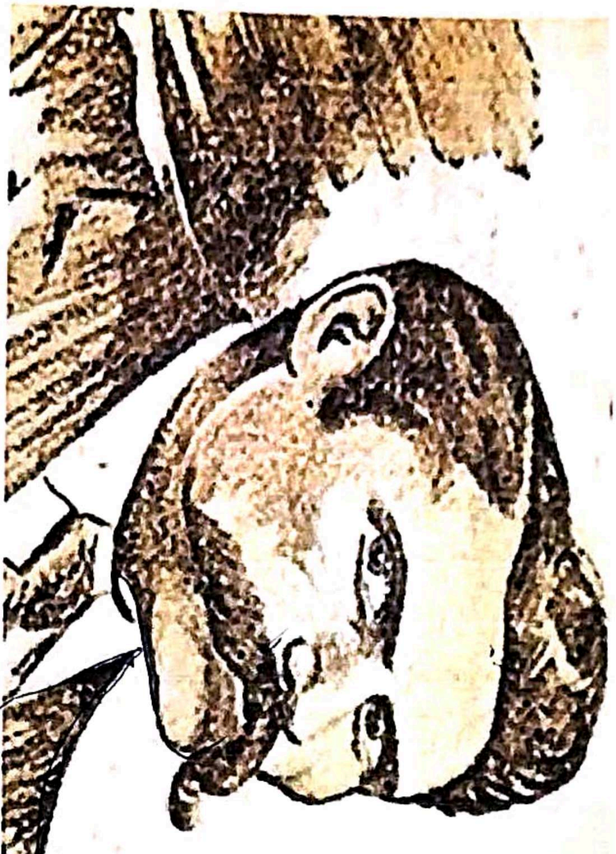
glican[24] and a devotee of the Protestant Queen Elizabeth, Spenser was larly offended by the anti-Elizabethan propaganda that some Catholics circulated. ost Protestants near the time of the Reformation, Spenser saw a Catholic church corruption, and he determined that it was not only the wrong religion but the anti- n. This sentiment is an important backdrop for the battles of *The Faerie Queene*.[25]

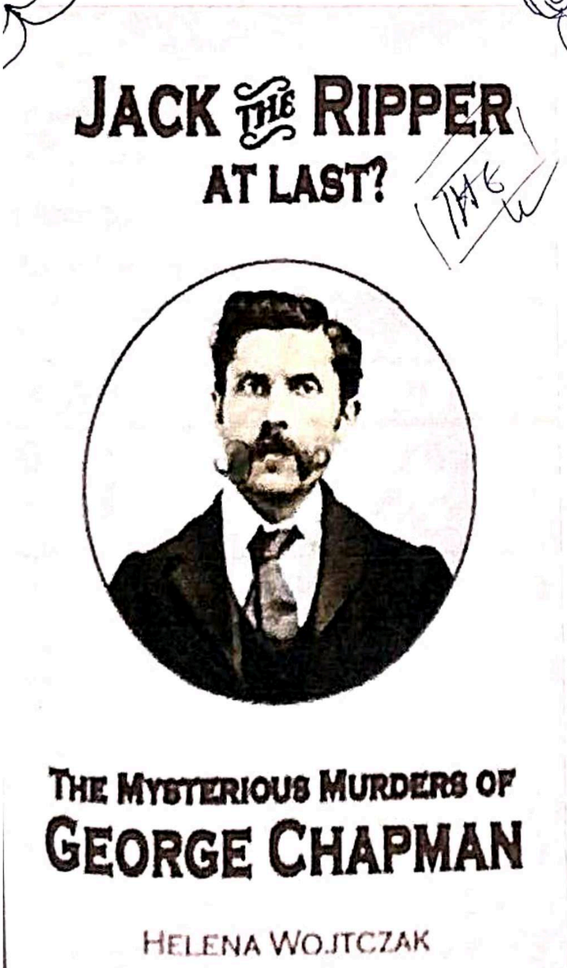
er was called "the Poet's Poet" by Charles Lamb,[26] and was admired by John William Blake, William Wordsworth, John Keats, Lord Byron, Alfred son and others. Among his contemporaries Walter Raleigh wrote a commendatory to *The Faerie Queene* in 1590, in which he claims to admire and value Spenser's ore so than any other in the English language. John Milton in *opagitica* mentions "our sage and serious poet Spenser, whom I dare be known a better teacher than Scotus or Aquinas".[27] In the eighteenth century, Alexander ompared Spenser to "a mistress, whose faults we see, but love her with them

George Chapman T. Madhu Sudhan B.A. L.E.P. Roll No. 02

(1559-1634)







JACK THE RIPPER AT LAST?

THE

THE MYSTERIOUS MURDERS OF GEORGE CHAPMAN

HELENA WOJTCZAK

George Chapman

eorge hapman (Hitchin, Hertfordshire, c. 1559 – ndon, 12 May 1634) was an glish dramatist, translatorand poet. He was lassical scholar whose work shows the influence Stoicism. Chapman has been speculated to be Rival Poet of Shakespeare's sonnets by William nto, and as an anticipator of the metaphysical ets of the 17th century. Chapman is best membered for his translations Homer's *Iliad* and *Odyssey*, and the meric *Batrachomyomachia*.

George Chapman

George Chapman. Frontispiece engraving for *The Whole Works of Homer* (1616) attributed to William Hole

Born	c. 1559 Hitchin, Hertfordshire, England
Died	12 May 1634 London
Occupation	Writer
Nationality	English
Period	Elizabethan
Genre	Tragedy, translation
Notable works	*Bussy D'Ambois*, translations of Homer

ontents

- fe and work
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fe and work

pman was born at Hitchin in Hertfordshire. There is conjecture that he studied at Oxford but not take a degree, though no reliable evidence affirms this. Very little is known about pman's early life, but Mark Eccles uncovered records that reveal much about Chapman's iculties and expectations.[1] In 1585 Chapman was approached in a friendly fashion by John lfall, Sr., who offered to supply a bond of surety for a loan to furnish Chapman money "for his per use in Attendance upon the then Right Honorable Sir Rafe Sadler Knight." Chapman's rtly ambitions led him into a trap. He apparently never received any money, but he would be gued for many years by the papers he had signed. Wolfall had the poet arrested for debt in 1600, when in 1608 Wolfall's son, having inherited his father's papers, sued yet again, Chapman's resort was to petition the Court of Chancery for equity.[2] As Sadler died in 1587, this gives apman little time to have trained under him. It seems more likely that he was in Sadler's sehold from 1577–83, as he dedicates all his Homerical translations to him.

hapman spent the early 1590s abroad, and saw military action in the Low Countries fighting nder renowned English general Sir Francis Vere. His earliest published works were the obscure hilosophical poems *The Shadow of Night* (1594) and *Ovid's Banquet of Sense* (1595). The latter s been taken as a response to the erotic poems of the age, such as Philip Sidney's *Astrophil and ella* and Shakespeare's *Venus and Adonis*. Chapman's life was troubled by debt and his inability find a patron whose fortunes did not decline: Robert Devereux, Second Earl of Essex and the ince of Wales, Prince Henry both met their ends prematurely. The former was executed for ason by Elizabeth I in 1601, and the latter died of typhoid fever at the age of eighteen in 1612. apman's resultant poverty did not diminish his ability or his standing among his low Elizabethan poets and dramatists.

ipman died in London, having lived his latter years in poverty and debt. He was buried at St s in the Fields. A monument to him designed by Inigo Jones marked his tomb, and stands y inside the church.

ays

nedies

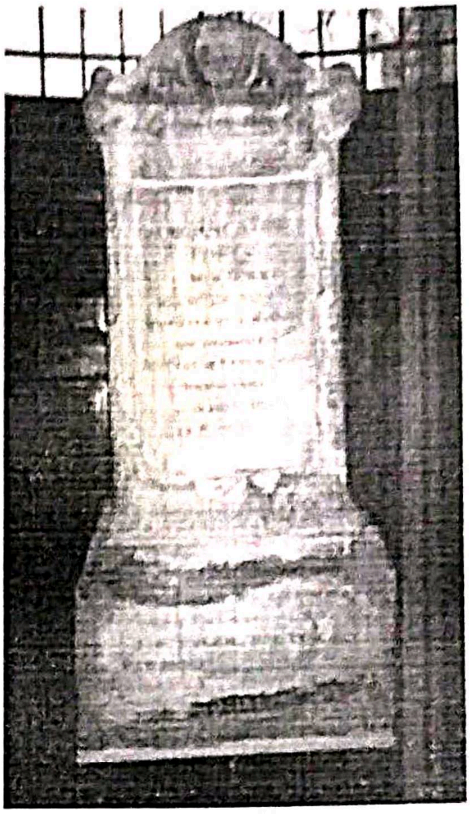
he end of the 1590s, Chapman had become a successful playwright, working for Philip lowe and later for the Children of the Chapel. Among his comedies are *The Blind Beggar of ndria* (1596; printed 1598), *An Humorous Day's Mirth* (1597; printed 1599). *All* (printed 1605), *Monsieur D'Olive* (1605; printed 1606), *The Gentleman Usher* (printed), *May Day* (printed 1611), and *The Widow's Tears* (printed 1612). His plays show a gness to experiment with dramatic form: *An Humorous Day's Mirth* was one of the first plays written in the style of "humours comedy" which Ben Jonson later used in *Every Man in His our* and *Every Man Out of His Humour*. With *The Widow's Tears*, he was also one of the first rs to meld comedy with more serious themes, creating the tragicomedy later made famous aumont and Fletcher.

so wrote one noteworthy play in collaboration. *Eastward Ho* (1605), written with Jonson ohn Marston, contained satirical references to the Scottish courtiers who formed the retinue new king James I; this landed Chapman and Jonson in jail at the suit of Sir James Murray of ool, the king's "rascal[ly]" Groom of the Stool.[3] Various of their letters to the king and men survive in a manuscript in the Folger Library known as the *Dobell MS*, and published by raunmuller as *A Seventeenth Century Letterbook*. In the letters, both men renounced the ling line, implying that Marston was responsible for the injurious remark. Jonson's ersations With Drummond" refers to the imprisonment, and suggests there was a possibility oth authors would have their "ears and noses slit" as a punishment, but this may have been n elaborating on the story in retrospect.

nan's friendship with Jonson broke down, perhaps as a result of Jonson's public feud nigo Jones. Some satiric, scathing lines, written sometime after the burning of Jonson's desk apers, provide evidence of the rift. The poem lampooning Jonson's aggressive behaviour and elieved superiority remained unpublished during Chapman's lifetime; it was found in nents collected after his death.

edies

hapman's greatest tragedies took their subject matter from cent French history, the French ambassador taking offence n at least one occasion. These include *Bussy Ambois*(1607), *The Conspiracy and Tragedy of Charles, ike of Byron* (1608), *The Revenge of Bussy D'Ambois* (1613) d *The Tragedy of Chabot, Admiral of France* (published 39). The two *Byron* plays were banned from the stage—hough, when the Court left London, the plays were rformed in their original and unexpurgated forms by the ildren of the Chapel.[4] The French ambassador probably k offence to a scene which portrays Henry IV's wife and stress arguing and physically fighting. On publication, the ending material was excised, and Chapman refers to the play his dedication to Sir Thomas Walsingham as "poore membered Poems". His only work of classical gedy, *Caesar and Pompey*(written 1604, published 1631), ough "politically astute", can be regarded as his most lest achievement in the genre.[5][6]



the Church of St. Giles, London. The tombstone was designed and paid for by Inigo Jones

ier plays

pman wrote one of the most successful masques of Jacobean era, *The Memorable Masque of the Middle ple and Lincoln's Inn*, performed on 15 February 1613. ording to Kenneth Muir, *The Masque of the Twelve ths*, performed on Twelfth Night 1619 and first printed by John Payne Collier in 1848 with no or's name attached, is also ascribed to Chapman.[7]

pman's authorship has been argued in connection with a number of other anonymous plays of era.[8] F. G. Fleay proposed that his first play was *The Disguises*. He has been put forward as the or, in whole or in part, of *Sir Giles Goosecap, Two Wise Men And All The Rest Fools, The ntain Of New Fashions*, and *The Second Maiden's Tragedy*. Of these, only 'Sir Gyles Goosecap' enerally accepted by scholars to have been written by Chapman (*The Plays of George pman: The Tragedies, with Sir Giles Goosecap*, edited by Allan Holaday, University of Illinois ss, 1987).

1654, bookseller Richard Marriot published the play *Revenge for Honour* as the work of pman. Scholars have rejected the attribution; the play may have been written by Henry pthorne. *Alphonsus Emperor of Germany* (also printed 1654) is generally considered another e Chapman attribution.[9]

e lost plays *The Fatal Love* and *A Yorkshire Gentlewoman And Her Son* were assigned to apman in Stationers' Register entries in 1660. Both of these plays were among the ones stroyed in the famous kitchen burnings by John Warburton's cook. The lost ty *Christianetta*(registered 1640) may have been a collaboration between Chapman and Richard ome, or a revision by Brome of a Chapman work.

oet and translator

her poems by Chapman include: *De Guiana, Carmen Epicum* (1596), on the exploits of Walter Raleigh; a continuation of Christopher Marlowe's unfinished *Hero and Leander* (1598); d *Euthymiae Raptus; or the Tears of Peace* (1609).

me have considered Chapman to be the "rival poet" of Shakespeare's sonnets (in sonnets 78–86), hough conjecture places him as one in a large field of possibilities.[10][11]

om 1598 he published his translation of the *Iliad* in instalments. In 1616 the mplete *Iliad* and *Odyssey* appeared in *The Whole Works of Homer*, the first complete English nslation, which until Pope's was the most popular in the English language and was the way most glish speakers encountered these poems. The endeavour was to have been profitable: his patron, nce Henry, had promised him £300 on its completion plus a pension. However, Henry died in 2 and his household neglected the commitment, leaving Chapman without either a patron or an ome. In an extant letter, Chapman petitions for the money owed him; his petition was fective. Chapman's translation of the *Odyssey* is written in iambic pentameter, whereas *Iliad* is written in iambic heptameter. (The Greek original is in dactylic hexameter.) Chapman n extends and elaborates on Homer's original contents to add descriptive detail or moral and osophical interpretation and emphasis. Chapman's translation of Homer was much admired ohn Keats, notably in his famous poem *On First Looking into Chapman's Homer*, and also attention from Samuel Taylor Coleridge and T. S. Eliot.

man also translated the *Homeric Hymns*, the *Georgics* of Virgil, *The Works of Hesiod* (1618, cated to Francis Bacon), the *Hero and Leander* of Musaeus (1618) and the *Fifth* *e* of Juvenal (1624).

man's poetry, though not widely influential on the subsequent development of English poetry, have a noteworthy effect on the work of T. S. Eliot.[12]

mage

ercy Bysshe Shelley's poem *The Revolt of Islam*, Shelley quotes a verse of Chapman's mage within his dedication "to Mary___ ___", presumably his wife Mary Shelley:

> There is no danger to a man, that knows
> What life and death is: there's not any law
> Exceeds his knowledge; neither is it lawful
> That he should stoop to any other law.[13]

Irish playwright Oscar Wilde quoted the same verse in his part fiction, part literary criticism, Portrait of Mr. W.H.".[14]

English poet John Keats wrote "On First Looking into Chapman's Homer" for his d Charles Cowden Clarke in October 1816. The poem begins "Much have I travell'd in the ns of gold" and is much quoted. For example, P. G. Wodehouse in his review of the first novel e *Flashman Papers* series that came to his attention: "Now I understand what that 'when a planet swims into his ken' excitement is all about."[15] Arthur Ransome uses two references it in his children's books, the *Swallows and Amazons* series.[16]

otes

TRR Government Degree College, Kandukur, SPSR Nellore District

Department of Telugu.

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2021 - 2022

STUDY PROJECT

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02	Y. Sravanthi	B.A SP.Tel III sem	Y201037066	Y. Sravanthi
03	D. Jagadeesh	B.A SPl.Tel III Sem	Y2010370 55	D. Jagadeesh
04	K. Vijay kumar	III. B. A SPl. Tel	Y201037056	K. Vijay kuma
05	S. Naga Raju.	III B.A SPl Tel Tel	Y2010370 64	S. Nagaraju.
06	Salman Raju	II BA SP.Tel III sem	Y20103 7060.	N. SALMAN RAJU
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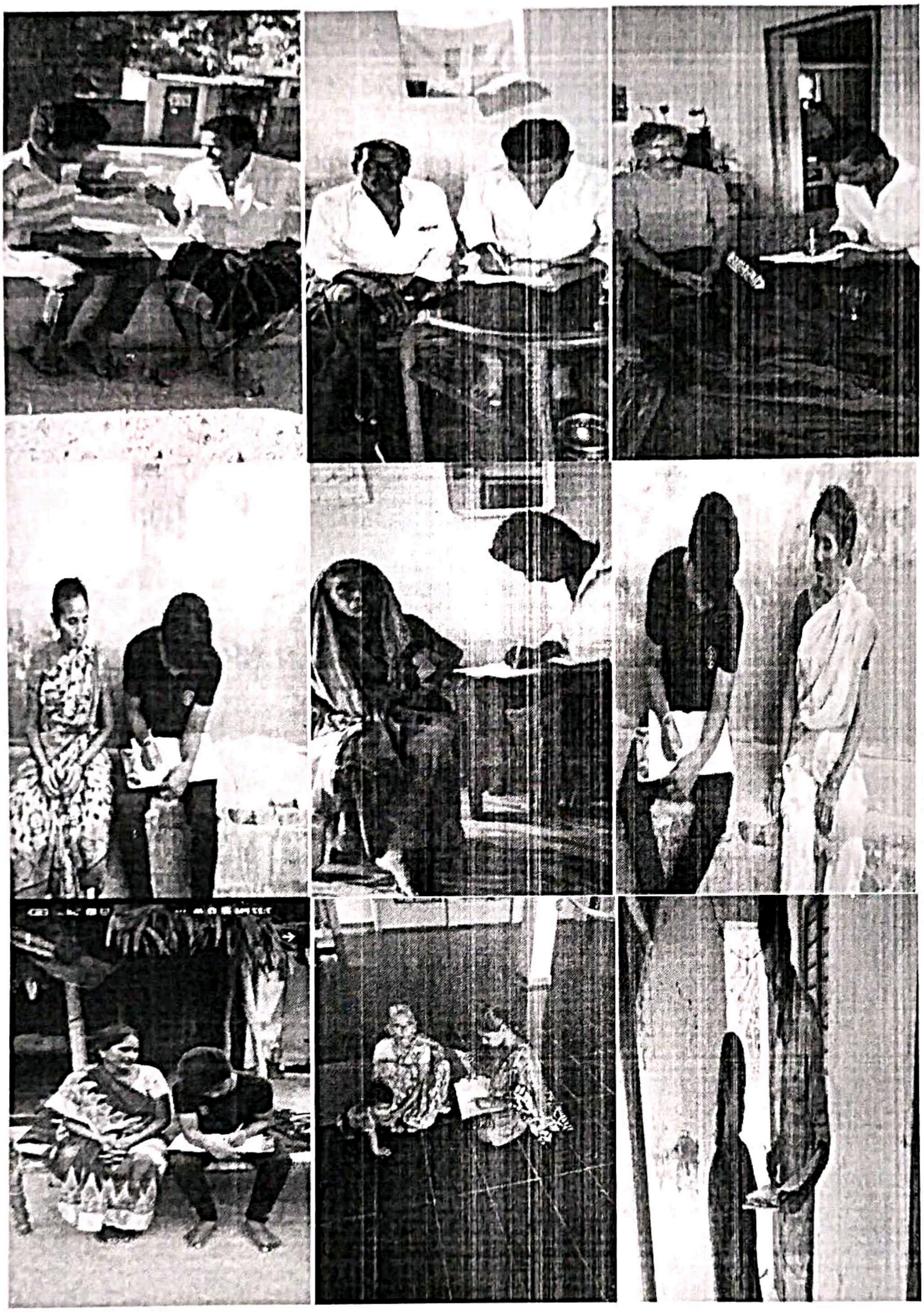
STUDENT STUDY PROJECT – **PODUPU KATHALU**



1

T.R.R. Govt Degree college
kandukur
Dept. of telugu
study project

Topic :- పొడుపు కథలు
సేకరణ :- M. sai yamini
Hall ticket no :- Y2010370 58
III B.A (H.E.T)

పర్యవేక్షణ :- supervision :- Dr. K. Sujatha
M.A (P.h.D)
Lec in telugu

— o —

M. sai yamini అనే నేను మండిపాడు గ్రామము
సర్వేటరాక కొంత మంది దగ్గర కొన్ని పొడుపు కథలు సేకరించడం
జరిగింది.

Sl. NO	Name	villege/town	Age
1.	భాగ్యమ్మ. సిమెంట	మండిపాడు	45
2.	ఎ) సుమరయమ్మ	మండిపాడు	25
3.	కుమారి. పి	మండిపాడు	30
4.	దానమ్మ	మండిపాడు	45
5.	మరియమ్మ	మండిపాడు	30
6.	సత్య	మండిపాడు	25

పేరు :- భాగ్యమ్మ. సిరాజ గ్రామము :- మందిపాడు వయస్సు :- 45

* ఎంత మందున్నా ఎత్తుకుంటాను ఎంతసేపైనా ఎత్తుకుంటాను
ఎంత ఎత్తుకున్నా అలసిపోను ఎంతసేపైనా అలాగే ఉంటాను

→ భూమి

* గుండ్రంగా ఉంటాను కాని చక్రాన్ని కాను నా ఒళ్ళంతా రంధ్రాలు
ఉంటాయి కాని వలని కాను చేత్తో తిప్పుతాను కాని steering
కాను.

→ జల్లెడ

* ఎప్పుడు నీటిలో ఉంటాను చేపను కాను అప్పుడప్పుడు బయటకి
వస్తాను అలను కాను

→ పడవ

* నామం ఉంది కానీ పూజారిని కాను, వాలముంటుంది కానీ, కోతిని కాను,
నేను ఎవరు ?

→ ఉడత

* అడవిలో అమ్మమ్మ ఎప్పుడూ తల విరబోసుకొని ఉంటుంది ఏమిటది

→ ఈత చెట్టు

* పచ్చని ఇంట్లో పదిరెక్కలు, రాళ్ళపై అద్దాలవలు రసాలన్నీ నలిపితే
గుక్కెడు నీళ్ళు గుటుకుమ

→ నిమ్మకాయ

* నాకు కన్నులు చాలా ఉన్నాయి కానీ చూసేది రెండింటితోనే
నేను ఎవరు

→ చందమామ

* అమ్మ తమ్ముడిని కాదు, కానీ మీ అందరికీ మేనమామనే
నేను ఎవరు

→ నెమలి

పేరు :- ఏసు మరియమ్మ   గ్రామము :- మండిపాడు   వయస్సు :- 25

* కత్తులు లేని భీకర యుద్ధం గెలుపు ఓటమి చెరిసగం

→ చదరంగం

* రాజావారి తోటలో రోజాపూలు చూసేవారే గాని కోసేవారు లేరు

→ నక్షత్రాలు

* నాలుగు కర్రల మధ్య నల్లరాలు

→ పలక

* చుక్కల చుక్కల రంగదాని, బంగారు వన్నెల ప్రాణదాని బిత్తర చూపులు
చూసేదను చెంగు చెంగున దూకేదను

→ లేడి

* పైనొక పలక, కిందొక పలక, పలకల నడుమ మెలికెల పాము

→ నాలుక

* ఎర్రని చిన్నోడు, వేలెత్తైనా ఉండడు. కొరికితే మంట ఆ కోపానికి
మనం తగలేము

→ మిరపకాయ

* మనకి అవసరం లేనిది దానికి అవసరం ఉంది అందరి ఇళ్లల్లో ఉంటుంది

→ దుస్తె బెన్న

* తెల్లైన ఉంటాను ఆకాశాన్ని కాను, నల్లగా ఉంటాను చీకటిని కాని
ఎండకి, వానకి గుర్తొస్తాను.

→ గొడుగు

* నల్లగా ఉంటాను కాని బొగ్గుని కాను, నేను ఆకర్షిస్తాను కాని
అమ్మాయిని కాని

→ మాంగ్నేటె

పేరు :- కీర్తన. పి గ్రామము :- మండపాడు వయస్సు :- 30

- చూస్తే పిడికిలాగ దాగుతుంది తీస్తే ఇల్లంతా చేరుతుంది ఏమిటది:-

→ దీపం

- ఏస్తే చిటికెడు, కాస్తే మూరెడు ఏమిటది

→ మునగకాయ

- తెల్లకోట లోపలున్న ఎర్రమచ్చదొర

→ కొబ్బెట్టు

- కాళ్ళు లేకపోయినా నడుస్తాను తెక్కలు లేకపోయినా ఎగుస్తాడు నేను ఎవరు

→ మేఘం

- తండ్రి గరగర, తల్లి పీచుపీచు, బిడ్డలు రత్నాలు మాణిక్యాలు ఏమిటది?

→ పనస పండు

- నల్లటి కుక్కకు నాలుగు చెవులు

→ లవంగం

- బైటంతా ఆకులూ లోపలంతా ముత్యాలు → మొక్క జొన్న

- తెల్లని బంతి చల్లని బంతి ఎవ్వరూ ఆడని బంతి → చందమామ

- గుడిసెలో గువ్వ ఎంత గుంజినా రాదు → నాలుక

- ముగ్గురు అన్నదమ్ములు రాత్రింబగళ్ళు నడుస్తూనే ఉంటారు

→ గడియారం ముళ్లు

పేరు :- దునమ్మ   గ్రామము :- మాదిపాడు   వయస్సు :- 45

* కతకత కంగు, మంత్రాల పింగు, తోలు తీసిమింగు

→ అరటి పండు

* ముఖం ఉన్నా మెడ లేనిది

→ నది

* లకాటంలో అర్రె గదులు, గది గదికో సిపాయి సిపాయికో ఈటె ?

→ తేనెపట్టు

* తెల్లని మైదానంలో నల్లని విత్తులు, చేతితో దున్నుతాం, నోటితో చల్లుతాం

→ [illegible]

* మా ఇంట్లో చిన్నది ఎప్పుడూ బోలెడు బట్టలు వేసుకుంటుంది
ఏమిటది?

→ ఉల్లిపాయ

* తండ్రి నున్నన, తల్లి మెత్తన, బిడ్డలు కటుకురాళ్ళు

→ జామ పండు

* అందమైన ఆభరణాల భరిణ, అందులో పసిడి పానుపు దానిపై
అమర్చిన కెంపులు

→ దానిమ్మ పండు

* ఎంతమందినైనా ఎత్తుకుంటాను ఎంతసేపైన ఎత్తుకుంటాను
ఎంతఎత్తుకున్న అలసిపోను ఎంతసేపైనా అలాగే ఉంటాను

→ భూమి.

పేరు :- మరియమ్మ గ్రామము :- ముదిపాడు వయస్సు :- 30

* గుండ్రంగా ఉంటాను బంతిని కాను, చేతికుంటాను వాచి కాను, ఆయుష్షుకి అందాన్ని ఇస్తాను మేకప్ ని కాను

→ గాజులు

* రెక్కలు ఉంటాయి కాని ఆకాశంలో ఎగరలేను గుడ్లు పెడతాను కాని కోడిని కాను తెల్లగ ఉంటాను కాని హంసను కాను

→ బాతు

* పొడవుగా ఉంటాను స్తంభాన్ని కాను, నన్ను కొట్టిన నీకే ఉపయోగ పడతాను నేను ఎవరిని

→ బోరింగ్ పంప్

* నేను గాయం చేసిన రక్తం రాదు నన్ను చెకపే చెయ్యడానికి వాడతారు నన్ను జతను చేస్తారు

→ షార్పనర్

* నిలబడితే నిలుస్తుంది కూర్చుంటే కూలబడిపోతుంది

→ నీడ

* సముద్రంలో పుట్టి సముద్రంలో పెరిగి, ఊర్లోకొచ్చి ఊదుమంటుంది

→ శంఖం

* ఎర్రటి పండు మీద ఈగైనా వాలదు

→ నిప్పు

* చూస్తే చూసింది గాని కళ్ళు లేవు నవ్వితే నవ్వింది గాని పళ్ళు లేవు, నోరు లేదు అంటే అన్నది గాని కాలు లేదు

→ అద్దం

పేరు :- సత్య **గ్రామము** :- మండపాడు **వయస్సు** :- 25

* ఒక్కటే తొట్టి, రెండు పిల్లలు → వేరు శనగ

* తల్లి దయ్యం పిల్ల పగడం → రేగి పండు

* తెలిసి కాయ కాస్తుంది తెలియకుండా పువ్వు పూస్తుంది
→ అత్తి చెట్టు

* తల నుండి తోక చెమట్లేసింది భూమిలోనారు తెన్నులు ఎర్రగా
ఉండు రాత్రి నారు పాటపాడు చూడు పాము కాదు
→ రైలు

* కాళ్ళు చేతులు లేని అందగత్తెకు బోలెడు వస్త్రాలు
→ ఉల్లిపాయ

* తొడిమ లేని పండు ఆకు లేని పండు
→ విభూతిపండు

* దాని పువ్వు పూజకు రాదు దాని ఆకు దిష్టుకు రాదు దాని పండు
అందరు కోరు
→ చింతపండు

* కిటుకిటు తలుపులు కిటారు తలుపులు ఎంత కొట్టిన చప్పుడు ఏముంటది?
→ కనురెప్పలు

* ఎందరు ఎక్కిన విరగని మంచం → అరుగు

T.R.R Govt Degree collage

Kandukur

Dept of Telugu

<u>study project</u>

Topic :- "పొడుపు కథలు"

సేకరణ :- Y. Sravanthi II BA Spl. Telugu

H.T No :- Y201037066

పర్యవేక్షణ :- Dr. K Sujatha
MA. ph.D
Lec in Telugu

Y. స్రవంతి అను నేను కందుకూరు లోని ఊళ్ళలో పర్యటించి ఈ క్రింది వారి ద్వారా నేను కొన్ని పొడుపు కథలను సేకరించాను.

S.l NO	Name	Village/Town	Age
1	CH. రమణమ్మ	Kandukur	50
2	Y. ధనమ్మ	"	53
3	S. పిచ్చమ్మ	"	49

పొడుపు కథలు

పేరు:- M. సుబ్బరావమ్మ వయస్సు:- 60. ఊరు: కందుకూరు

* ఊరందరికి ఒకటే దీపం.
→ సూర్యుడు.

* అన్ని వేసి చూడు
నన్ను వేసి చూడు.
→ ఉప్పు.

* కంటికి కనబడదు
ఎంత కోసిన తెగదు.
→ గాలి.

* అమ్మ అంటే కలుస్తాయి కాని
నాన్న అంటే కలవవు ఏంటవి.
→ పెదవులు.

* ఆకాశంలో ఎగురుతాను పక్షిని కాదు
నాకు తోక ఉంటుంది కాని విమానాన్ని కాదు
నేను ఎవరిని.
→ గాలిపటం.

* అడవిలో పుట్టింది, అడవిలో పెరిగింది.
మా ఇంటికొచ్చింది తైతక్కలాడింది.
→ కవ్వం.

* చెంద్యానకుండ పొంద్యాన నీరు.
వెంద్యాని సున్నం ఏంటది.
→ కొబ్బరికాయ.

- జానచెట్టు కింద జానమ్మ
  ఎంత గుంజిన రాదమ్మ
  → నీడ

- పైన పచ్చని లోన తెల్లని
  అందులో కొన్ని గులకరాళ్ళు
  గారడున్ని నీళ్ళు
  → బత్తాయి.

- రాజుగారి తోటలో రోజాపువ్వులు
  చూసేవారే కాని కోసేవారు లేరు
  → చుక్కలు.

- ఇద్దరు దొంగలు ఒకరు తిరుగుతారు
  ఒకరు తిరగరు.
  → ఇసురురాయి.

- నల్లని అడవిలో ఒకటే దారి
  → పాపటి.

- తండ్రి గరగర. తల్లి పీచు పీచు
  పిల్లలు రత్నాలు. → సీతాఫలం

- తోకలేని నా బండి
  తొంబై ఆమడల దూరం పోతుంది.
  → ఉత్తరం.

- కాళ్ళు చాలా ఉంటాయి కాని
  ఒకటే కన్ను ఉంటుంది.
  → రంపం.

* ఎర్రని పొలంలో నల్లని విత్తనాలు. → పుచ్చకాయ.

* రాత్రివేళ రాచరికం, పగటివేళ పేదరికం. → చందమామ.

* తెల్లని దారము నల్లని టోపి. → అగ్గిపుల్ల.

* దాని మొదలు చెరుకు మొదలు
దాని ఆకులు తామరాకులు
దాని గుత్తి ద్రాక్ష గుత్తి. → ఆముదపుచెట్టు.

* ఒకటే తొట్టిలో ఇద్దరు పిల్లలు. → సెనకాయ.

* తెలిసి కాయ కాస్తుంది. తెలియకుండ పువ్వు పూస్తుంది. → అంతిచెట్టు.

* కూర వచ్చె నార వచ్చె
పొయ్యిలోకి పుల్ల వచ్చె
కొప్పులోకి పూత వచ్చె. → గొంగూర.

* [illegible] అన్నదమ్ముళ్లము ప్రక్క ప్రక్కనే ఉంటాము
కలుసుకోము. → ఫ్యాన్

* ఊరంతా తిరిగి వచ్చి మూలనపడి ఉంటాయి. → చెప్పులు.

* పుట్టినప్పటినుండి అక్కా చెల్లెళ్లము
ప్రక్కప్రక్కనే ఉంటాము కాని కలుసుకోము
చూసుకోము. → కన్నులు.

T.R.R. Govt. Degree College.
Kandukur.

Dept of Telugu

Study project

Topic :- "మాండలిక పదాలు"
సేకరణ :- D. Jagadeesh

Hall Ticket No :- Y201037055 [I B.A (H.E.T.)]
పర్యవేక్షణ :- Supervision :- Dr. K. Sujatha
- M.A. Ph.D
Lec in Telugu

D. Jagadeesh అను నేను ఓ రెడ్డిపాలెం గ్రామంలో పర్యటించి ~~ఈ~~ క్రింది వారి ద్వారా ఇచ్చట మాండలిక పదాలను నేను సేకరించడం జరిగినది.

Sl.No.	Name	Village/Town		Age
1.	పారా. శిలువమ్మ	ఓ రెడ్డిపాలెం (గ్రామం)		60
2.	గోరా. లక్ష్మీనారమ్మ	"	"	53
3.	గుమ్మడమాల. ఏడుకొండమ్మ	"	"	56
4.	కనపర్తి. లక్ష్మమ్మ	"	"	62

1. పచ్చనిపండ్లలో పసిరాంకాళ్ళు, రాళ్లపై అందాల రంగుల రకాలన్ని
మారకపోతే సక్రియు నాళ్ళ పదాల్ల
సమ్మేళనాయు.

2. నల్లటి కుక్కకు 4 చెవులు
లవంగం

3. బైటది పారేస్తాం లోపలిది తింటాం
బైటది తింటాం లోపలిది పారేస్తాం
మొక్కజొన్న

4. తెల్లని బంతి చల్లని బంతి ఎవ్వరూ పట్టని బంతి
చందమామ.

5. గూటిలో గువ్వ వింత గుంజినా రాదు
నాలుకే

6. ముగ్గురన్నదమ్ములు రాత్రింబవళ్ళు నడుస్తూనే ఉంటారు.
గడియారం ముళ్ళు

7. కత్తులు లేని రక్తం యుద్ధం గెలుపూ ఓటమి
చెరిసగం
చదరంగం

8. ముఖం ఉన్న మెడ లేనిది
నది

నా వారి తోటలో రోజా పూలు చూసి వారి

తి కోసినారు వీరు.

త్రాయ

తకత కంస. మా తాత పింగు. తోలు తీసి మింగు

అరటి పండు

నాకె పలకె, కిందాకె పలకె, పలకెల నడుమ మెలికెల

పాము.

లుకె

మకేళిం చమకేళిం రాసిన, బంగారం వన్నెల ప్రాసిన

చిత్రె చూపులు చూపులు చూసెదను, చెంగు

చెంగున దుంకెదను.

లేడి

కొమ్మలో అర్రలు గదులు. గది గదిలో సిపాయి

సిపాయిలో తుపాకి ?

తేనెతుట్టె

తెల్లని మడిలో నల్లని విత్తులు, చేతితో, మున్నతాం.

నోటితో చల్లుతాం.

సీతాఫలం

నాలుగు కర్రల మధ్య నల్లరాయి

పలకె

దరిని పైకి తీసుకెళ్తాను, కాని నేను మాత్రం

క్కె నేను నేను ఎవరు ?

చ్చెన

ాకు కన్నులు చాలా ఉన్నాయి. కాని చూసేది

ెండింటితోని నేను ఎవరు?

మలి

ామం ఉంది కాని పూజారిని కాదు, వాలముంటుంది

కాని , కోతిని కాను. నేను ఎవరిని?

ఉడుత

అమ్మ తమ్ముడిని కాదు కాని వరి అందరికి

మేనమామని. నేను ఎవరిని?

చందమామ.

దాస్తే పిడికిలిలో దాగుతుంది. తీస్తే ఇల్లంతా

చేరుతుంది ఏమిటది ?

దీపం

మా ఇంట్లో చిన్నది, ఎప్పుడూ చాటెడు బట్టలు

వేసుకుంటుంది ఏమిటది ?

ఉల్లిపాయ.

ఆకు చిటికెడు కాయ మూరెడు ఏమిటది ?

మునగ కాయ.

డవిలో అమ్మమ్మ ఎప్పుడూ తల విరబోసుకొని
ంటుంది. ఏమిటది ?

ఈత చెట్టు

ల్లకోట తోడుతున్న ఎర్రమంత్రి దొర?

కొవ్వొత్తి

కాళ్ళు లేకపోయినా నడుస్తాను. కళ్ళు లేకపోయినా
ఏడుస్తాను నేను ఎవరు ?

మేఘం.

ఒళ్ళంతా ముళ్ళంట, తీసిపట్టిని మేనంట, విప్పి చూస్తే
బొతెడంత, కడుపు చూస్తే బిడ్డలంట,

పనసకాయ.

7. తండ్రి గరగర, తల్లి పీచు పీచు, బిడ్డలు రత్నాలు
మొగాకర్రలు.

పనస పండు

ఎర్రని చిన్నోడు, వేలంతైనా ఉండడు, కొరికితే మాత్రం, కో
కోపానికే మినం ఆగలేము.

మిరపకాయ.

9. తండ్రి నున్నన, తల్లి మెత్తన, బిడ్డలు కటిక రాళ్ళు

జామకాయ.

30 అందమైన ఆభరణాల ఖజానా, అందులో పసిడి పొరుపు.
దానిపై అమర్చిన కెంపులు.

దానిమ్మ పండు.