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Biometrical Authentication of Twins from Side-View using Hybrid Approach

Rohit Raja
Research Scholar
Computer Science and Engineering
Dr. C. V. Raman University
Bilaspur(CG)
E-mail:- rohitraja4u@gmail.com

Tilendra Shishir Sinha
Ex-Principal (Engineering)
ITMUR-School of Engineering & Research
ITM University Raipur (CG)
E-mail:-tssinha1968@gmail.com

Ravi Prakash Dubey
Principal(Engineering)
Dr. C. V. Raman University
Bilaspur(CG)
Email:-ravidubey_1963@yahoo.co.in

***Abstract*— In the recent times frontal face images have been used for the biometrical authentication of twins. The present paper incorporates the frontal face images of twins only for the formation of corpus. But for the biometrical authentication, side-view of the twins face images has been analysed using hybrid approach, which means the combination of Artificial Neural Network (ANN) and Genetic Algorithm (GA). The work has been carried out in two phases. In the first phase, formation of the FACE_MODEL as a corpus using frontal face images of one subjects from twins have been done. In the second phase, the model or the corpus has been used at the back-end for Biometrical Authentication using a proposed algorithm called HABAT (Hybrid Approach Biometrical Authentication for Twins). The authentication process has been carried out with the help of an unknown zero-degree (parallel to the surface plain) oriented image of same subject from twins which is in the corpus and second subject from that same twins. Hence relevant features with switching orientation in image from Zero-degree (parallel to the surface plain) to higher degree with 10-degree change have been matched with the corpus. The classification process of acceptance and rejection has been done after best-fit matching. The proposed algorithm has been tested with 10 subjects of varying age groups. The result has been found very satisfactory with the data sets and may be helpful in bridging the gap between computer and authorized subject for more system security.**

***Index Terms* — Artificial Neural Network (ANN), Genetic Algorithm (GA), Abnormal Face Recognition (AFR), Principal Component Analysis (PCA), Discrete Cosine Transform (DCT), Discrete Wavelet Transform (DWT)**

I. INTRODUCTION

BIOMETRICAL authentication plays a vital role in system security in recent times. Most of the researchers have done the work so far using frontal images of twin's faces for biometrical study. The relevant features have been extracted from the frontal images twin's faces and the template matching has been employed for face recognition [1]-[4]. Little work has been done in the area of face recognition by extracting features from the side-view of the twin's faces. When frontal images are tested for its recognition with minimum orientation in the face or the image boundaries, the performance of the recognition system degrades. In the present paper, side-view of the twins face has been considered with zero-degree orientation. After enhancement and segmentation of the image relevant geometrical features have been extracted. These features have been matched using an evolutionary algorithm called Genetic Algorithm. To throw more light the present work has been carried out in two phases: *Modeling* phase and *Understanding* phase. In the *Modelling* phase, a knowledge-based model or corpus has been framed using ANN by extracting relevant features of the known frontal image. In the *Understanding* phase, this knowledge-based model or corpus has been utilized for Biometrical Authentication of Face using proposed algorithm call HABAT(Hybrid Approach Biometrical Authentication for twins). Many researchers like Zhao and Chellappa [5] proposed a Shape from shading (SFS) method for preprocessing of 2D images. Hu et al. [6] have modified this work by proposing 3D model approach and creating synthetic images under different poses. Lee et al. [7] has proposed a similar idea and given a method where edge model and color region are combined for face recognition after synthetic image were created by a deformable 3D model. Xu et al. [8] proposed a surface based approach that uses Gaussian moments. Chua et al. [9]-[10] introduced point signature to describe the 3D landmark that is used to describe the position of forehead, nose and eyes. From the literature survey it has been observed that still there is a scope in face recognition using ANN and GA (Hybrid approach).

Swati y. Dhote et al. [11] has describe facial features which has important for the acceptance of expert proof in legal proceeding for determining the identity of an individual from facial images. They develop a model for face recognition

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system which can distinguish two different persons who are identical twins.

The paper has been organized in the following manner, section II proposes the problem formulation and solution methodology, section III proposes the results and discussions, section IV gives the conclusions and further scope of the work and final section gives all the references made in completing the present work.

II. PROBLEM FORMULATION AND SOLUTION METHODOLOGY

In the present paper the problem has been formulated in five stages. The first stage of the problem is the detection of noises and its removal from the image for better performance of the system. The second stage of the problem is the detection of boundaries or contours of the image. The third stage of the problem is the selection and extraction of relevant features from the enhanced and segmented image. The fourth stage of the problem is framing of knowledge-based model as corpus. The fifth stage of the problem is the recognition problem, given an unknown face image; the goal is to formulate an algorithm that matches the best pattern stored in the knowledge-based model for classification. The objective of this paper is to investigate and develop a new method for Biometric authentication using Hybrid Approach (ANN and GA) within a single framework. The paper aims to analyze and discuss experimentally the aforesaid problem in the subsequent subsections.

A. Mathematical Preliminaries

Based on the assumption that the original image is additive with noise. To compute the approximate shape of the wavelet (i.e., Any real valued function of time possessing some structure), in a noisy image and also to estimate its time of occurrence, two methods are available, first one is a simple structural analysis and the second one is the template matching technique. For the detection of wavelets in noisy image, assume a class of wavelets, $S_i(t)$, I = 0,...N-1, all having some common structure. Based on this assumption that noise is additive, then the corrupted image has been modeled by the equation -:

$$X(m,n)=i(m,n)+Gd(m,n) \quad (1)$$

where i(m,n) is the clean image, d(m,n) is the noise and G is the term for signal-to-noise ratio control. To de-noise this image, wavelet transform has been applied. Let the mother wavelet or basic wavelet be ψ(t), which yields to,

$$\psi(t)=\exp(j2\pi ft-t^2/2) \quad (2)$$

Further as per the definition of Continuous Wavelet transform CWT (a,τ), the relation yields to,

$$\text{CWT}(a,\tau) = (1/\sqrt{a})\int x(t)\,\psi\{(t-\tau)/a\}dt \quad (3)$$

The parameters obtained in equation (3) has been discretized, using Discrete Parameter Wavelet transform, DPWT (m, n), by substituting $a = a_0^m$, $\tau = n\,\tau_0 a_0^m$. Thus equation (3) in discrete form results to an equation (4),

$$\text{DPWT}(m,n) = 2^{-m/2}\sum_k\sum_l x(k,l)\,\psi(2^{-m}k-n) \quad (4)$$

where 'm' and 'n' are the integers, a_0 and τ_0 are the sampling intervals for 'a' and 'τ', x(k,l) is the enhanced image. The wavelet coefficient has been computed from equation (4) by substituting $a_0 = 2$ and $\tau_0 = 1$.

Further the enhanced image has been sampled at regular time interval 'T' to produce a sample sequence {i (mT, nT)}, for m = 0,1,2, M-1 and n=0,1,2,…N-1 of size M x N image. After employing Discrete Fourier Transformation (DFT) method, it yields to the equation of the form,

$$I(u,v)=\sum_{m=0}^{M-1}\sum_{n=0}^{N-1} i(m,n)\exp\left(-j2\pi(um/M+vn/N)\right) \quad (5)$$

for u=0,1,2,…,M-1 and v = 0, 1, 2, ……..,N-1

In order to compute the magnitude and power spectrum along with phase angle, conversion from time domain to frequency domain has been done. Mathematically, this can be formulated as, Let R(u,v) and A(u,v) represent the real and imaginary components of I(u,v) respectively.

The Fourier or Magnitude spectrum yields.

$$|I(u,v)| = \left[R^2(u,v)+A^2(u,v)\right]^{1/2} \quad (6)$$

The phase angle of the transform is defined as,

$$\phi(u,v) = \tan^{-1}\left[\frac{A(u,v)}{R(u,v)}\right]$$

$$P(u,v) = |I(u,v)|^2 = R^2(u,v)+A^2(u,v) \quad (7)$$

The power spectrum is defined as the square of the magnitude spectrum. Thus squaring equation (6), it yields, (8)

Due to squaring, the dynamic range of the values in the spectrum has been found very large. Thus to normalize this, logarithmic transformation has been applied in equation (6). Thus it, yields.

$$|I(u,v)|_{normalize} = \log(1+|I(u,v)|) \quad (9)$$

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The expectation value of the enhanced image has been computed and it yields to the relation,

$$E[I(u,v)]=\frac{1}{MN}\sum_{u=0}^{M-1}\sum_{v=0}^{N-1}I(u,v) \quad (10)$$

where 'E' denotes expectation. The variance of the enhanced image has been computed by using the relation,

$$Var[I(u,v)] = E\{[I(u,v) - I'(u,v)]^2\} \quad (11)$$

The auto-covariance of an enhanced image has also been computed using the relation,

$$C_{xx}(u,v)=E\{[I(u,v)-I'(u,v)][I(u,v)-I'(u,v)]\} \quad (12)$$

Then the power spectrum density has been computed from equation (12),

$$P_E(f)=\sum_{m=0}^{M-1}\sum_{n=0}^{N-1}C_{xx}(m,n)W(m,n)\exp(-j2\pi f(m+n)) \quad (13)$$

where C_{xx}(m,n) is the auto-covariance function with 'm' and 'n' samples and W(m,n) is the Blackman window function with 'm' and 'n' samples.

The data compression has been performed using discrete cosine transform (DCT), given below,

$$DCT(u,v)=\sum_{m=0}^{M-1}\sum_{n=0}^{N-1}I(m,n)\cos\left(\frac{2\pi T(m+n)}{MN}\right) \quad (14)$$

Further for the computation of principal components (i.e., Eigenvalues and the corresponding Eigenvectors), a pattern vector $\overline{p_n}$ **,** which can be represented by another vector $\overline{q_n}$ of lower dimension, has been formulated using (5) by linear transformation.

$$\text{Thus } \overline{p_n} = [M]\ \overline{q_n} \quad (15)$$

where $[M]$ = $[I(m,n)]$ for m= 0 to M-1 and n = 0 to N-1.

and $\overline{q_n}$ = min([M]), such that $\overline{q_n} > 0$

Taking the covariance of equation (15), it yields, the corresponding Eigenvector, given in equation (16),

$$\overline{P} = \text{cov}(\overline{p_n}) \quad (16)$$

$$\text{and thus } \overline{P}\ .\ M_i = \lambda_i\ .\ M_i \quad (17)$$

where 'λ_I' are the corresponding Eigenvalues.

For the detection of boundaries in an image mathematically, let 'pix' at coordinates (x,y) has two horizontal and two vertical neighbors, whose coordinates are (x+1,y), (x-1,y), (x,y+1) and (x,y-1). The arrangement has been shown in figure4-1. This forms a set of 4-neighbors of 'pix', denoted as N_4(pix). The four diagonal neighbors of 'pix' have coordinates (x+1,y+1),(x+1,y-1),(x-1,y+1) and (x-1,y-1), denoted as N_D(pix). The union of N_4(pix) and N_D(pix), yields 8-neighbors of 'pix'. Thus,

$$N_8(pix)=N_4(pix)\cup N_D(pix) \quad (18)$$

A path between pixels 'pix_1' and 'pix_n' is a sequence of pixels pix_1, pix_2, pix_3,…..,pix_{n-1},pix_n, such that pix_k is adjacent to p_{k+1}, for $1 \le k < n$. Thus connected component is defined, which has been obtained from the path defined from a set of pixels and which in return depends upon the adjacency position of the pixel in that path. In order to compute the orientation using reducing strategy, phase-angle must be calculated first for an original image. Hence considering equation (7), it yields, to some mathematical modelling.

Let I_k be the side-view of an image with orientation 'k'. If k = 0 degree, then I_0 is the image with actual side-view.

If the real and imaginary component of this oriented image is R_k and A_k. For k = 0 degree orientation,

$$\Rightarrow |I_k| = [R_k^2 + A_k^2]^{1/2} \quad (19)$$

For k = 0^0 , orientation,

$$\Rightarrow |I_{90}| = [R_{90}^2 + A_{90}^2]^{1/2} \quad (20)$$

Thus phase angle of image with k = 0 degree orientations is

$$\phi_k = \tan^{-1}\left[\frac{A_k}{R_k}\right] \quad (21)$$

If k = k-5, (applying reducing strategy), equation (21) yields,

$$\phi_{k-5} = \tan^{-1}\left[\frac{A_{k-5}}{R_{k-5}}\right] \quad (22)$$

Form equation (21) and (22) there will be lot of variation in the output. Hence it has been normalized, by imposing logarithmic to both (21) and (22)

$$\phi_{normalize}=\log\left(1+(\phi_k-\phi_{k-5})\right) \quad (23)$$

Taking the covariance of (23), it yields to perfect orientation between two side-view of the images i.e. , I_{90} and I_{85}

$$I_{perfect-orientation} = \text{Cov}\left(\phi_{normalize}\right) \quad (24)$$

The distance between the connected components have been computed using Euclidean distance method. A perfect matching has been done with the corpus with best-fit measures

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using genetic algorithm. If the matching fails, then the orientation is reduced further by 5^0, that is k = k-5 and the process is repeated till k = 45^0.

B. Solution Methodology with proposed algorithm

The proposed algorithm called HABAT (Hybrid Approach Biometrical Authentication fro Twins) has been depicted below,

Step1. Read the unknown Zero-degree oriented face image.

Step2. Set the frame counter, fcount = Zero

Step3. Set the flag for best fit as fbest = 1

Step4. Do while fbest <> 0

Read the face_image[fcount]

Enhance the image using DCT

Compute the connected components

Locate ROI and Crop the image

Compute the relevant geometrical features

Perform the best-fit matching using Genetic algorithm

Compute the efficiency of matching of parameters

If true then fbest = 0 and display 'ACCEPT'

else display 'REJECT'

End do

III. RESULTS AND DISCUSSIONS

In order to form a FACE_MODEL, a known frontal face image as depicted in figure 1 has been analyzed for the extraction of relevant features. Figure 2 shows the enhanced image, the histogram has been plotted in figure 3. The relevant ROI of different face parts have been shown in figure 4. The methods that have been applied for the above analysis are connected component, DCT and ANN.

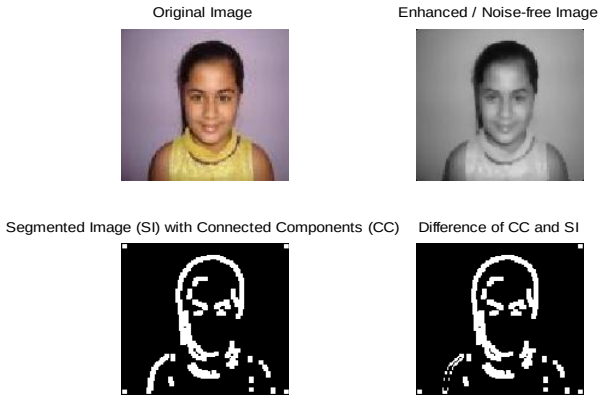

Fig. 1: (a) Original Image (b) Enhanced / Noise-Free Image (c) Segmented Image with connected component (d) Difference of CC and SI

Fig. 2: (a) Original Image (b) Motion Blurred (c) Blurred Image (d) Sharpened Image

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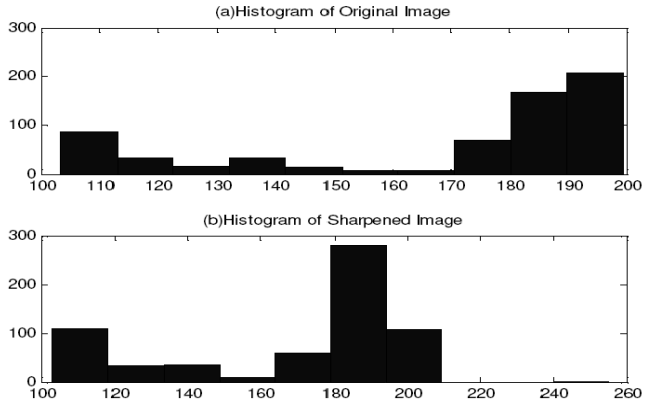

Fig. 3: Shows the histogram of Original Image and Sharpened Image

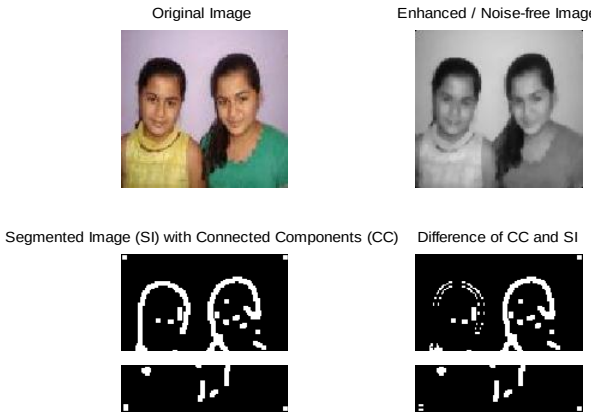

Fig. 4: (a) Original Image of twins (b) Enhanced / Noise-Free Image of twins (c) Segmented Image with connected component of twins(d) Difference of CC and SI of twins

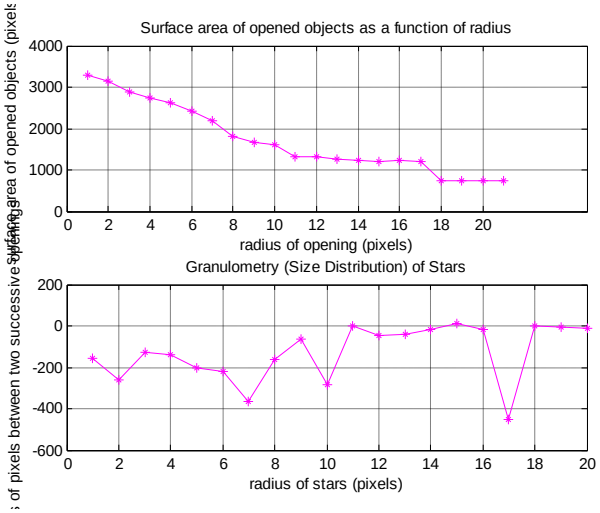

Fig. 5: Probability distribution of face features extracted of frontal face

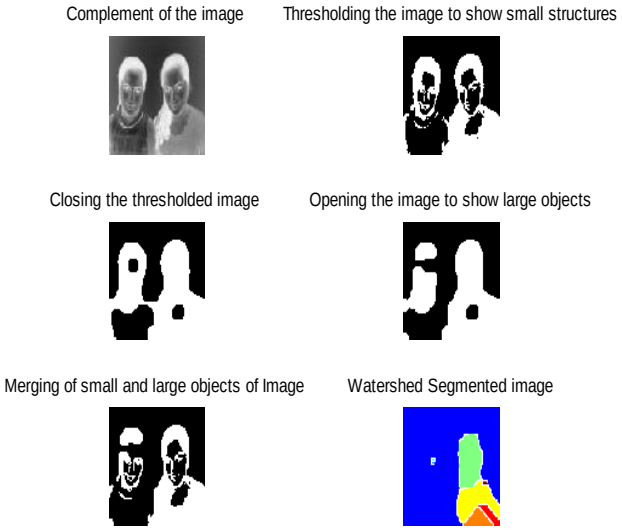

Fig. 6: (a) Compliment image (b) Thresholding the image to show small structure (c) Closing the thresholded image (d) Opening the image to show large objects (e) Merging of small and large object of images (f) Watershed segmented image

The output of the algorithm has been shown in Figure 7, Figure 8 and Figure 9.

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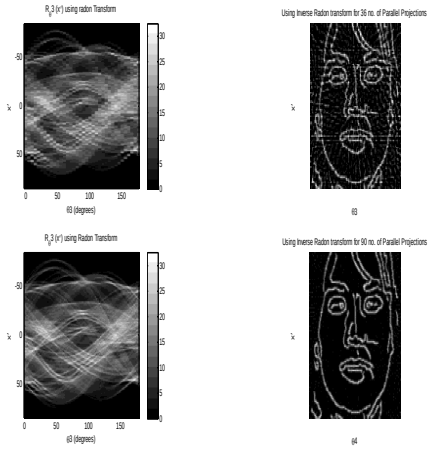

Fig 7. Employment of Radon transform for computing muscle activation and contraction with projection count 36 and 90.

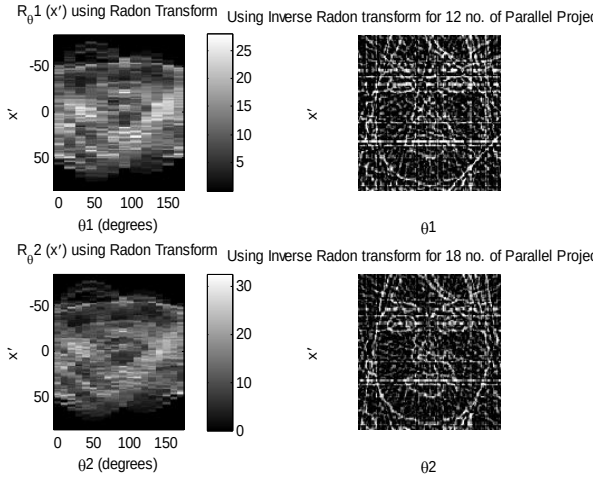

Fig. 8. Employment of Radon transform for computing muscle activation and contraction with projection count 12 and 18.

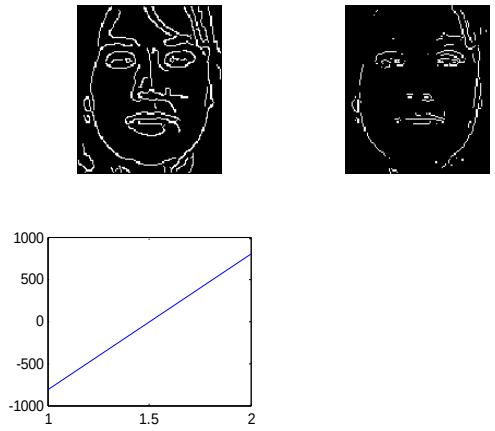

Fig. 9. Employment of Sobel and Canny edge function for the linearity in the computation of muscle activation and contraction

From figure 7 and figure 8, it has been observed that the projection at 90 degree is having wider profile than at 0 degree projection. This means the enery and intensity value of muscle activation and contraction appears maximum when the angle for parallel projection of extracted data is at 90 degree. This estimated value can be further employed for the determination of sensors at the projected space using Fan-Beam projection.

IV. Conclusions and Further Scope of the Work

In the present paper, the authentication process from side-view with 90-degree orientation has been performed using a proposed algorithm called HABA, which has been tested with the corpus developed and the result has been found very satisfactory. For further study, the proposed algorithm has to be tested with the image of the same subject by changing the getups and extracting the side-view geometrical features for biometrical authentication

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World Ranking of University

-A View

Pramod Kumar Naik
Professor & HOD, Dept. of Education
Dr. C. V. Raman University
Bilaspur, Chhattisgarh, India
pramodnaik678@gmail.com

Aniket Sutradhar
M.Phil. (Education)
Dr. C. V. Raman University
Bilaspur, Chhattisgarh, India
aniketsutradhar1@gmail.com

Abstract— As all want to get specialized knowledge from the university for those future lives to get success in the field or to get job, it is very necessary to get quality education at the university level. As we all know that now-a-days, to get job and successfully manage it is going to be very difficult day by day. So, we must get the quality education from the university.

In this situation the next question comes "What university we should join from the thousands of universities all over the world and for what?" The solution of this problem will be the best if we get a ranking list of all the universities in hand just before joining time to the university.

That's why the concept of ranking comes into the play. The get skilled quality education we should get ranking of universities.

Keywords— World Ranking, University.

INTRODUCTION

University is the main base for the higher education. We all want higher education to achieve some goal of our life, to know deeply about the subject we like most. University is the only place where one gets knowledge in some specialized manner. So, to get some specialized or skilled knowledge we attend university just after college level of learning. For this reason we should go to good university or college to get quality education. So, the term comes just after it is what the rank of the university is, we want to join for specialized knowledge.

College and university rankings are rankings of institutions in higher education ordered by various combinations of various factors. Rankings have most often been conducted by magazines, newspapers, websites, governments, or academics. In addition to ranking entire institutions, organizations perform rankings of specific programs, departments, and schools. Various rankings consider combinations of measures of wealth, research excellence and/or influence, selectivity, student options, eventual success, demographics, and other criteria. There are no known college rankings of student academic quality.

Some rankings evaluate institutions within a single country, while others assess institutions worldwide. The subject has produced much debate about rankings' usefulness and accuracy. The expanding diversity in rating methodologies and accompanying criticisms of each indicate the lack of consensus in the field.

NEED OF RANKING

As all want to get specialized knowledge from the university for those future lives to get success in the field or to get job, it is very necessary to get quality education at the university level. As we all know that now-a-days, to get job and successfully manage it is going to be very difficult day by day. So, we must get the quality education from the university.

In this situation the next question comes "What university we should join from the thousands of universities all over the world and for what?" The solution of this problem will be the best if we get a ranking list of all the universities in hand just before joining time to the university.

That's why the concept of ranking comes into the play. The get skilled quality education we should get ranking of universities.

CRITERIA OF RANKING

We get ranking is important. Now the next question comes that how ranking can be possible and what are the bases of it? So, let look into the criteria of ranking. These are—

(i) **Academic-Peer Review**: Composite score drawn from peer review survey.
(ii) **Employer-Review**: Based on responses to employer survey.
(iii) **Faculty-Student Ratio**: Based on student faculty ratio
(iv) **Citations per Faculty**: Based on research performance factored against the size of the research body.
(v) **International-Faculty:** Based on proportion of international faculty.

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(vi) **International-Students**: Based on proportion of international students.

(vii) **Academic Performance:** Based on overall academic performance of the university.

I. RANKING OF UNIVERSITY IN GLOBAL LEVEL

As the concept 'university' comes from the education of global level, we should look into the global level first. There are few ranking organisations give ranking separately from many years. Some of the important are as follows:

- **Academic Ranking of World Universities**

The Academic Ranking of World Universities (ARWU) compiled by the Shanghai Jiao Tong University and now maintained by the Shanghai Ranking Consultancy, has provided annual global rankings of universities since 2003, making it the earliest of its kind. The ranking is funded by the Chinese government and its initial purpose was to measure the gap between Chinese and "world class" universities. ARWU rankings have been cited by *The Economist* magazine. It has been lauded for being "consistent and transparent" based on an article. The education ministers of France, Norway and Denmark travelled to China to discuss and find ways to improve their rankings. ARWU does not rely on surveys and school submissions. Among other criteria, ARWU includes the number of articles published by *Nature* or *Science* and the number of Nobel Prize winners and Fields Medallists (mathematics). Harvard and Stanford have topped the ranking for years. One of the primary criticisms of ARWU's methodology is that it is biased towards the natural sciences and English language science journals over other subjects. Moreover, the ARWU is known for "relying solely on research indicators", and "the ranking is heavily weighted toward institutions whose faculty or alumni have won "Nobel Prizes": it does not measure "the quality of teaching or the quality of humanities."

- **Centre for World University Rankings**

This Saudi Arabia based consulting organization has published yearly rankings of world universities since 2012. Rankings are based on quality of education, alumni employment, and quality of faculty, number of publications, number of publications in high-quality journals, citations, scientific impact and number of patents.

- **Global University Ranking**

Global University Ranking measures over 400 universities using the RatER, an autonomous, non-commercial, Russian rating agency supported by Russia's academic society. The methodology pools universities from ARWU, HEEACT, Times QS and Webometrics and a pool of experts formed by project officials and managers to determine the rating scales for indicators in seven areas. It considers academic performance, research performance, faculty expertise, resource availability, socially significant activities of graduates, international activities, and international opinion. Each expert independently evaluates these performance indicators for candidate universities. The rating is the average of the expert evaluations. This ranking raised questions when it placed Russian Moscow State University in fifth place, ahead of Harvard and Cambridge.

- **Leiden Ranking**

The Centre for Science and Technology Studies at Leiden University maintains a European and worldwide ranking of the top 500 universities according including the number and impact of Web of Science indexed publications per year. The rankings compare research institutions by taking into account differences in language, discipline and institutional size. Multiple ranking lists are released according to various bibliometric normalization and impact indicators, including the number of publications, citations per publication, and field averaged impact per publication.

- **Professional Ranking of World Universities**

In contrast to academic rankings, the Professional Ranking of World Universities established in 2007 by the "***École nationale supérieure des mines de Paris***" measures the efficiency of each university at producing leading business professionals. Its main compilation criterion is the number of Chief Executive Officers (or equivalent) among the Fortune Global 500. This ranking has been criticized for placing five French universities into the top 20.

- **QS World University Rankings**

The QS World University Rankings are a ranking of the world's top universities produced by Quacquarelli Symonds and published annually since 2004. In 2011 they ranked 712 universities, with the University of Cambridge in the UK, Harvard University in the USA and MIT on top. The QS rankings should not be confused with the Times Higher Education World University Rankings. From 2004 to 2009 the QS rankings were published in collaboration with *Times Higher Education* and were known as the Times Higher

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Education QS World University Rankings. In 2010 QS assumed sole publication of rankings produced with this methodology when *Times Higher Education* split from QS in order to create a new rankings methodology in partnership with Thomson Reuters. The QS rankings are published in the United States by *U.S. News & World Report* as the "World's Best Universities." However in 2014, the *U.S. News & World Report* launched their own international university ranking titled "Best Global Universities". The inaugural ranking was published in October 2014.

The QS rankings use peer review data collected (in 2011) from 33,744 scholars and academics and 16,785 recruiters. These two are worth 40 per cent and 10 per cent of a university's possible score respectively. The QS rankings also incorporate citation per faculty member data from Scopus measures are worth 20 per cent of an institution's total possible score and the international staff and student data five per cent each. QS has published online material about its methodology. QS published the 2011 QS World University Rankings online on September 6, 2011. The rankings also appear in book form and via media partners including *US News & World Report* and *The Chosun Ilbo*.

RANKING OF UNIVERSITIES IN ASIAN LEVEL

In 2009, Quacquarelli Symonds (QS) launched a department of the Q*S Asian University Rankings* in partnership with *The Chosun Ilbo* newspaper in Korea. They rank the top 200 Asian universities and has now appeared three times. They release an independent list of rankings each time, different from that of the QS World University Rankings. These rankings use some of the same criteria as the World University Rankings but they use other measures, such as incoming and outgoing exchange students as well. As the criteria and their weightings are different, the QS World university rankings and the QS Asian University rankings released in the same academic year are different. Times Higher Education World University Rankings from 2004 to 2009 *Times Higher Education* (THE), a British publication, published the annual Times.

The Globe and Mail in 2010 described the Times Higher Education World University Rankings as "arguably the most influential." Research published by professors at the University of Michigan in 2011 demonstrated that the early THES rankings were disproportionately influential in establishing the status order of world research universities.

RANKING OF UNIVERSITIES IN INDIA

There are many ranking organizations working in India. The university degree system in India is similar to that in Europe. The first cycle lasts 3 years (4 years in the engineering specialization) after which one acquires a Bachelor's degree. After another 1-2 years, one acquires the Master's diploma. Three years of additional study leads to a PhD.

It is interesting to note that there are different names for the categories of education levels in the system: Universities (for the 2nd and 3rd cycle) and Colleges (1st cycle). Often, colleges are affiliated with a university. You will find information about the different universities (in English) on the Ministry of Human Resource Development website. The Indian Institutes of Technology (IIT) are equivalent to the "grandes écoles" in France. Areas of IIT of Excellence is space, aeronautics, computer science, electricity, electronics, shipbuilding, civil engineering, materials science, metallurgy, mechanical engineering, textile sciences, manufacturing, biochemistry and biotechnology.

Some of the ranking of Indian institutions and universities by Ranking Web of Universities given below:

Ranking	World Rank	University Name
1	589	Indian Institute of Technology Bombay
2	670	Indian Institute of Science Bangalore
3	685	Indian Institute of Technology Kanpur
4	777	Indian Institute of Technology Madras
5	1150	Cochin University of Science & Technology
6	1199	University of Delhi
7	1268	Tata Institute of Fundamental Research
8	1283	Indian Institute of Technology Delhi
9	1527	Anna University
10	1587	Manipal University
11	1606	Indian Institute of Technology Kharagpur
12	1621	National Institute of Technology Rourkela
13	1691	Panjab University
14	1763	Jawaharlal Nehru University
15	1906	Indian Statistical Institute Kolkata

*Source: http://www.webometrics.info/en/Asia/India

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CONCLUSION

Finally it can be concluded that ranking of universities is very necessary now-a-days as the demand of skilled and quality educated person in the job competition. Parents and students want to attend the best university to get quality education to become successful.

Now-a-days, there are a lots of university options for the students. Before few years student can attend his nearer university due to communication was not too easy like now. Now one can attend a university far from his home via distance education or online education system. So, options increased. But is the all universities offer same level of quality education? Certainly not, some of the university is not upto the mark in producing quality research. For this reason ranking is becoming more and more significant day after day. World ranking of university is really an importantly needed now-a-days.

ACKNOWLEDGMENT

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Effect of Home Environment on Different Dimensions of Emotional Maturity of Adolescents

-A Study

Sukriti Mondal
Asst. Professor
Wali Institute of Teachers' Education
Barasat, West Bengal, India
sukriti.mon@gmail.com

Aniket Sutradhar
M.Phil. (Education)
Dr. C. V. Raman University
Bilaspur, Chhattisgarh, India
aniketsutradhar1@gmail.com

***Abstract*— The first lesson of a child's life is learnt at home. The family nurtures the individual and prepares him for his role and function in the society. Healthy parental relations in the home are a medium for making children into wholesome and adjustable personalities. These ongoing changes in the society have not only affected the thinking of people but has also changed the perceptions of people, their lifestyles, even the dimensions of anxiety have changed, now even the small children are facing different kinds of pressures, so adolescence which is considered an age of storm and strife is bound to have more pressures which affect their emotional maturity. The main objective of the topic is to find out the effect of home environment on different dimensions of emotional maturity of adolescents of Bilaspur District of Chhattisgarh. A sample size of 120 Adolescents was selected and taken up for the study. Home Environment Inventory by Karuna Shankar Mishra and Emotional Maturity Scale by Dr. Yasvir Singh & Dr. Mahesh Bhargava are used for the study. It is found that there is significant effect of home environment on all the dimensions of emotional maturity of adolescents.**

***Index Terms*— Home Environment, Emotional Maturity, Adolescents.**

I. INTRODUCTION

Home Environment stands for all those circumstances, which asset their influence on the child since conception to death. The first environment contact for a child is home, the development of child, inculcation of values and creating wholesome individuals all these functions are performed by the family which is the fundamental unit of human society. The first lesson of a child's life is learnt at home. The family nurtures the individual and prepares him for his role and function in the society.

Healthy parental relations in the home are a medium for making children into wholesome and adjustable personalities. In fact, home and parents play the most important part in laying the foundation of the child's personality, because they are the most influential part of child's environment.

Parents are an essential part of their child's environment. Therefore, in order to foster caring, responsible and strong children, adults need to have a positive view of them and serve as role models for their children.

II. SIGNIFICANCE OF THE STUDY

The purpose of the present study was to study the emotional maturity among adolescents in the age group of 13 to 15 years and the various factors affecting it like self-esteem, home environment and mental health. The adolescents in this age group face many kinds of pressures at home and also outside. It is a globally accepted fact that during adolescence a child goes through a lot of changes physically, emotionally and socially. These changes have a great impact on them; they can either make or break an individual.

The family nurtures the individual and prepares him for his role and function in society. Consciously, or unconsciously the home environment moulds the behavior, personality, and attitude, level of aspiration, aptitude of the child. The emotional maturity is also affected by home environment and mental health, which means that these two factors also play an important role in shaping emotional maturity of an individual. The modern era of globalization and liberalization has not only changed the economy of our nation but also embarked a great revolution in the society and culture as a whole. These ongoing changes in the society have not only affected the thinking of people but has also changed the perceptions of people, their lifestyles, even the dimensions of anxiety have changed, now even the small children are facing

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different kinds of pressures, so adolescence which is considered an age of storm and strife is bound to have more pressures which affect their emotional maturity. Emotional maturity plays an important role in how an individual behaves at home, school and society.

Previous studies have shown that there exists a positive and significant relationship between emotional maturity and intelligence of student which implies that more intelligent the person is, more emotionally mature he is in the fast changing society home environment is changing, conflicting situation at home and outside disturbs the mental health also, weakens the adolescents psychologically and creates complexities in their social and familial relationships.

i. Home environment serves as a foundation for early learning. As child's parent, you are her first teacher, and home is her first classroom. Creating a home environment that fosters learning can have a positive effect on your child's ability and desire to learn.
ii. Learning Ability: Child's ability to learn is directly influenced by his learning environment. Children are better able to pay attention, absorb information and engage in learning if their brain is rested and their belly is full. So, this is very important to build their personal values.
iii. Motivation: to decide how much effort and energy he/she will put into learning based on how much he values learning and education. Creating an environment where you can freely show interest in child's learning progress, communicate expectations and model learning can help to increase your child's motivation.
iv. Attention Level: For a child to learn effectively, he/she must have some ability to sit still, pay attention and focus.
v. Work Habits and Skills: To succeed in learning, your home environment must be conducive to developing solid work habits and study skills.
vi. Maximizing Learning: Creating an environment that provides an opportunity for your child to explore her world can help to maximize learning.

Keeping this in mind, the investigator visualized a need to study emotional maturity and its relationship with home environment among adolescents.

III. STATEMENT OF THE PROBLEM

The problem for the present study is stated as follows:

Effect of Home Environment on Different Dimensions of Emotional Maturity of Adolescents –A Study

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IV. OBJECTIVES OF THE STUDY

i) To study effect of home environment on emotional instability dimension of emotional maturity of adolescents.
ii) To study effect of home environment on emotional regression dimension of emotional maturity of adolescents.
iii) To study effect of home environment on social maladjustment dimension of emotional maturity of adolescents.
iv) To study effect of home environment on personal disintegration dimension of emotional maturity of adolescents.
v) To study effect of home environment on lack of independence dimension of emotional maturity of adolescents.
vi) To study effect of home environment on emotional maturity of adolescents.

V. HYPOTHESES OF THE STUDY

H_{01}: There will be no significant effect of home environment on emotional instability dimension of emotional maturity of adolescents.

H_{02}: There will be no significant effect of home environment on emotional regression dimension of emotional maturity of adolescents.

H_{03}: There will be no significant effect of home environment on social maladjustment dimension of emotional maturity of adolescents.

H_{04}: There will be no significant effect of home environment on personal disintegration dimension of emotional maturity of adolescents.

H_{05}: There will be no significant effect of home environment on lack of independence dimension of emotional maturity of adolescents.

H_{06}: There will be no significant effect of home

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VI. METHOD

In the present study researcher has used survey method.

VII. SAMPLE

In this study, all the students of class X in the High schools of Bilaspur District of Chhattisgarh formed the population of the study. In order to collect the data for the present study 4 High schools were selected through random sampling techniques.

VIII. TOOL USED

In the present study, the tool used is-

1. Home Environment Inventory by Karuna Shankar Mishra
2. Emotional Maturity Scale by Singh & Bhargava

Data were collected individually. The scoring of responses was done in accordance with the scoring key given in the manual. Statistical treatment of obtained data was done to test signification of each hypothesis.

IX. STATISTICAL TECHNIQUES USED

The scores obtained were subject to statistical treatment using proper statistical techniques. For this purpose Mean, Standard Deviation, t- test, was used. The result so obtained are interpreted and discussed in the light of problem factors to make the result meaningful.

X. VARIABLES

Independent variable: - Home Environment,
Dependent variable: - Emotional Maturity,
Intervening variable: - Students of class X in Secondary Schools.

XI. ANALYSIS AND INTERPRETATION OF DATA

H_{01}: There will be no significant effect of home environment on emotional instability dimension of emotional maturity of adolescents.

Table - 01

Category	N	Mean	SD	S_{ED}	t-test Value	Df
Home Environment	120	226.1	48.11	4.432	45.293	238
Emotional Instability	120	25.33	6.52			

Above table shows that the t value 45.293 is significant at the 0.05 level and 0.01 level. Hence, the null hypothesis stated above is rejected. It means; there will be significant effect of home environment on emotional instability dimension of emotional maturity of adolescents.

H_{02}: There will be no significant effect of home environment on emotional regression dimension of emotional maturity of adolescents.

Table - 02

Category	N	Mean	SD	S_{ED}	t-test Value	Df
Home Environment	120	226.1	48.11	4.45	45.166	238
Emotional Regression	120	25.1	8.07			

Above table shows that the t value 45.166 is significant at the 0.05 level and 0.01 level. Hence, the null hypothesis stated above is rejected. It means; there will be significant effect of home environment on emotional regression dimension of emotional maturity of adolescents.

H_{03}: There will be no significant effect of home environment on social maladjustment dimension of emotional maturity of adolescents.

Table - 03

Category	N	Mean	SD	S_{ED}	t-test Value	Df
Home Environment	120	226.1	48.11	4.447	45.372	238
Social Maladjustment	120	24.31	7.63			

Above table shows that the t value 45.372 is significant at the 0.05 level and 0.01 level. Hence, the null hypothesis stated above is rejected. It means; there will be significant effect of home environment on social maladjustment dimension of emotional maturity of adolescents.

H_{04}: There will be no significant effect of home environment on personality disintegration dimension of emotional maturity of adolescents.

Table - 04

Category	N	Mean	SD	S_{ED}	t-test Value	Df
Home Environment	120	226.1	48.11	4.453	45.309	238

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Personality Disintegration	120	24.3	8.07			

Above table shows that the t value 45.309 is significant at the 0.05 level and 0.01 level. Hence, the null hypothesis stated above is rejected. It means; there will be significant effect of home environment on personality disintegration dimension of emotional maturity of adolescents.

***H_{05}*:** There will be no significant effect of home environment on lack of independence dimension of emotional maturity of adolescents.

Table - 05

Category	N	Mean	SD	S_{ED}	t-test Value	Df
Home Environment	120	226.1	48.11	4.431	46.352	238
Lack of Independence	120	20.71	6.39			

Above table shows that the t value 46.352 is significant at the 0.05 level and 0.01 level. Hence, the null hypothesis stated above is rejected. It means; there will be significant effect of home environment on lack of independence dimension of emotional maturity of adolescents.

***H_{06}*:** There will be no significant effect of home environment on emotional maturity of adolescents.

Table - 06

Category	N	Mean	SD	S_{ED}	t-test Value	Df
Home Environment	120	226.1	48.11	5.275	20.175	238
Emotional Maturity	120	119.6	32.00			

Above table shows that the t value 20.175 is significant at the 0.05 level and 0.01 level. Hence, the null hypothesis stated above is rejected. It means; there will be significant effect of home environment on emotional maturity of adolescents.

XII. FINDINGS

On the basis of result and discussions, the following findings were found:

(i) There will be significant effect of home environment on emotional instability dimension of emotional maturity of adolescents.

(ii) There will be significant effect of home environment on emotional regression dimension of emotional maturity of adolescents.

(iii) There will be significant effect of home environment on social maladjustment dimension of emotional maturity of adolescents.

(iv) There will be significant effect of home environment on personal disintegration dimension of emotional maturity of adolescents.

(v) There will be significant effect of home environment on lack of independence dimension of emotional maturity of adolescents.

(vi) There will be significant effect of home environment on emotional maturity of adolescents.

XIII. SUGGESTIONS

The investigator's work is complete only when some positive suggestions are put forth after the analysis of the problem. The following suggestions are worth mentioning to strengthen the finding obtained:

- **To Home Members**
  - **a.** Provide a safe and loving home environment.
  - **b.** Create an atmosphere of honesty mutual trust and respect.
  - **c.** Support and guide properly.
  - **d.** Do not expect unreasonable achievement.

Home environment plays an important role and the present study revealed that the increase of control at home can cause a hindrance in their independence, as children in this age want independence and to explore the world. Parents should provide more rewards, nurturance and permissiveness and should allow the adolescent to express his views freely. There should be a provision of opportunities with no interference from parents, which may help in proper development of the child. Parents should try to avoid the factors that can cause stress and frustration in the adolescents like punishment, deprivation of privileges, and rejection etc. This implies that

conditional love of parents for the child and imposing sanctions on children by isolating them from the beloved ones or putting their (parents) expectations to comply by their actions is in-fact detrimental for a child's harmonious development.

Parents who are democratic in their dealings with children and provide reasonable freedom to them can pave a path for making their wards emotionally mature.

Counselors or school administrators or teachers who face problems with adolescents like aggression, depression or use of drugs, can also be benefited by the findings of this study. It is evident that home environment plays an important role but the emotional maturity of adolescents.

Students should be involved in activities that enhance the ability to think with maturity. The present study has given a clear picture of the current situation to help and identify the factors responsible for creating problems in the life of adolescents and how they can be helped.

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Assessment of microhabitats of Anura, Ophidia and Sauria of GHR of West Orissa, India

Soubhagya Pradhan
Research Scholar, Dr.C.V.Raman University
Kota, Bilaspur (C.G.),
India
soubhagya.zoology@gmail.com

Devraj Mishra
Dept. of Zoology
Jawaharlal College, Patnagarh
Orissa, India
drdevrajmsr@gmail.com

K.R. Sahu
Dept. of Zoology,
Govt.E.R.R. (P.G.) Sc.College
Bilaspur, (C.G), India.
krsahuseri@gmail.com

Abstract- **Anura, Ophidia and Sauria are the three important orders in the group of vertebrates and they are together known as herpetofauna with a large number of species are in the verge of extinction. Anura includes all the tailless amphibia, Ophidia includes the snakes and Sauria are the lizards. GHR which is popularly known as Gandhamardan Hills Range, lies in the western part of Orissa, is rich in herpetofauna diversity. From our recent survey it was found that this hills range harbours 14 species of anura, 10 species of lizards and 20 species of snakes. In this paper, a list of microhabitats of these animals is presented which is the outcome of our survey and assessment. Their microhabitats are exploited by many anthropogenic factors. It is our primary duty to give proper protection to these animals in situ and conserve them for the posterity to cherish.**

Keywords - Anura, Ophidia, Sauria, GHR, Assessment, Microhabitats.

I. INTRODUCTION:

Depletion of Anura, Ophidia and Sauria (herpetofauna) throughout the globe and their extinction is causing a conscientious and diligent task to the people of all spheres of the society to conserve those [1]. Herpetofauna which are popularly known as herps belong to two big classes in the vertebrates. These two classes are Amphibia and Reptilia. The Amphibians probably originated 300 million years ago during Devonian period and flourished through carboniferous and Permian periods. During Carboniferous period of late Paleozoic era, about 250 million years ago, some labyrinthodont amphibians gradually took on reptilian characters [2]. From that time they became an inseparable part in all the ecosystems of the biosphere. They help to maintain the balance of nature and serve a lot to the mankind. But unfortunately due to anthropogenic factors they are depleting very sharply from the earth. In most of the parts of the earth herpetologists are trying to provide the actual inventory and assessment of these animals. In India also the work was done accurately and many new species were discovered by them. Many herpetologists in Orissa and Chhattisgarh also did some inventory and assessment of herpetofauna in an excellent way [3, 4, 5, 6, 7]. It was found that some area in the state of Orissa is remaining uncovered in this field and most of these species are becoming extinct before they come to human knowledge. One wildlife study was carried by Pradhan during 1987 in the GHR (Gandhamardan Hills Range of West part of Orissa) which was a preliminary assessment of the biodiversity. [8]. In the monsoon and post monsoon of 2012 and 2013, we carried out a survey to assess the diversity of these animals in this hills range and prepared an inventory and assessment of their microhabitats in which these are dwelling [1, 9, 10].

II.METHODS AND METHODOLOGY

The study area, Gandhamardan Hills Rangelies between 20^0 42'-21^0 00' north latitude and $82^0$41'-$83^0$05' east longitude inside the western part of state of Orissa, India (Figure 1). The GHR is classified as a reserve forest calculated to be 251 km^2 [11] which is a part of Eastern Ghats of India [12]. This hills range forms a natural boundary on the North Western side Bolangir district and the Southern boundary of Bargarh district of Orissa. The richness of GHR is due to its' water resources with 840 springs perennial in nature, which feed water into 54 small streams and 14 larger streams joining two rivers the Ong and the Suktel. These two rivers join the Mahanadi of Orissa [8]. This forest ecosystem is rich in Biodiversity [13]. The damp skin, larval stage and communal behaviour of amphibians made them different from other herpetofauna, which was discussed by Heyer [14]. Lizards showed positive correlation with leaf litter. This was particularly more evident in case of skinks and agamids. The association of geckos, skinks and agamids with microhabitat availability has already been earlier

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shown [15, 16, 17,18]. The specific habitat features are essential for leaf litter reptiles as they can meet the conflicting demands of thermoregulation, predator avoidance and participation in other activities [19]. Several factors must be considered when planning surveys and monitoring programmes for snake dens. Investigators designing or implementing visual surveys of known or new den sites must incorporate mechanisms to account for bias among observes with different search images, abilities to concentrate, experience or knowledge of the target species [20].Herpetofauna are most active during monsoon and post monsoon. During the rest of the year, most of the species hibernate/aestivate and are rare to sight. Hence, the months from July to November of 2012 and 2013 were selected as the period of study timing. This period represents the active period of these fauna. The animals are both diurnal, nocturnal and some are crepuscular. So that the survey was conducted at day, evening and night time. The visual encounter survey (VES) technique was used. The VES technique involves walking through the study site systematically searching for all these animals. No time constrained studies (TCS) were utilised and hence a varied amount of time was utilised at the sites based on species diversity. Microhabitat assessment included terrestrial, arboreal, Fossorial and aquatic during the study [21]. Periodical searches under rocks and debris were carried out ensuring that microhabitats were not disturbed. Multiple sampling technique (MST) was used which is broadly divided into two categories i.e. direct and indirect sampling methods given in Table 1 [1, 16, 22]. Identification was performed capturing the animals by hand using the gloves and hooks and then these were photographed. All the specimens were released in the same microhabitats where these were captured. The photographs were matched with referred literatures and identified properly [23, 24, 25, 26, 27]. The equipments which used for survey work were the hand gloves, hooks, torches for night searches, measuring tape, Nikon-L 810(24X zoom camera) and a Nikon coolpix-2500 camera for photography. All animals after diagnosis and photographed were released into their habitats in situ [28].

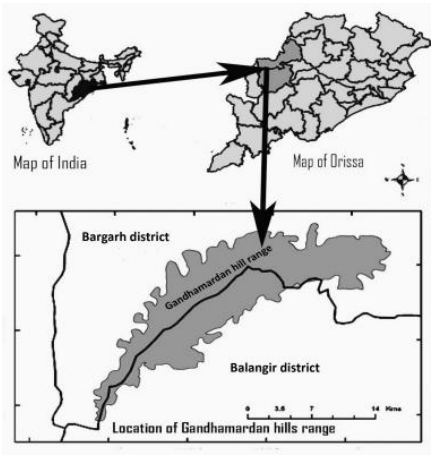

Figure 1.Gandhamardan Hills Range of Western Orissa, India.

Table-1: Different methods used for identification and documentation of herpetofauna groups (+ indicate the method applied for particular herpetofauna group recognition during present study).

Direct method	Sampling methods	Anura	Lizards	Snakes	Comments.
	Hand Capturing	+	+	+	Simple and most reliable method and
	Extensive Search in microhabitats	+	+	+	Applied in all habitats.
Indirect method.	Opportunistic spotting	+	+	+	Spotted accidentally, Best result obtained during early hours after day break.
	Call Survey	+			Mostly used at night.
	Acquiring information from local people.	+	+	+	Useful for chronological comparison of herpetofauna diversity.

III.RESULTS AND DISSCUSSION

From the assessment of the microhabitats of these herpetofauna of GHR it is observed that there are 44 species of these animals belong to 30 genera and 13

families given in Chart 1. The amphibians are only anura of 14 species belonging to 10 genera and 04 families [1]. The lizards are of 10 species belonging to 06 genera and 04 families [9]. The snakes are of 20 species belonging to 17 genera and 05 families [10]. The microhabitats of the herpetofauna are classified into 05 categories, such as HH=Human habitation of tribal villages, AG=Agricultural fields of tribal people in the edge of forest, SC=Scrub forest, where small bushes are present, GL=Grass Land in the forest & DF=Deep forest i.e. present near the hill streams. Their mode of adaptation are classified into 05 types, such as

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T=Terrestrial, F=Fossorial, A=arboreal, AQ=Aquatic, aq=semi aquatic. Their habits of these animals are also divided into many types such as, N=Nocturnal, D=Diurnal, C=Crepuscular, O=Oviparous & V=Viviparous. All their microhabitats, adaptation and habits are assessed properly which are given in Table-2, 3 & 4.During this assessment it was found that from anura *Duttaphrynus melanostictus*isthe most abundant species, where as *Ramanella veriagata*is the rare species. From the lizards most abundant is*Calotes versicolor* and rare species is *Varanus bengalensis.* From snakes, most abundant is*Amphisema stolatum* and the rare species is *Ramphotyplops braminus.* Some species are becoming rarer due to their habitat destruction due to human activities. When interviewed, local people told that in the near past, *Chameleon zeylanicus*was present in the deep forest but now it is not found. They also told the number of species from each group is decreasing sharply. Tribal people of the area use some of these animals for medicinal purposes [29]. This is one of the anthropogenic pressures on them.

Table-2: Name of the amphibian species, their microhabitats & adaptation [1].

Sl.No.	Name of the Species	Microhabitat & their adaptation.
01.	Duttaphrynus melanostictus(Schneider,1799)	(HH) /(T) (Most abundant species)
02.	Duttaphrynus stomasticus(Lutken,1864)	(AG)/ (T/F)
03.	Euphlyctis cyanophlyctis(Schneider,1799)	(AG/AQ)
04.	Fejervarya orissaensis(Dutta,1997)	(AG/DF)/ (AQ/aq)
05.	Fejervarya limnocharis(Gravenhorst,1829)	(AG/DF)/ (AQ/aq)
06.	Hoplobatrachus tigerinus(Daudin,1802)	(AG/DF)/ (aq)
07.	Hoplobatrachus crassus(Jerdon,1853)	(AG/DF)/ (aq)
08.	Sperotheca breviceps(Schneider,1799)	(SC/DF),/(F)
09.	Sperotheca rolandae(Dubois,1983)	(SC/DF)/ (F)
10.	Microhyla ornata(Dumeril & Bibron,1841)	(AG/ DF)/ (F/aq)
11.	Kaloula taprobanica(Parker,1934)	(SC, HH)/ (A)
12.	Ramanella veriagata(Stoliczka,1872)	(AG)/ (F/A) (Rare species)
13.	Uperodon systoma(Schneider,1799)	(AG/ HH/DF)/ (F)
14.	Polypedates maculatus(Gray,1834)	(HH/ SC/DF)/(A)

(The habitats of the amphibians are classified into 4 types such as **HH**=Human Habitation, **AG**=Agricultural Fields, **SC**=Scrub Forest and **DF**=Deep Forest. The Scrub forest includes the areas where small bushes grow densely. The Deep forest, near the hill streams. Their adaptive habits is classified into **A**=Arboreal, **T**=Terrestrial, **AQ**=Aquatic, **aq**= semi aquatic and **F**=Fossorial.)

Table 3. List of species names (lizards), microhabitats and their adaptation [9].

S. No.	Name of the Species	Microhabitat & their adaptation
01	*Hemidactylus flaviviridis*(Ruppell,1835)	N/A , SC//HH and O.
02	*Hemidactylus frenatus*(Dumeril & Bibron,1836)	N/A , SC/HH and O.
03	*Hemidactylus brookii*(Gray,1845)	N/C/A/T , SC/DF/HH and O.
04	*Hemidactylus leschenaultia* (Dumeril & Bibron, 1836)	N/A/T , SC/DF/HH/AG and O.
05	*Lygosoma punctatus* (Gmelin, 1799)	D/C/T, HH/SC/DF and O.
06	*Mabuya carinata* (Schneider,1801)	D/T//A, HH/SC/DF and O.
07	*Mabuya macularia*(Blyth,1853)	D/T/A , HH/SC/DF and O.
08	*Calotes versicolor*(Daudin,1803)	D/A, HH/SC/DF and O.(Most abundant species)
09	*Sitana ponticeriana*(Cuvier,1844)	D/T, HH/SC/DF/AG and O.
10	*Varanus bengalensis*(Daudin,1802)	D//T/A/AG/, HH/AG/SC/DF and O.(Rare species)

(The habitats of lizards are classified into four types such as, **HH** = Human Habitation of the tribal people, **AG** = Agricultural Fields of the tribal villages, **SC** = Scrub Forest, and **DF**= Deep forest. The scrub forest includes the areas where small bushes grow densely. The deep forest is near by the hill streams i.e. semi evergreen. **Adaptive types:N**=Nocturnal **D**=Diurnal, **C**=Crepuscular, **A** = Arboreal, **T** = Terrestrial, **O**= Oviparous and **V**=Viviparous.

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Table-4.Name of the species (snakes), their microhabitats and adaptation, [10].

Sl.No.	**Name of the Species**	**Microhabitat & their adaptation.**
01	Gongylophis conicus(Schneider,1801)	N/C/F/T , SC/HH and V.
02	Python molurus(Linnaeus.1758)	N/A/T , SC/DF/GL and O.
03	Ahetula nasuta(Lacepede,1789)	D/A/T , SC/DF/GL and V.
04	Amphisema stolatum(Linnaeus,1758)	D/T, HH/SC/DF and O.(Most abundant species)
05	Argyrogena fasciolata(Shaw,1802)	D/T/aq/A, HH/SC/DF and O.
06	Boiga trigonata(Schneider,1802)	N/T , HH/SC/DF and O.
07	Boiga forsteni(Dumeril & Bibron.1854)	N/T, HH/SC/DF and O.
08	Chrysopelea ornata(Shaw,1802)	D/A, HH/SC/DF and O.
09	Dendrelaphis tristis(Daudin,1803)	N/C/T/AG/F, HH/GL/SC/DF and O.
10	Macropisthodon plumbicolor(Cantor,1836)	D/A/T, SC/DF and O.
11	Oligodon arnesis(Shaw,1802)	N/A/T, HH/SC/DF and O.
12	Lycodon aulicus(Linnaeus,1758)	N/T, HH/SC/DF and O.
13	Ptyas mucosus(Linnaeus,1758)	D/T/A, HH/AG/SC/DF and O.
14	Xenochrophis piscator(Schneider,1799)	D/N/aq/AQ, HH/DF and O.
15	Bungarus caeruleus(Schneider,1801)	N/aq/T, HH/AG/SC/DF and O.
16	Bungarus fasciatus(Schneider,1801)	N/T , HH/SC/DF and O.
17	Naja naja(Linnaeus,1758)	D/T, HH/SC/DF and O.
18	Naja kaouthia(Lesson,1831)	D/C/aq/T/F , HH/SC/DF and O.
19	Ramphotyplops braminus(Daudin,1803)	C/T/F/aq, HH/SC/DF and O. (Rare species)
20	Daboia russelii(Shaw & Nodder,1797)	N/C/F, HH/SC/DF and O.

(The habitats of snakes are classified into four types such as, **HH** = Human Habitation of the tribal people, **AG** = Agricultural Fields of the tribal villages, **GL**=Grass Land, **SC** = Scrub Forest, and **DF**= Deep forest. The scrub forest includes the areas where small bushes grow densely. The deep forest is near by the hill streams. **Adaptive types**: N=Nocturnal, D=Diurnal, C=Crepuscular, A = Arboreal, T = Terrestrial, AQ = Aquatic, aq = semi aquatic, F= Fossorial. O=Oviparous and V=Viviparous.)

(Chart-1: Family Status of anura, ophidia&sauria of GHR)

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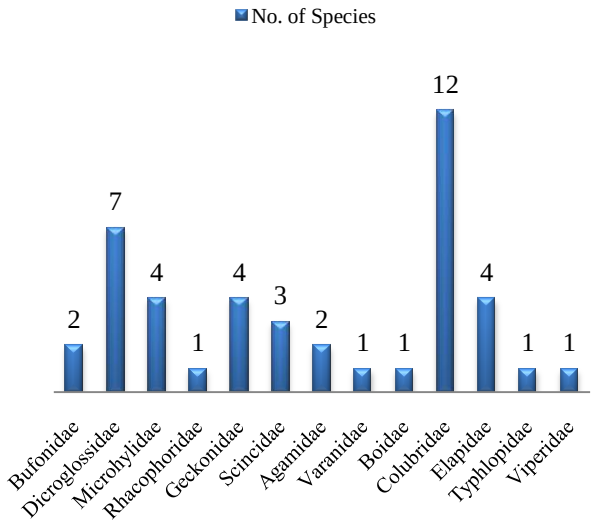
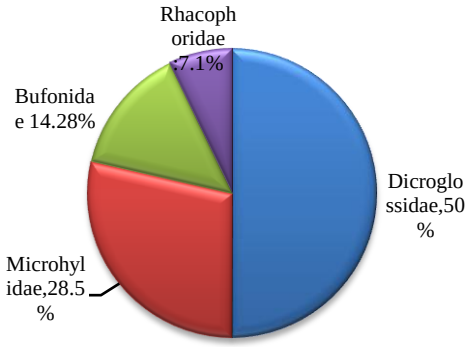
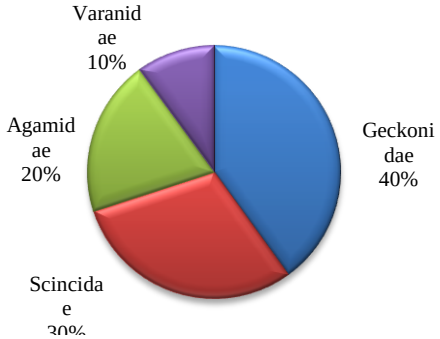


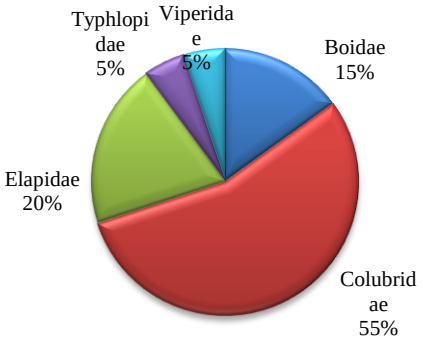
(Chart 2: Percentage of different families of Amphibia in GHR out of 14 species [1]



(Chart 3: Different families of lizards of GHR out of 10 species [9]



(Chart 4: Percentage of different families of snakes in GHR out of 20 species.[10]



IV.CONCLUSION

The forest department of government of Orissa is advised to give proper and significant attention to restore the habitat loss and in decline of the population of these animals and to pay additional attention in the land use pattern and subsequent fragmentation in GHR. It is necessary to check habitat fragmentation and split and provide sufficient protection for the breeding and survival of these animals. Once split and fragmentation occurs only extensive restoration programmes will be able to reverse the negative impacts [30]. Hence it is essential to check habitat degradation and loss. An intensive long-term study on their population and ecology of their habitat is necessary in GHR. Loss of habitat due to anthropogenic activities must be checked to ensure reproductive and survival success of these neglected animals. Biologists must be pragmatic to assess which causes of population declines can be obviated directly. The impact of habitat degradation,

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introduced invasive species and unsustainable use can be controlled immediately. Current evidence suggests the herpetofauna declines, which are exacerbated by burgeoning human populations, constitute a worldwide crisis [31].

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Aero Phyllo Mycological Study of Hibiscus Sabdariffa (Roselle) In Summer Season

Seema Sahu
Research Scholar,
Pt. Ravishankar Shukla University,
Raipur (C.G.)

K. Sharma
Govt Arts & Commerce Girls College
Raipur (C.G.)
drktsharma@gmail.com

S Patra
Govt NPG Sc College Raipur

Abstract-The objective of this study was to study the aero and leaf surface mycoflora of Hibiscus sabdariffa. Study of aero and leaf surface mycoflora of Hibiscus sabdariffa was done during summer season (March to June 2013). The observation shows some common fungal colonies at particular period of appearance in the leaf surface. Total 145 colonies were isolated as aeromycoflora and total 114 isolated as leaf surface mycoflora during the investigation period. Dominating fungal species are Curvularia lunata, Aspergillus Niger, Alternaria alternata, Aspergillus flavus, Cladosporium cladosporioides, Fusarium oxysporum.

***Key words*: Aeromycoflora, *Hibiscus sabdariffa*, Seasonal Variation, Fungal species.**

I. INTRODUCTION

Microorganisms were probably the first living things to appear on earth. Aerobiological studies have received much attention recently because of application in the field of allergy, dispersal of pathogens and in allied aspect of microbiology. Since fungal species constitute the major component of airborne flora, the study of aeromycology is highly significant. Environmental aeromycology constitutes one of the major aspects mainly because of the dominance of fungal spores in the airspora (Tilak 1981). Leaf surface is the platform of the numerous fungal spores present in the air. During suitable microhabitat these spores are settled down on this having platform and try to colonised. After settle down fungal spores, a triangular relationship appears among the micro-organisms, leaf surface and the environment.

Seasonal variation affects aero and phyllo mycoflora of the area. Fungal spores are not equally distributed in the environment their distribution varies according to geographical location and meteorological condition. In summer the temperature of Raipur goes to a maximum of 43-46 degree celcius. The related investigation of such type was that of Kulshrestha and Chauhan (2001), Sawane (2010), Sharma (2011).

II. MATERIAL & METHODS

Hibiscus sabdariffa (Roselle) plant belongs to the family Malvaceac, is an important annual crop grown in tropical & sub tropical climate in all over world (Copley, 1975). The plant is 2.5 to 3.5m tall (Photoplate 1).Chhattisgarh people are grown for vegetable and they are used dry calyx as beverage. It's called amari & jerra bhaji. It also has some medicinal properties (Mohamed, 2012). Sampling of fungal spores was done with the help of gravity petriplates methods during March 2013 to June 2013 i.e., the summer season. The sampling was done fortnightly by exposing five petriplates containing PDA media.

For isolation of aeromycoflora

For study of aeromycoflora over the plants, 5 petriplates containing PDA(potato,dextrose,agar) media were used. The petriplate were exposed over cultivated *Hibiscus sabdariffa* field for 5-10 minouts. Then this petriplates were brought in to the laboratory and incubated at $25_{-}^{+}1^{0}C$ for 5 to 7 days. After incubation period, number of colonies was counted, identification with the help of available literature and finally sends this culture to authentic authority: National centre of fungal taxonomy Delhi for identification. (Jadhav 1994,).

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For isolation of leaf surface mycoflora

For the isolation of leaf surface mycoflora, leaves of *Hibiscus sabdariffa* plants were sampled randomly at a regular interval of 15 days. Sampled leaves were then placed in sterilized polythene bags and brought in to the laboratory. After that, leaves were placed in 250 ml conical flask is hand shaken for 30 minutes to obtain a homogenous suspension of microorganism. This suspension is used for isolation of leaf surface mycoflora. 0.1ml of this suspension was poured in to petriplates containing PDA media. Petriplates will be at a time in each experiment, and then these petriplates are incubated at 25±10C for 6-7 days (Sharma 2001). Fungal colonies were counted from each plate, identified and maintained the pure culture (Photoplate 2).

III. RESULT & DISCUSSION

Soil, Water and Plants are the three major source of airspora present in our nature. Total 145 fungal colonies isolated in summer season as aeromycoflora during the investigation whereas 114 as leaf surface mycoflora. Monthly occurrence of fungal species observed. In March 56 colonies isolated from both leaf as well as from air, in April from air 31 and from leaf 28 colonies recorded. Only 1o fungal colonies isolated in the month of May from leaf surface but 22 colonies observed in air. Again increase no. of fungi observed in June month; 36 in air and 20 from leaf. **(Table-1, 2 & Fig-1).** During studied of some fungal spores were found only restricted environment like *Aspergillus flavus*, *Curvularia* lunata, and *Fusarium* species was presented only in air. On the contrary *Penicillium frequentans* isolated from leaf surface but absent in air observation. It was also noted that in air anamorphic fungi were dominated group: 73.03% followed by ascomycotina 13.09%, 10.33 zygomycotina and minimum presence 3.43 showed by mycelia sterilia **(Fig-2)**. Similar results have also reported by various scientists *i.e.* Jadhav and Tiwari (1994), Singh(2006), Chandel (2014).

TABLE: 1 SHOWING NUMBER OF FUNGAL COLONIES OF AEROMYCOFLORA OF HIBISCUS *sabdariffa* (Roselle).

S No	Name of Fungi	SUMMER SEASON				
		Mar	Apr	May	June	Total
	Zygomycotina					
1.	Mucor hemalis	2	-	-	-	**2**
2.	Rhizopus oryzae	3	-	-	-	**3**
	Ascomycotina					
3.	Emericella nidulans	4	-	3	-	**7**
4.	Lewia infectaria	-	-	5	7	**12**
	Anamorphic fungi					
5.	Alternaria alternata	-	5	-	5	**10**
6.	Aspergillus flavus	-	2	8	-	**10**
7.	Aspergillus fumigatus	12	7	4	7	**30**

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S No	Name of Fungi	SUMMER SEASON				
		Mar	Apr	May	June	Total
8.	Aspergillus japonicus	-	-	-	1	**1**
9.	Aspergillus niger	5	4	-	8	**17**
10.	Cladosporium cladosporioides	16	-	2	-	**18**
11.	Curvularia lunata	4	-	-	-	**4**
12.	Fusarium oxysporum	-	3	-	-	**3**
13.	Penicillium citricum	-	-	-	6	**6**
14.	Phoma fimeti	1	6	-	-	**7**
	Mycelia sterilia					
15.	Mycelia sterilia (Black)	2	-	-	2	**4**
16.	Mycelia sterila (white)	7	4	-	-	**11**
Grand Total of fungal colonies		**56**	**31**	**22**	**36**	**145**

TABLE: 2 SHOWING NUMBER OF FUNGAL COLONIES OF LEAF SURFACE MYCOFLORA OF HIBISCUS sabdariffa(Roselle).

S No	Name of Fungi	SUMMER SEASON			
		Apr	May	June	Total
	Zygomycotina				
1.	Mucor hemalis	-	-	-	**3**
2.	Rhizopus stolonifer	-	-	-	**1**
	Ascomycotina				
3.	Emericella nidulans	-	2	-	**6**
4.	Lewia infectaria	-	4	11	**15**
	Anamorphic fungi				
5.	Alternaria alternata	-	-	-	**3**
6.	Aspergillus fumigatus	15	4	2	**26**
7.	Aspergillus japonicus	-	-	-	**1**
8.	Aspergillus niger	2	-	-	**11**
9.	Cladosporium cladosporioides	-	-	1	**10**
10.	Penicillium frequentans	6	-	1	**7**
11.	Phoma fickeli	2	-	-	**3**
	Mycelia sterilia				
12.	Mycelia sterilia (Black)	-	-	5	**14**

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S No	Name of Fungi	SUMMER SEASON			
		Apr	May	June	Total
13.	Mycelia sterila (gray)	3	-	-	**13**
14.	Mycelia sterila (white)	-	-	-	**1**
Grand Total of fungal colonies		**28**	**10**	**20**	**114**

Fig 1: Variation in Aero and Leaf surface mycoflora in summer

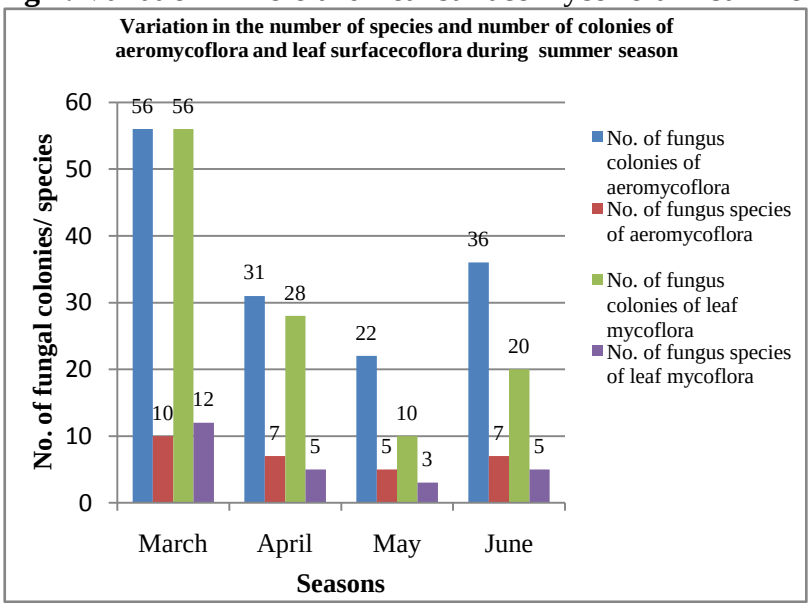
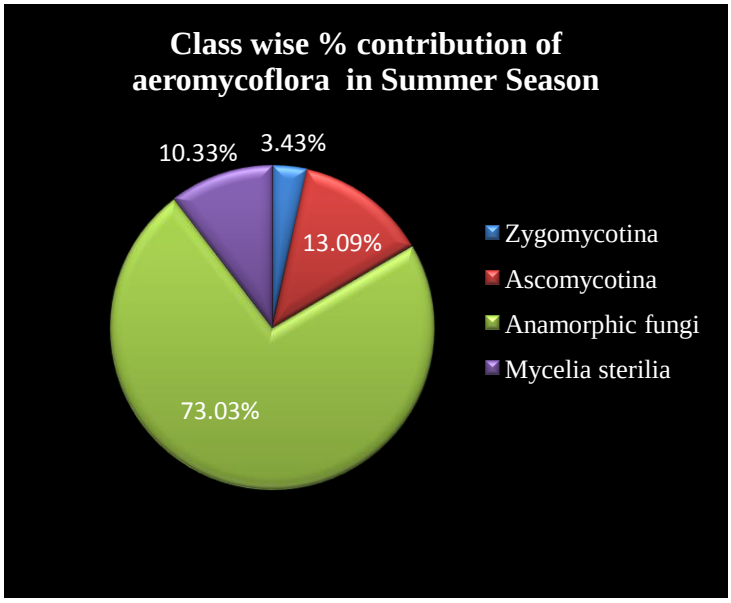


Fig 2: Class wise % contribution



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Photoplate 1: Plant field *Hibiscus sabdariffa* (Roselle) flowering & fruiting (red calyx)

Figure 2: Fungal culture in PDA plates.

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An application of the Cesarosummability to the wavelet approximation

Shubhra Sharma[1], Chitaranjan Khadanga[2]
Dept. of Mathematics,
Dr.C.V.Raman University, Bilaspur (C.G),
Professor, Dept .of Mathematics R C E T Bhilai (C.G)
Shubhrasharma13@gmail.com
Chitakhadanga@gmail.com

Abstract: In this paper we have been proved the rapid rate of convergence of the Cesarosummability method and we obtain the relation which is valid for avoiding the Gibb's phenomenon in intermediate levels of wavelet approximation. Finally some compression between the results obtained by the Norlund means and the Cesarosummability methods reveals a slight improvement concerning the reduction of excessive oscillations.
KEY WORDS: Summability method, Fourier series, approximation theory, wavelet frames.

I. INTRODUCTION

Let$f \epsilon L^2([0,1]);\ \int f^2(t)dt < \infty$
A wavelet representation of *'f'* is aseries of the from

$$f = C_0 + \sum_{j\geq 0}^{\infty}\sum_{k=1}^{2^j} < f, \psi_{j,k} > \psi_{j,k}$$

Where C_0 is a constant,$\left(C_0 = \int_0^1 f(t)dt\right)$ and
$\theta_{j,k} \equiv < f,\ \ \psi_{j,k} >= \int_0^1 f(t)\psi_{j,k}(t)dt$and
The basic functions$\psi_{j,k}$ are orthonormal, oscillatory singnals, each with an associated scale2^{-j} and position$k \times 2^{-j}$.$\psi_{j,k}$is called the wavelet at scale2^{-j} and position.
Also we have, the Cesaro sum (c,r) of a series is extended to the copy of an infinite integral $\int_a^{\infty} f(a)da$ by taking in place of the integral $\lim_{n\to\infty}\int_a^n (1-a/n)^r f(a)da$
This limiting value when it exists is called the sum (c,r) of the integral.
Thus instead of Fourier's repeated integrals ,

$$\frac{1}{\pi}\int_0^{\infty} da \int_{-\infty}^{\infty} f(\beta)\cos a(\beta - x)\, d\beta,$$

We have the sum (c,r)

$$\lim_{n\to\infty} I_n(r) = \lim_{n\to\infty}\frac{1}{\pi}\int_a^{\pi}(1-a/n)^r da \times$$

$$\int_{-\infty}^{\infty} f(\beta)\cos a(\beta - x)\, d\beta$$

The function $I_n(r)$ has the same relation to the infinite integral as the function $c_n(r)$ to the series, with the usual notation of Cesarosummability.
Therefore, it is shown that the Gibb's phenomenon occurs in Fourier's integral when, and does not occurs when . Also that the question of its occurrence in the sum, for , depends as in the case of Fourier series on the behavior of the function

$$\int_a^{\pi}(1-a/n)^r \frac{\sin a}{a} da$$

KNOWN RESULTS:

1. We know by Haar wavelets, the "first " wavelet basis that was developed.

$$\psi_{j,k}(t) = 2^{\frac{j}{2}}(1\left\{t\epsilon\left[2^{-j}(k-1), 2^{-j}\left(k-\frac{1}{2}\right)\right]\right\}$$
$$-1\left\{t\epsilon\left[2^{-j}\left(k-\frac{1}{2}\right), 2^{-j}k\right]\right\})$$

$$\int_0^1 \psi_{j,k}(t)\, dt = 0, \quad \text{so that}$$

$$\int_0^1 \psi^2_{j,k}(t)\, dt = \int_{(k-1)2^{-j}}^{k2^{-j}} 2^j\, dt = 1$$

$\int_0^1 \psi_{j,k}(t)\psi_{l,m}(t)\, dt = 0$, unless$j = l, k = m$and f is a constant on
$[2^{-j}(k-1), 2^{-j}k]$, then $\int f\, \psi_{j,k}(t)dt = 0$

because of this and the fact that each wavelet basis function is supported an a small region means that wavelet are blind to constant patches.
By graphical we have,

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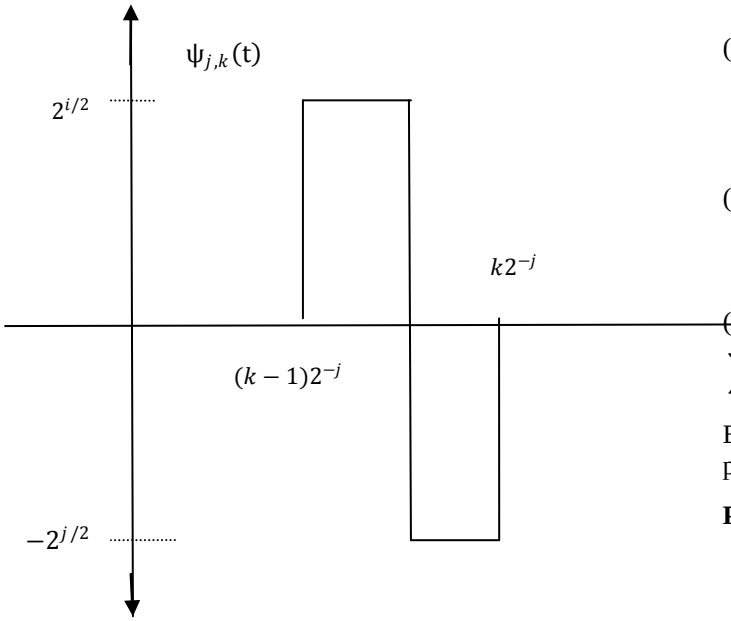

2.If $\{\lambda_n\}$ is a non-negative and non-increasing sequence such that $\sum p_n\ \lambda_n < \infty$ where $\{p_n\}$ is a sequence of positive numbers such that $P_n \to \infty\ as\ n \to \infty$

and $\sum_{v=1}^{n} P_v\ A_v(t) = 0(P_n)$. Then the factored Fourier series $\sum A_n(t)\ P_n\ \lambda_n$ is summable $|N, p_n|_k$, $k \geq 1$.

3. If $\{\lambda_n\}$ is a non-negative and non-increasing sequence such that $\sum p_n\ \lambda_n < \infty$, where $\{p_n\}$ is a sequence of positive numbers such that $P_n \to \infty\ as\ n \to \infty$ then $P_n\ \lambda_n = 0(1)\ as\ n \to \infty$ and $\sum P_n\ \Delta\lambda_n < \infty$.

II. MAIN RESULT

Let $\{p_n\}$ is a sequence of positive numbers such that $P_n = p_1 + p_2 + ... + p_n \to \infty$ as $n \to \infty$ and $\{\lambda_n\}$ is a non-negative , non-increasing sequence such that $\sum p_n\ \lambda_n\ <\ \infty$. If

(i). $\sum_{v=1}^{n} P_v\ A_v(t) = 0(P_n)$

(ii). $\sum_{n=v+1}^{m+1} \left(\frac{P_n}{p_n}\right)^{k-1} \left(\frac{p_{n-v-1}}{P_{n-1}}\right) = 0\left(\frac{p_v}{P_v}\right),\ as\ m \to \infty$

and

(iii). $P_{n-v-1}\ \Delta\lambda_v = 0(p_{n-v}\ \lambda_v)$, then the series $\sum A_n(t) P_n\ \lambda_n$ t ımable $|N, p_n|_k$, $k \geq 1$.

By considering the above results in this paper we have been prove the main theorem.

PROOF :-

Let $t_n(x)$ be the n-th (N, p_n) mean of the series $\sum_{n=1}^{\infty} A_n(x)\ P_n\ \lambda_n$, then by definition we have

$$t_n(x) = \frac{1}{P_n} \sum_{v=0}^{n} p_{n-v} \sum_{r=0}^{v} A_r(x)\ P_r\ \lambda_r$$

$$= \frac{1}{P_n} \sum_{r=0}^{n} A_r(x)\ P_r \lambda_r \sum_{v=r}^{n} p_{n-v}$$

$$= \frac{1}{P_n} \sum_{r=0}^{n} A_r(x)\ P_r\ P_{n-r} \lambda_r\ .$$

Then

$$t_n(x) - t_{n-1}(x) = \frac{1}{P_n} \sum_{r=0}^{n} P_{n-r}\ P_r \lambda_r\ A_r(x) - \frac{1}{P_{n-1}} \sum_{r=0}^{n-1} P_{n-r-1}\ P_r \lambda_r A_r(x)$$

$$= \sum_{r=1}^{n} \left(\frac{P_{n-r}}{P_n} - \frac{P_{n-r-1}}{P_{n-1}}\right) P_r\ \lambda_r\ A_r(x)$$

$$= \frac{1}{P_n P_{n-1}} \sum_{r=1}^{n-1} \left(P_{n-v}\ P_{n-1} - P_{n-r-1}\ P_n\right) P_r\ \lambda_r A_r(x)$$

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$$= \frac{1}{P_n P_{n-1}} \left[\sum_{r=1}^{n-1} \Delta\{(P_{n-r}\ P_{n-1} - P_{n-r-1}\ P_n)\lambda_r\} \left(\sum_{v=1}^{r} P_v\ A_v(x) \right) \right]$$

, using partial summation formula with $p_o = 0$

$$= \frac{1}{P_n P_{n-1}} \left[\sum_{r=1}^{n-1} (p_{n-r}\ P_{n-1} - p_{n-r-1}\ P_n)\lambda_r P_r \right.$$

$$\left. + \sum_{r=1}^{n-1} (p_{n-r-1}\ P_{n-1} - P_{n-r-2}\ p_n) P_r \Delta\lambda_r \right],$$

$$= T_{n,1} + T_{n,2} + T_{n,3} + T_{n,4}, \text{ say.}$$

In order to complete the proof of the theorem, using Minkowski's inequality, it is sufficient to show that

$$\sum_{n=1}^{\infty} \left(\frac{P_n}{p_n} \right)^{k-1} |T_{n,i}|^k < \infty, \ \text{for } i = 1,2,3,4.$$

Now, we have

$$\sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} |T_{n,1}|^k = \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_n^k} \left(\sum_{v=1}^{n-1} p_{n-v} P_v \lambda_v \right)^k$$

$$\leq \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_n} \left(\sum_{v=1}^{n-1} p_{n-v} P_v^k \lambda_v^k \right) \left(\frac{1}{P_n} \sum_{v=1}^{n-1} p_{n-v} \right)^{k-1},$$

using Holder's inequality

$$= O(1) \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_n} \sum_{v=1}^{n-1} p_{n-v}\ P_v \lambda_v (P_v\ \lambda_v)^{k-1}$$

$$= O(1) \sum_{v=1}^{m} P_v \lambda_v \sum_{n=v+1}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{p_{n-v}}{P_n}$$

$$= O(1) \sum_{v=1}^{m} p_v \lambda_v$$

$$= O(1), \ as\ m \to \infty.$$

$$\sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} |T_{n,2}|^k = \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_{n-1}^k} \left(\sum_{v=1}^{n-1} p_{n-v-1}\ P_v\ \lambda_v \right)^k$$

$$\leq \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_{n-1}} \left(\sum_{v=1}^{n-1} p_{n-v-1} P_v^k \lambda_v^k \right) \left(\frac{1}{P_{n-1}} \sum_{v=1}^{n-1} p_{n-v-1} \right)^{k-1}$$

$$= O(1) \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-n} \frac{1}{P_{n-1}} \sum_{v=1}^{n-1} p_{n-v-1}\ P_v\ \lambda_v (P_v \lambda_v)^{k-1}$$

$$= O(1) \sum_{v=1}^{m} P_v \lambda_v \sum_{n=v+1}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \left(\frac{p_{n-v-1}}{P_{n-1}} \right),$$

$$= 0(1) \sum_{v=1}^{m} p_v \lambda_v,$$

$$= 0(1), \ as\ m \to \infty.$$

Now,

$$\sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} |T_{n,3}|^k = \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_n^k} \left(\sum_{v=1}^{n-1} p_{n-v-1}\ P_v\ \Delta\lambda_v \right)^k$$

$$\leq \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_n} \left(\sum_{v=1}^{n-1} p_{n-v-1} (P_v\ \Delta\lambda_v)^k \right) \left(\frac{1}{P_n} \sum_{v=1}^{n-1} p_{n-v-1} \right)^{k-1}$$

$$= O(1) \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_n} \sum_{v=1}^{n-1} p_{n-v-1}\ P_v\ \Delta\lambda_v (P_v \Delta\lambda_v)^{k-1}$$

$$= O(1) \sum_{n=2}^{m+1} \left(\frac{P_n}{p_n} \right)^{k-1} \frac{1}{P_n} \sum_{v=1}^{n-1} p_{n-v-1}\ P_v\ \Delta\lambda_v,$$

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$$= O(1)\sum_{v=1}^{m} P_v \ \Delta\lambda_v \ \sum_{n=v+1}^{m+1}\left(\frac{P_n}{p_n}\right)^{n-1}\left(\frac{p_{n-v-1}}{P_n}\right)$$

$$= 0(1)\ \sum_{v=1}^{m} p_v \ \Delta\lambda_v \ ,$$

$$= 0(1)\ , \ m \to \infty \ .$$

Finally,

$$\sum_{n=2}^{m+1}\left(\frac{P_n}{p_n}\right)^{k-1}\left|T_{n,4}\right|^k = \sum_{n=2}^{m+1}\left(\frac{P_n}{p_n}\right)^{k-1}\frac{p_n^k}{P_n^k P_{n-1}^k}\left(\sum_{v=1}^{n-1} P_v \ P_{n-v-2} \ \Delta\lambda_v\right)^k$$

$$\leq 0(1)\ \sum_{n=2}^{m+1}\left(\frac{P_n}{p_n}\right)^{k-1}\frac{1}{P_{n-1}^k}\left(\sum_{v=1}^{n-1} p_{n-v-1} \ P_v \ \lambda_v\right)^k ,$$

$$\leq 0(1)\ \sum_{n=2}^{m+1}\left(\frac{P_n}{p_n}\right)^{k-1}\frac{1}{P_{n-1}}\sum_{v=1}^{n-1} p_{n-v-1}\left(P_v \ \lambda_v\right)^k\left(\frac{1}{P_{n-1}}\sum_{v=1}^{n-1} p_{n-v-1}\right)^{k-1}$$

$$= 0(1)\ \sum_{n=2}^{n+1}\left(\frac{P_n}{p_n}\right)^{k-1}\frac{1}{P_{n-1}}\sum_{v=1}^{n-1} p_{n-v-1} \ P_v \ \lambda_v$$

$$= 0(1), \ as \ m \to \infty \ , \text{ as above}$$

This completes the proof of the theorem.

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Innovative Horizons in English Language Teaching

Shruti Sangam
Research Scholar
Dr. C.V.Raman University, Kota, (C.G)
E-mail:- shrutisangam15@gmail.com

Abstract: In this paper English communication skill is considered to be one of the most deep-seated knowledge of study that every student should inherit. I would like to present in this paper the use of advanced technologies that has come up in the following years where students should be taught through digitalized and e- learning systems to make their career full of communication skills. It is thus said, Take advantage of every opportunity to practice your communication skills so that when important occasions arise, you will have the gift, the style, the sharpness, the clarity and the emotions to affect other people. (Jim Rohm). The above quotation is the very basic concept of teaching English which every single individual should learn with true and sincere efforts in order to survive in such a competitive world where technology serves to be holding human beings breath.

Today's globalised world of learning is a wide horizon full of English language is constituted to be the basic touchstone where every single individual is tested once in a lifetime. English language being a part of both Neo- linguistic Imperialism, and latest language empire has become a matter of both subordination and liberation. According to Disraeli today English is the language of (i) de- intellectualization of the Indian mind, (ii) the language that has subverted the Indian languages, and (iii) the language that has divided into two nations.

Language is said to be the wheels of communication and in today's scenario English becomes the very evident language that can take a student into a world of bright future. English has been a boon for the Indians given by the British's during the period of India's colonization. Great personalities like the Raja Ram Mohan Roy, Pt. Jawaharlal Nehru, Mahatma Gandhi, etc became educated by empowering themselves with the weapon of speaking English to represent themselves at the International and National levels. But, finally, a slogan was made by the Indian mobs, "Angrezi Hatao" which gradually transformed into the slogan " Angrezi Batao". And, now learning and teaching English language has become the basic food which every single person wants to be served with and enjoy its delicious flavor.

During ancient times in schools and colleges English language was not given much priority but gradually there was a metamorphism in the whole process. Tennyson has rightly said,

"Old order changeth yielding place to new." (Line no.49)

This means that the old and traditional methods of teaching should be replaced by some new and innovative methods by using advanced technology. This was because from the Northern to the Southern part and from Western to Eastern side of the country there was not a particular common language in which people could easily communicate with one another. Like, for e.g. in the Northern the Kashmiris spoke some sort of Urdu language and in the Southern part like Tamil Nadu people spoke Malayalam language. Thus, when people made a tour to different places they faced a number of tribulations because of these miscommunications. Since a person belonging to the

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North cannot speak Malayalam language during his journey to the South India. And so, the Almighty sent the British to our country and asked them to us the gift of embellish us with the gift of learning English as this very language is the most common language that is spoken among the people of all regions. And now this very language has become the most essential for a student's life and the very dream of each parent to educate their next generation in an English medium school.

There are many students all over India who have never been blessed with the opportunity to study in an English school but are interested in becoming engineers, doctors and translators. But nowadays it is very difficult for a student studying till class 12 in a state board where education is delivered to the students in Hindi language. And when they grow up to take admissions in technical, law and medical colleges they have to face problems in both speaking, learning, writing English in any subjects, because all the matters and books that they have to study are only available in English version. And thus it becomes problematic for the students to make proper pronunciation of the technical terms and also is unable to write in English. And finally they land up with scoring fewer marks. Again if the students are absent in the class he/she again has to face problems in keeping pace with the lessons taught in the class.

Thus, in this globalised world which is full of scientific and advanced technology English language is a basketball which every single player (student) wants to have it in his/her own basket. And this dream of a student should be fulfilled by the respective coach (teacher). English should be taught to a child right from the childhood period in a school whether the school be situated in a rural or urban area. The novel and innovative horizons of technologies that has come up within a few years becomes the best assets for teaching English language to students all over India.

An effectual communication skill in any language is very vital and quite important for a person to communicate with one another. Spoken English is one of the primary concepts that are being used in our day to day life. Many coaching classes have been opened in every nook and corner of the states of India who promise to give an assurance of making a person or a student learn English within a few months. This is just a sort of business that helps a person to put money into ones pocket. This is used for transactions, social interactions and is an instrument of intellectual discussions. In today's world listening and speaking are the two basic skills that a student should be made familiar with and this can only be possible if a good teacher is made available in every school for teaching English. But English language can never be learnt by sending a child to spoken English classes.

There are four different types of communications which every student belonging to any age should be acknowledged with in order to learn good English. This is because if proper input is given then only proper output can come out which is further divided into four skills. They are:

1. **Speaking Skill**: this is the most important skill that a child learns while hearing the people speaking in the surroundings and also through Web Quest.

2. **Reading skill**: This helps a student to develop their fluency in reading and also in understanding of difficult words. Reading can also be made interesting through reading animated movies on the internet.

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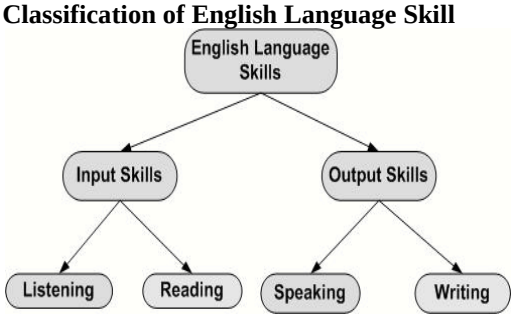
3. **Listening Skill**: students should acquire the power to listen properly because correct pronunciation can be successful only through listening words pronounce on the net.

4. **Writing Skill**: once the student is well equipped with all these skills he can easily be able to write things in English despite coming from any background.

Classification of English Language Skill



There are many basic technologies through which a student can easily learn the English language with the help of logging on to different sites available on the internet like:

1. Listening and Watching:

    - Watching videos and listening to audio materials
    - Following the podcast about life
    - Reading articles, stories and poems and listen the way they are been pronounced at the same time
    - Checking the monthly updates of the popular elementary podcast introduced on the sites

2. Grammar Section

    - Playing games in the grammar section by putting the correct word in the blanks
    - Matching the word with the correct meaning and gaining points

Firstly, English should be taught not as a secondary language in schools of CBSE, ICSE and other state boards both in rural and urban areas but as a primary first language and as a mandatory subject. A student's basic concept in English should be made so strong that by the time he reaches to achieve his aims in colleges he does not have to face problems in speaking English. Therefore, an effort should be made to utilize such technologies in every schools and colleges by implementing the emergence of digitalized study i.e. audio- video presentation. This is because the books read by students consists of only written materials that are available to serve them during their exams time, but it fails to arise any sort of interest in children. Therefore if the study material is full of pictures, animations and figures it allures the students to learn things with ease and interest. For e.g. the pronunciation of the words like boy- written linguistically as /boi/, which cannot be easily understood without having the knowledge of linguistics but when it is made to hear through audio presentation and taught to the students it is easily adaptable for them. These terms are also written in a linguistically manner in the dictionary but it becomes difficult to understand and pronounce. So, through audio presentation that is through hearing students can learn the correct usage of skill pronunciation.

For school and college students small audio- video conversation presentation classes can be arranged thrice in a week to make the students more energetic and full

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of enthusiasm to learn something new. These technologies can also be made available for students in rural areas through radio and doordarshan channels thrice in a week. Animations in today's era have become the greatest equipment which facilitates in making a student learn English very easily. Like, small story books and novels which many students find difficulty in reading and understanding of the words they find the same story books and novels when they made to watch them in the form of movies and animations for e.g., the thick novel *Harry Potter* by J.K.Rowling is time taking and difficult for many students when they are asked to read it but when animated movies were made children were interested in watching it. The subtitles which are shown below help them to understand its clear pronunciation and also the meaning of the word given. Same was the story with Chetan Bhagat's novels *3 Mistakes of My Life* which was made into a movie that had recently appeared in the theatres Kai Po Chi and his novel *Five Point Someone* into 3 Idiots. Thus, the students found the movie to be much more interesting than studying the thick novels. These technologies like the making of movies and animations seem to provide a soothing effect for the student's eyes mind and enhance their knowledge.

Another very popular technology that has been made available for the students of Dighalgram Netaji Vidyapith High School in Nadia District (W.B) developed by some teachers teaching in rural schools. This way of teaching is in popular known as E- Seminar that is Electronic Seminar or a Live Capture System. A Live Capture System is a solution that captures class-room activities in a digital format and enables live viewing over the internet or makes it available for download and viewing at a later time. It works best for live streaming of lectures. Students and teachers need not travel from one place to another. "The web- based lecture technology is a boon especially because of the high student teacher ratio in a nation like ours. Through this technology, good lectures by good teachers can be provided to the whole student fraternity which would not have been possible otherwise. More and more education institutes are now adopting this approach owing to its benefits," confirms Sandhya Kode, Director, EnchanceEdu, Training and Development, Center for educational and Technology.

In this kind of teaching the school or college should be made available with only two or three equipments like a projector, a webcam, internet and a computer system. Now, teaching takes place on the screen projector sitting just at one place and at that very particular period of time students should be present online so that through video calling or conferencing applications like SKYPE, OVOO, etc they are able to receive their lessons. In case a student is unable to attend the class or unavailable at tat very particular time period, then the digital file of that day's lessons will be transferred automatically to their cell phones. This is because cell phones have now become a common device present with all the age group persons. And finally a student using Bluetooth can be able to see and learn the lessons taught in the class. These lessons can further be uploaded on YouTube, so that students can easily be availed with as soon as he comes in contact with the internet. This sort of technology is also helpful for the students who are doing their distance course education by just sitting at home.

Just like a house wife by just sitting at home can operate a number of home appliances on just one click in the same English teaching has also become easier for

students. Through just one click on the internet a student can come in contact through many experts online and learn English without worrying about the amounts of cash to be paid. There many workshops organized by many organizations where learning is absolutely free. Even cell phones are available at a reasonable price where dictionary is been provided in which the meaning every small and difficult words are given and whenever the students gets stuck up in not being able to understand the words meaning he/she may search for the words then and there without any doubts haunting their minds.

Today even technology is used in the form of WEB Quest that is searching things through internet. Even people can learn grammar through this technology also. A Web Quest is in essence a mini-project using authentic language and carefully staged steps, which, as learners work through them, reach pre-set goals and work towards the production of original output, which is finally cemented of a presentation of some kind. Here, the participants will have to arrive by means of navigating the Web, while involving in it a variety of skill enhancing activities by clearing ones doubts.

Typically, a well designed Web Quest will include an opportunity for learners to undertake self-evaluation as well, which may be guided by thought-provoking questions geared towards both what the student feels they have learned in the realm of language, as well as asking them to look at the type of experience they have just undertaken and how that relates to their progress as a whole. They might also be asked what they see as the advantages or otherwise using the Internet compared to a more traditional, classroom and printed materials approach.

A communication skill does not simply mean learning or pronunciation of difficult terms and words, or speaking in an artificial manner. But it means the perfect development of a bud into a blooming flower that is the student should have a perfect body language, good pronunciation skills, good fluency in speaking English especially during an interview and group discussions organized for engineering students, reading skills and writing skills should also be developed. English is a language that cannot be just put upon as a burden on the shoulders of the students like their schools bags full of books which they need to carry every day. But, interest among the students should come from within and only then can they become a good orator in the society and public. And this can only be possible not through bookish means of teaching English but making oneself adaptable and acknowledgeable with the advanced technology used for teaching in this globalised world.

The pendulum of the future of learning English language in India is swinging from darkness to brightness due to progress in science and technology and because of this the whole world has become a hamlet and English is the only medium of language that can help in linking the peoples all over the world. Aspiring to become a superpower, India can't afford to neglect English at any cost. This paper therefore makes an effort in highlighting the different use of the advanced technologies that is emerging in our day to day life to make the students learn the 'King of all language' that is the English language to every student studying either in a rural or urban area.

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A Survey on Anti-Phishing Techniques for Classification of Phishing E-mails

NiharikaVaishnaw
M-Tech Scholar
Department of Computer Science and Engineering
C. V. Raman University
Kargi Road Kota, Bilaspur (C.G)
vaishnaw.niharika@gmail.com

S R Tandan
Assistant Professor
Department of Computer Science and Engineering
C. V. Raman University
Kargi Road Kota, Bilaspur (C.G)
srtandan@cvruresearch.org

Abstract: Today, Phishing emails are considered as one of the fastest growing threat for both organizations and individuals. Internet users are heavily been prone to economic deficits due to fraudulent activities performed by these phishing mails. Various approaches and techniques have been developed to filter these phishing mails from mailboxes. In this paper, we present a survey on different anti-phishing techniques for classification of phishing emails. We present an overview of phishing scenario, attributes required to identify phishing mails and a review of numerous machine learning based as well as other antiphishing techniques presently used to classify phishing email. This paper gives proper perspective towards the problem, its solution space, and helps to prognosticate the future research direction.

Keywords: Phishing emails, Classification, Machine Learning

I. INTRODUCTION

Now days the use of Internet is increasing rapidly to access information from the World Wide Web. Every organization like bank, insurance, industries have large volume of data. To secure such information, classification of information plays a very important role. Classification is one of the most important decision making techniques in many real world problems. Anti phishing is one of the important areas to classify the phishing and normal e-mails[21]. Phishing is an Internet-based attack in which an attacker tricks a user into submitting his or her sensitive information to a fake website mimicking a legitimate site.This sensitive information ranges from usernames and passwords to bank account numbers and social security numbers. Phishing is a serious threat to the security of internet users' confidential information. Phishing is also a type of spam emails which redirect the users to fake websites and access the sensitive information from users.

Phishing Scenerio:

The phishing process starts with setting up of a counterfeited website by the phisher which is very much similar to a legitimate website. Phisher frequently send emails to target users with embedded hyperlinks directing to their fake website. As soon as the receiver clicks on the hyperlink, it takes it to the bogus website. There it asks users for their confidential informations like username, id, password etc. When the users enter their personal information, phisher steal them and spoof the users.

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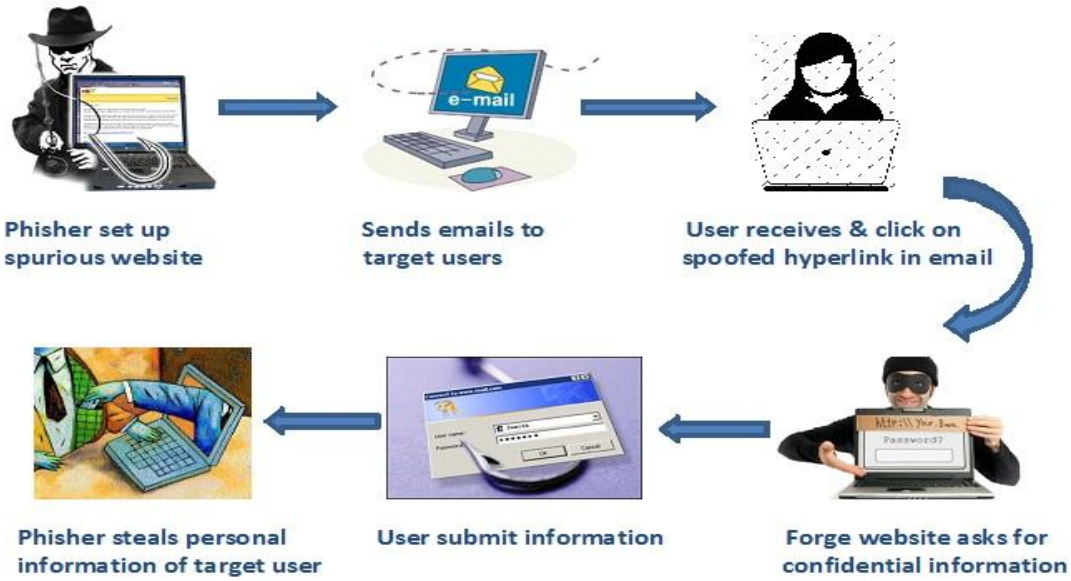

Fig1: Process of Phishing

1.1 Types of Phishing Attacks:

There are various types of phishing attacks, some of the conventional one are listed below[22].

• Deceptive Phishing-This type of phishing attack broadcast to a wide group of recipients with the intention of acquiring their confidential information. It consists of messages related to verify account information, system failure requiring users to re-enter their information, fictitious account charges, undesirable account changes, new free services requiring quick action, and many other such scams.

• Malware-Based Phishing- These attacks tries to inject malicious software on users' PCs. Malware can be introduced as an email attachment, as a downloadable file from any web site, or by exploiting known security vulnerabilities—like un-updated software applications.

• Keyloggers and Screenloggers-In this attack keyboard input are traced and relevant information is send to the hacker via the Internet. They embedthemselve as small utility programs, device drivers or screen monitors that run automatically inside the system.

• Session Hijacking- Users activity is observed until they sign in to their account or perform any transaction and establish their authentic credentials. At that point the malicious software commits unauthorized actions, like transferring funds, without the knowledge of user.

• Web Trojans- Pop up invisibly when users attempt to log in. They retrieve legitimate informations locally and pass on to the attacker.

• Hosts File Poisoning. Most of the users' PCs running a Microsoft Windows operating system first look up "host names" in their "hosts" file before undertaking a Domain Name System (DNS) lookup. By "poisoning" the hosts file, hackers have a bogus address transmitted,taking the user unawarely to a fake similar looking website where their information can be stolen.

• System Reconfiguration- Perform alteration to settings on a user's PC for pernicious purposes. For example: URLs in a favorites file might be modified to direct users to look alike websites. For example: a bank website URL may be changed from "citibank.com" to "citybank.com".

• Data Theft- Data theft is a widely used approach to business espionage. By stealing confidential communications, design documents, legal opinions, and employee related records, etc., thieves profit from selling to those who may want to embarrass or cause economic damage or to competitors.

• DNS-Based Phishing ("Pharming")- Pharming is a Domain Name System (DNS)-based phishing. With this scheme, hackers manipulate a company's host's files or domain name system so that requests for URLs or name service return a forge address and further communications are directed to a fake website. The

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result: users unwittingly enter confidential information and get spoofed by hackers.

• Content-Injection Phishing- It describes the situation where hackers replace part of the content of a legitimate site with false content designed to mislead or misdirect the user into giving up their confidential information to the hacker. For example, hackers may insert malicious code to log user's credentials or an overlay which can secretly collect information and deliver it to the hacker's phishing server.

• Man-in-the-Middle Phishing- It is one of the most difficult to detect scheme. Hackers place themselves between the user and the legitimate website or system. They record the information coming from one end and continue to pass it on to the other end without influencing the ongoing transaction. Later they misuse the credentials collected when the user is not active on the system.

• Search Engine Phishing- In this attack, phishers creates websites with appealing offers and have them indexed authenticaly with search engines. Users find these sites while surfing and are deluded by providing their information. For example, phishers set up false online shoppingwebsites offering exclusive deals at lower costs than other related sites. Victims get trapped and peforrm online transactions causing financial loss to them.

II. THE APWG REPORT Q2 2014

According to the last APWG report the intimidation of phishing is still high, the number of cyber attacks in the second quarter of 2014 is the second-highest number ever observed in a quarter since the APWG began its monitoring activity (2008)[23].“The total number of phish observed in Q2 was 128,378, a 3 percent increase over Q1 2014, when a total of 125,215 were observed. The 128,378 is the second-highest number of phishing sites detected in a quarter, eclipsed only by the 164,032 seen in the first quarter of 2012.” states the report.

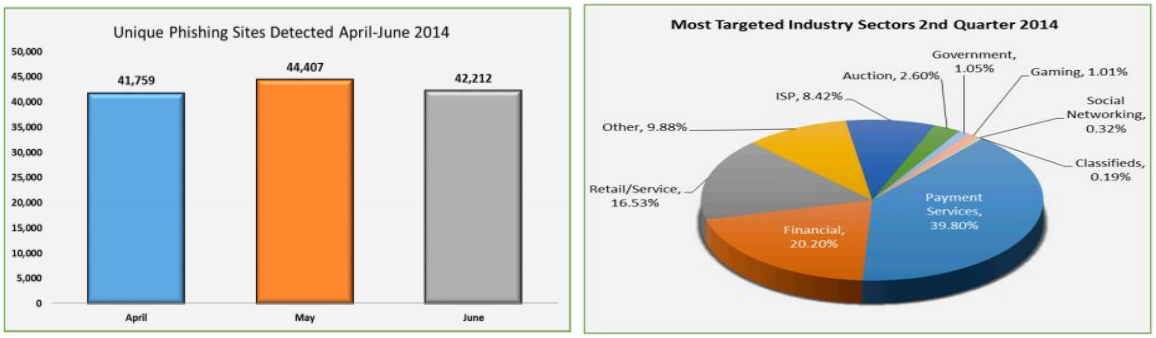

Fig 2: Phishing trend report of new phishing sites[23]

The APWG group detected an average of 42,793 new

phishing attacks per month in Q2, the number of targets was decreased of 17 percent from same period of 2013, and the data confirms a higher concentration of attacks on more

According to the APWG report, Trojans are still the most common type of malware (58.20%), but experts are worried by the increase in PUPs (Potentially Unwanted Programs) such as spyware andadware. The APWG members linked the increase in PUPs to a significant increase in the creation of software bundlers, which install programs that serve PUPs.[23]

III. ANTI-PHISHING TECHNIQUES

vulnerable brands. Fig2 indicates 41,759 unique sites detected in the month of April followed by 44,407 in May and 42,212 in June respectively. Fig 3 shows that Payment Services (39.80 percent) and Financial (20.20 percent) are most targeted industry sectors in Q2. The APWG report also includes data on attacks against retail/service sites, the offensives on the industries grew, from 11.5 to 16.5 percent of all phishing attacks.

In order to guard internet users from malicious activities of phishers, several antiphishing techniques have been developed. In general the techniques can be classified as list-based, heuristic-based and machine learning-based approach.

A. List-Based Approach: This approach comprises of a black list and a white list. The black list contains numerous URLs of phishing sites reported by internet users or collected by

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web crawlers. The list maintainers ensure whether the reported URLs are phishing sites or not. The drawback of this approach is that it does not give 100% guarantee. There is always a possibility of unreported and uncollected URLs. On the other hand white list contains names of legitimate domains. When user tries to visit a site which is not present in the list, it gets blocked decision is upto the user. The drawback with this approach is that it constantly asks for permission due to which the impatient user either disables the filtering mechanism or unblocks it.

B. **Heuristic-Based Approach:** Heuristic-based approach applies diverse criteria to find out whether a website is a phishing site. Domain names, URL, image similarity, keywords etc. are some of the respective criterias. This mechanism may use only one criterion to assess web sites. For example, the basic CANTINA filter [24] only calculates the TF-IDF score.

C. **Machine learning-Based Approach:** This is one of the best and widely used approaches because of its best results and high accuracy.Machine learning (ML) is a branch of artificial intelligence (AI) that employs the method of data mining to discover new or existing patterns (or features) from a dataset which is then used for the purpose of classification. Many machine learning algorithms are used as classifiers to classify phishing and non-phishig emails. This section is further discussed in detail later in this paper.

IV. ATTRIBUTES OF A PHISHING EMAIL

A phishing email consists of multimedia information, such as image and text, where the text information may contain rich/plain text, HTML, URLs, scripts, styles, etc. From this information however it is not that easy to recognize a phishing email since all these may present in a non-phishing email too. Hence, different types of features are defined manually based on observation to detect such mails which serve as input to various classifiers.After the survey of available literature, we have selected various attributes that capture the characteristics of phishing emails and consolidated them in a tabular representation (Table 1).

TABLE 1: Attributes indicating threat of phishing activities

S.NO	ATTRIBUTES	DESCRIPTION	EXAMPLE
1	URL	-Containing IP Address	http://192.82.12.1/signin.ebay.com
		-Inclusion of @ symbol in order to redirect users to another site	www.citybank.com@123.123.123.12 instead of www.citibank.com
2	Domain Name	-Phishing site may register itself with a similar name as a legitimate site	www.snapdea1.com instead of www.snapdeal.com
		-Number of dots or periods	More than 3 dots suspect the legitimacy of site
3	Hyperlinks	-Hyperlinks in email does not route to same location as is supposed to do	
		-Unusually long hyperlinks	http://payment2.works.com/wpm/validate?code=2139877…..nvuhufyeru993fu8eu00
		-Disparity between “href” attribute and “link text”	 Bogus.com Instead of

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			paypal.com
4	Keywords	Frequently appearing words in phishing emails	Win!; Jackpot; Update; Confirm; Click; Here; Login; User; Customer; Client;
5	Input Fields	Phishing sites usually require users to input their personal information and hence embed input fields	Enter Password, UserID, Security No. , Account No. ,Credit Card No etc.
6	HTML Content	Phishing emails consists of content-type with attribute "text/html" in order to use HTML links	Type of content- "text/html" Instead of "text/plain"
7	Embedded JavaScript	Presence of JavaScript in either body of email or in link mostly to hide information from the user	Use of <Script>tag
8	Absence of personalized information	Phishing emails does not contain personalized content about the user	Address without name of recipient, Lack of last 4 digits of recipient's account no.
9	Disparity between domain names in email and sender's domain name	Phishing emails have mismatch between domain names present inside email and sender's domain(the domain name referred to by the "From" field of the same email)	
10	Ruses	Phishing emails uses different ruses to create an urgency situation to trap recipient	-The customer's account may be frozen if account details are not provided within a specified time -Fraudulent activity involving the user's account has been detected and the user must therefore provide information urgently.etc.

V. MACHINE LEARNING BASED ANTI-PHISHING TECHNIQUES

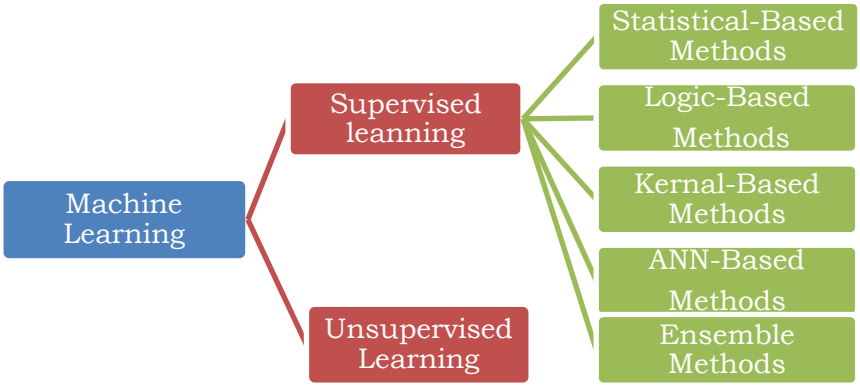

Fig 4: Classification of Machine Learning Techniques

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Machine learning is one of the important subfield of computer science and classification is an important application of machine learning techniques.Machine learning focuses on the development of computer programs that can teach themselves to grow and change when exposed to new data. Maching learning, concerns the construction and study of systems that can learnfrom data.

Supervised Learning is the learningin which the training data is labeled with the correct answers, e.g., "spam" or "ham." The two most common types of supervised learning are **classification**(where the outputs are discrete labels, as in spam filtering) and **regression** (where the outputsare real-valued).

Unsupervised learning is the learningin which we are given a collection of unlabeled data, which we wish to analyze and discover patterns within. The two most important examples are **dimensionreduction** and **clustering**.

AmmarAlmomani et.al [1] proposed a survey of the protection against these phishing email attacks.This survey improves the understaning of the phishing emails problem, the current solution space, and the future scope to filter phishing emails. Most classifiers used to identify phishing email are based on: supervised learning, i.e. they must learn before they can be used to detect a new attack; unsupervised learning, which is faster, but has a low level of accuracy; or a hybrid (supervised and unsupervised) learning, which is time consuming and costly.

In this research work, we havebreifed various classification techniques to classify phishing attacks. These are described below:

5.1 Statistical-Based Methods

Statistical approaches are characterized by having an explicit underlying probability model, which provides a probability that an instance belongs in each class, rather than simply a classification. Under this category of classification algorithms, one can find Bayesian networks and Naive Bayesian networks (NB).

5.1.1 Bayesian Networks: A Bayesian Network [25] is a graphical model for probability relationships among a set of variables (features). The Bayesian network structure *S* is a directed acyclic graph (DAG) and the nodes in *S* are in one-to-one correspondence with the features *X*. The arcs represent casual influences among the features while the lackof possible arcs in *S* encodes conditional independencies. Moreover, a feature (node) is conditionally independent from its non-descendants given its parents.Typically, the task of learning a Bayesian network can be divided into two subtasks: initially, the learning ofthe DAG structure of the network, and then the determination of its parameters. Probabilistic parametersare encoded into a set of tables, one for each variable, in the form of local conditional distributions of a variablegiven its parents.

IsredzaRahmi A Hamid et.al [4] proposed a hybrid feature selection approach based on combination of content based and behavior-based. The study presented that hybrid features selections are able to achieve 93% accuracy rate as compared to other approaches. In addition, the quality of proposed behavior-based feature (used to detect phishing emails by observing sender behavior) using the Information Gain, Gain Ratio and Symmetrical Uncertainty is successfully tested.This hybrid feature selection approach achieved 93% accuracy.For data size of 60:40, Bayes Net outperformed other classifier and achieved the highest accuracy in set 2 which is 92% when compared to Adaboost and Random Forest. The resultsrecommend that Bayes Net works well because of its manipulating capabilities of tokens and associatedprobabilities according to the user's classification decisions and empirical performance.

Saeed Abu-Nimeh et.al [3] developed a client-server distributed architecture to detect phishing e-mails by taking advantage of automatic variable selection in Bayesian Additive Regression Trees (BART). When combined with other classifiers, BART improves their predictive accuracy. Further the overall architecture proves to leverage well in resource constrained environments.The results demonstrated that automatic variable selection in CBART can be used to improve the predictive accuracy in other classifiers. Although the AUC decreased for the majority of classifiers (except LR), the error rate, false positive rate, and false negative rate decreased for RF, LR, and NNet after using variable selection via CBART. However, when using another variable selection technique, namely Kruskal-Wallis (KW) test, the predictive accuracy for all the compared classifiers degraded.

5.1.2 Naive Bayes classifiers: Naive Bayesian networks (NB) are very simple Bayesian networks which are composed of DAGs with only one parent (representing the unobserved node) and several children (corresponding to observed nodes) with a strong assumption of independence among child nodes in the context of their parent. The major advantage of the

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naive Bayes classifier is its short computational time for training. In addition, since the model has the form of a product, it can be converted into asum through the use of logarithms with significant consequent computational advantages.

Zhan, J.Thomas [2] proposed anomaly detection in dynamic social environment by using Stochastic Learning Weak Estimation (SLWE) approach. This approach is studied and implemented based on Naïve Bayes classification, for filtering phishing emails that are unpredictable in nature. Experimental results shows that the SLWE based Naïve Bayes filters are superior in performance, when compared with the MLE (Maximum Likelihood Estimation) based filter. The SLWE filters are adapted especially in environments where there are abrupt changes in the distribution of phishing and non-phishing emails. Moreover the drops in the detection rates of phishing were recovered faster by employing the SLWE filter.

5.2 Logic-Based Methods

In this section we will concentrate on of logical (symbolic) learning methods: decision trees, random forest and c5.0.

5.2.1 Decision tree: Decision tree induction is the learning of decision trees fromclass-labeled training tuples.Adecision tree is a flowchart-like tree structure,where each internal node (nonleaf node)denotes a test on an attribute, each branch represents an outcomeof the test, and each leafnode (or *terminal node*) holds a class label. The topmost node in a tree is the root node.The construction of decision treeclassifiers does not require any domain knowledge or parameter setting, and therefore isappropriate for exploratory knowledge discovery. Decision trees can handle high dimensionaldata. Their representation of acquired knowledge in tree formis intuitive and generallyeasy to assimilate by humans. The learning and classification steps of decision treeinduction are simple and fast. In general, decision tree classifiers have good accuracy.

Ma, L.Ofoghi et.al [5] developed a method to build a robust classifier to detect phishing emails using hybrid features and to select features using information gain. The experiment was done on 10 cross-validations to build an initial classifier which performs well. The experiment also analyses the quality of each feature using information gain and best feature set is selected after a recursive learning process. Experimental result shows the selected features perform as well as the original features. The performance of five machine learning algorithmsi.edecision tree, random forest, multi-layer perceptron, naive bayers and support vector machine (SVM). was compared. The result comes that decision tree generated the highest accuracy which builds a good classifier. Comparing to decision tree methods, the accuracies of other learning algorithms are random forest (-0.02%), multi-layer perceptron (-0.72%), naive bayes (-0.94%) and support vector machine (-1.92%). This result recommends that decision tree works well in discrete and small vector space data.

5.2.2 Random forest (RF): Random forest (RF) is an ensemble learning classification and regression method suitable for handling problems involving grouping of data into classes. The algorithm was developed by Breiman and Cutler. In RF, prediction is achieved using decision trees.During the training phase, a number of decision trees are constructed (as defined by the programmer) which are then used for the class prediction; this is achieved by considering the voted classes of all the individual trees and the class with thehighest vote is considered to be the output.

Andronicus A. Akinyeluet.al [6] investigated and reported the use of random forest machine learning algorithm in classification of phishing attacks, with the major objective of developing an improved phishing email classifier with better prediction accuracy and fewer numbers of features. The study presented a content-based phishing detection approach which has bridged the current gap identified in the literature. From a dataset consisting of 2000 phishing and ham emails, a set of prominent phishing email features (identified from the literature) were extracted and used by the machine learning algorithm with a resulting classification accuracy of 99.7% and low false negative (FN) and false positive (FP) rates of about 0.06%.

Khonji et.al [7] proposed in the study that the classification accuracy of anti-phishing email filters enhance when they incorporate the proposed lexical URL analysis technique. To evaluate the claims, a highly accurate anti-phishing email classifier is constructed and tested against publicly available phishing and legitimate email data sets. When RF was run with AdaBoostM1 [20] and using features set 3-A (the full features set without features subset selection, with Lexical URL Analysis (48 features in total), its classification model resulted in an f1 score of 99.45%. Only one classifier is known to have a higher f1 score of 99.46%however it uses additional model-based featuresand image processing techniques.

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PILFERS is a proposed method to detect phishing emails byFette et.al [19]. This technique works based on 10 different features representing phishing emails. Nine features extracted from the email itself, while the tenth feature represents the age of linked-to-domain names, which can be extracted from a WHOIS query at the time the email is received. The S.A. tool(Spam assassin), was used to identify if this email has spam features or not. This technique works based on 10-fold cross-validation with random forest and SVM as classifiers to train and test the dataset. This approach is a machine-learning based approach to classification. For reference implementation of PILFER, random forest was used as a classifier. The result of the PILFER with S.A. features was 0.12% false positive rate, and 7.35% false negative rate, respectively, which means that a sizeable number of phishing and ham emails were not well classified.

5.2.3 C5.0: C5.0 [8] is one of the more recent in a family of learning algorithms referred to as decision tree algorithms. This algorithmis an improvement of the C4.5 algorithm also developedby Quinlan. The improvements are merely in efficiency, the algorithm remains the same. The algorithm is based on theconcepts of entropy, the measure of disorder in the collection,and the information gain of each attribute. Information gain isa measure of the effectiveness of an attribute in reducing theamount of entropy in the collection.

F. Toolan et.al [8] introduced an approach to classifying emails into Phishing / non-Phishing categories using the C5.0 algorithm which achieves very high precision and an ensemble of other classifiers that achieve high recall. The representation of instances used in this paper is very small consisting of only five features. Results of an evaluation of this system, using over 8,000 emails approximately half of which were phishing emails and the remainder legitimate, are presented.The F-Score of the R-Boost method was 99.31% by far the highest of the techniques that have been examined.These results show the benefits of using this recall boosting technique [8] over that of any individual classifier or collection of classifiers.

5.3 Kernal Method

Kernel Methods are best known for the popular method Support Vector Machines which is really a constellation of methods in and of it. Kernel Methods are concerned with mapping input data into a higher dimensional vector space where some classification or regression problems are easier to model.

5.3.1. Support Vector Machines(SVM): In formal definition, a support vector machine design a hyperplane or set of hyperplanes in a high or infinite dimensional space, which can be used for classification, regression or other tasks. A SVM is a promising new method for classification of both linear and nonlinear data. Support Vector Machines are based on the concept of decision planes that define decision boundaries. A decision plane is one that separates between a set of objects having different class memberships[9]. Support vector machine algorithms divide the n dimensional space representation of the data into two regions using a hyperplane. This hyperplane always maximizes the margin between the two regions or classes. The margin is defined by the longest distance between the examples of the two classes and is computed based on the distance between the closest instances of both classes to the margin, which are called supporting vectors[9].

M.Chandrasekaran et.al [10] proposed a novel technique to discriminate phishing emails from the legitimate emails using the distinct structural features present in them. The derived features, together with one class support vector machine (SVM) can be used to efficiently classify phishing emails before it reaches the users inbox, essentially reducing human exposure. Their prototype implementation sits between a user's mail transfer agent (MTA) and mail user agent (MUA) and processes each arriving email even before it reaches the inbox.

Wilfried N. Gansterer David et al.[11] employed statistical classification methods to classify emails as legitimate (ham) or phishing emails. Two new types of features generated by adaptive Dynamic Markov Chains (DMC) and by latentClass-Topic Models (CLTOM) were introduced. Teiradaptive DMC approach reduces the memory requirements compared to the standard DMC approach by two thirds almost without any loss in performance. CLTOM approach, which incorporates class-specific information into the topic model, outperforms the standard LDA approach for topic numbers of up to 100. Classifiers incorporating these features as input are able to substantially outperform previous approaches on publicly available benchmark corpora.Support Vector Machine (SVM) classifier gets implemented in the libSVM-library. The RBF kernel with parameters C = 10 and gamma = 0.1 turned out to be most accurate and stable.

Bergholz et.al [12] introduced various new features for identifying phishing messages and rank established as well as newly introduced features according to their significance for this classification problem. Moreover, in contrast to classical binary classification approaches

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(spam vs. not spam), a more refined ternary classification approach for filtering e-mail data is investigated which automatically distinguishes three message types: ham (solicited e-mail), spam, and phishing. The classification is based on a partly new designed set of features to be extracted from each incoming message. SVM classifier based on feature set *F*1 achieved an overall accuracy of 92,5% on a balanced test data set (1000 messages from each class. On a correspondingly imbalanced test set the overall accuracy improved to 95,3%. Various classifiers have been compared for assigning messages to one of the three groups. Over all three groups, a classification accuracy of 97% was achieved, which is better than solving the ternary classification problem with a sequence of two binary classifiers. Overall, the SVM achieves the highest accuracy.

5.4 ANN-Based Method

Artificial Neural Networks are models that are inspired by the structure and/or function of biological neural networks. They are a class of pattern matching that are commonly used for regression and classification problems but are really an enormous subfield comprised of hundreds of algorithms and variations for all manner of problem types.

5.4.1. Neural Networks: An artificial neural network, or neural network, is a mathematical model inspired by biological neural networks. Inmost cases it is an adaptive system that changes its structure during learning. There are many different typesof NNs. For the purpose of phishing detection, which is basically a classification problem, we choose multilayerfeedforward NN. In a feedforward NN, the connections between neurons do not form a directed cycle. Contrastedwith recurrent NNs, which are often used for pattern recognition, feedforward NNs are better at modeling relationships between inputs and outputs.

N. Zhang et.al [13] proposed multilayer feedforward neural networks for phishing email detection and evaluated the effectiveness of this approach. From the statistical analysis, it was concluded that NNs with an appropriate number of hidden units can achieve satisfactory accuracy even when the training examples are scarce. The multilayer feedforward NN is implemented in Java with the Encog Java Core package, which provides a powerful framework to conveniently construct NNs and perform training and testing. NN gives the highest recall while still maintaining a >95% precision, suggesting that NNs are excellent at detecting phishing emails while misclassifying only a small portion of ham emails.

ALmomani et.al[14] proposed the Detection and Prediction of unknown "zero-day" phishing Emails by provide a new framework called Phishing Evolving Neural Fuzzy Framework (PENFF) that is based on adoptive Evolving Fuzzy Neural Network (EFuNN). PENFF does the process of detection of phishing email depending on the level of features similarity between body email and URL email features. The totality of the common features vector is controlled by EFuNN to create rules that help predict the phishing email value in online mode. The proposed framework has proved its ability to detect phishing emails by decreasing the error rate in classification process. The current approach is considered a highly compacted framework. As a performance indicator; the Root Mean Square Error (RMSE) and Non-Dimensional Error Index (NDEI) has 0.12 and 0.21 respectively, which has low error rate compared with other approaches Furthermore, this approach has learning capability with footprint consuming memory.

5.5 Ensemble Methods

Ensemble methods or hybrid models are models composed of multiple weaker models that are independently trained and whose predictions are combined in some way to make the overall prediction. Much effort is put into what types of weak learners to combine and the ways in which to combine them. This is a very powerful class of techniques and as such is very popular. A hybrid model is a combination of two or more models to avoid the drawbacks of individual models and to achieve high accuracy. Bagging and boosting are two techniques that use a combination of models. Each combines a series of *k* learned models (classifiers), *M*1, *M*2,…..*Mk*, with the aim of creating an improved composite model, *M*.

A novel method for profiling phishing activity from an analysis of phishing emails is proposed by John Yearwood et.al [15]. Profiling is useful in determining the activity of an individual or a particular group of phishers.It is distinct from detection of phishing emails. The profiling problem is formulated as a multi-label classification problem using the hyperlinks in the phishing emails as features and structural properties of emails along with whois (i.e.DNS) information on hyperlinks as profile classes. Further, profiles based on classifier predictions are generated and classes become elements of profiles. A boosting algorithm (AdaBoost) as well as SVM to generate multi-label class predictions on three different datasets created from hyperlink information in phishing emails is employed. These predictions are further utilized to generate complete

profiles of these emails. Results show that profiling can be done with quite high accuracy using hyperlink information.

Del Castillo et.al [16]developed a system for classifying e-mails into two categories, legitimate and fraudulent. This classifier system is based on the serial application of three filters: a Bayesian filter that classifies the textual content of e-mails, a rule based filter that classifies the non-grammatical content of e-mails and, finally, a filter based on an emulator of fictitious accesses which classifies the responses from websites referenced by links contained in e-mails. The approach of this system is hybrid.A client-side system called FRALEC is proposed, which was designed and built to detect and filter phishing e-mail automatically, using different sources of information present in the content of e-mails which are handled by the processing methods most suitable for each information type.The author used 1,038 emails (10 emails as legitimate and 1,028 as phishing emails).The precision in the best result was 96%. FRALEC is an effective system for filtering fraudulent e-mails. Its good performance is reached because of integrating different classification methods that deal with all kinds of data present in e-mails.

VI. OTHER ANTIPHISHING TECHNIQUES

R. B. Basnet et.al [17] proposed a new and simple methodology to detect phishing emails utilizing Confidence-Weighted Linear Classifiers. The contents of the emails as features are used without applying any heuristic based phishing specific features and obtain highly accurate results compared to the best that have been published in the literature. Confidence-Weighted Linear classifiers achieved the best accuracy of 99.77%, with false positive rate (FPR - ham emails marked as phishing) of less than one percent across all datasets. LIBLINEAR which is a linear classifier for millions of instances and features on the other hand gave the best accuracy of 99.58% with FPR less than 1% and the worst FNR of 2.3% on Corpus2 dataset.

MadhusudhananChandrasekaran et.al [18] presented a novel approach to detect phishing attacks using fake responses which mimic real users, essentially, reversing the role of the victim and the adversary. Our prototype implementation called PHONEY, sits between a user's mail transfer agent (MTA) and mail user agent (MUA) and processes each arriving email for phishing attacks. Using live email data collected over a period of eight months we demonstrate data that our approach is able to detect a wider range of phishing attacks than existing schemes. The evaluation of the tool showed that our approach is able to detect a vast majority of the attacks, including cases where the masqueraded page is launched within the legitimate domain with no false positives

V.Shreeram et al.[20] have proposed genetic algorithm approach to detection of phishing webpages by using rule-based system and this rule set is used to match the hyperlink. An approach to detect phishing hyperlinks using the rule based system formed by genetic algorithm is proposed, which can be utilized as a part of an enterprise solution to anti-phishing. A legitimate webpage owner can use this approach to search the web for suspicious hyperlinks. In this approach, genetic algorithm is used to evolve rules that are used to differentiate phishing link from legitimate link. Evaluating the parameters like evaluation function, crossover and mutation, GA generates a ruleset that matches only the phishing links. This ruleset is stored in a database and a link is reported as a phishing link if it matches any of the rules in the rule based system and thus it keeps safe from fake hackers. Preliminary experiments show that this approach is effective to detect phishing hyperlink with minimal false negatives at a speed adequate for online application.

CONCLUSION

Phishing is a fraudulent activity which mostly attack through emails, websites and phone calls. Phishing emails are those emails which have wrong intentions of stealing confidential information by directing the user to their bogus website and tricking them to enter their personal information. The financial loss incurred by internet users and organizations due to phishing is growing rapidly day by day. However several approaches have been developed to protect against these phishing attacks. This survey enhances the understanding of phishing problem and helps to comprehend various anti-phishing approaches. Out of all, machine learning approaches are considered to be most affective giving satisfactory results. Approaches mentioned in the literature are able to give moderate protection against these attacks still none of them ensures 100% accuracy. Moreover many of them like hybrid techniques are costly and time consuming. Thus there is still a space for better approaches to solve drawbacks of previous ones.

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Analysis of Metals in Industrial area, Raipur, Chhattisgarh

Manish Upadhyay
Dean of Science, Department of Chemistry
Dr. C.V. Raman University
Kota, Bilaspur (C.G.) India
man_bsp@rediffmail.com.

Abstract- The paper deals with determination of eight Heavy metals namely. Copper, Iron, Mangnese, Zinc, Nickel,, Chromium Lead and Mercury in the ground water of different sites of Raipur Industrial area of Raipur district . All activities carried out on the ground surface have direct or indirect impact on the ground water whether associated with urban ,industrial or agricultural activities large scale concentrated source of pollutants, such as industrial discharges and sub surface injection of chemicals and hazardous are obvious source of ground water pollutants. This study was carryout in the month of during summer 2013. The samples were collected from seven different source of Raipur Industrial area of Raipur. The results obtained are compared with safe limits in ppm for heavy metals laid down by BIS, WHO, ICMR, APHA.

Key Words: concentrated, pollutant, Industrial area, traces metals.

I. INTRODUCTION

Water is one of the very precious substances on the earth, it is very essential for the existence and survival of the life. As population grows in their need for water increases the pressure, the pressure on our ground water resources also increases. In many areas of the world, ground water is now being over extracted, in some places massively. So, the result is falling wafer levels and declining well yield, land subsidence and ecological damage, such as the drying out of wetland.

The trace metal in water behaves in a typical manner. No single mechanism is sufficient to explain the process that are undergoing in the water. Trace metals like Fe, Mn, Cu, Zn, Co, Ni,etc., are very important for the proper functionary of the biological system and their deficiency or excess in the human system can lead number of disorders Other trace metals like Pb, As, Hg, etc., are not only biologically non essential but definitely toxic . The potential toxic metal elements, such as Cr, Pb, Cu, Zn, etc., are identified to cause health hazards in animal. In case of many heavy metals, bio-magnification occurs through food chain. So, it is necessary to discuss the theoretical aspects of trace metals for easy understanding of their metabolic activities. Cu and Fe is mixed in groundwater by rocks bearing iron and copper bearing ores, namely cuprites, malachite, azurites, hematite, magnetite and iron pyrite. Fe in surface water is generally present in the ferric state. Concentrations of Fe greater than 1 mg/L have been reported to occur in ground water.

Table 1: Safe limits (as per APHA, WHO, BIS, ICMR) and maximum acceptable limits for drinking purpose use of ground water adverse effect on bodies,

Serial No	**Heavy metal in Ground water**	Max	**Effect**

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01	LEAD	0.05	gastro intestinal track ,Toxic plumb solvency diseases, visual disturbance anemia, etc.,
02	CHROMIUM	0.05	Carcinogic acuity (cancer) can produce coetaneous and nasal mucous membrane ulcer and dermatitis. hexavalent Cr causes lung tumors.
03	COPPER	1.5	essential elements for metabolism, deficiency results is anemia in infants, excess may results in liver damage
04	NICKEL	0.02	May be carcinogenic, can react with DNA. Resulting in DNA damage
05	MERCURY	0.001	Causes minimata disease also causes blue baby disease in infants the colour of skin in baby is turn . Blue. Paralysis
06	IRON	1.0	Promote iron bacteria in water, bad taste, In trace is nutritional
07	MANGANESE	0.5	Produce bad taste, Excess causes reduced metabolism of iron to form hemoglobin
08	ZINC	5	Causes astringent taste and opalescence in water

Table 2- Sampling station in Raipur industrial area

Sampling place	**Sampling point number**
Real ispat	1
Seeta sponge	2
Bajrang Alloys	3
Shivalic sponge	4
Common drain -Nala	5
Chhokra nala industry	6
Kharun river up strem	7
Kharun river mid stream	8
Kharun river down stream	9

Table No- 3 Concentration of heavy and trace metals in Raipur district.

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Trace metal	1	2	3	4	5	6	7	8	9
Lead	0.19	0.10	0.18	0.14	0.16	1.18	0.18	0.2	0.25
Cadmium	1.20	0.20	0.50	0.40	0.90	0.50	0.01	0.04	0.08
Chromium	0.02	0.012	0.014	0.10	0.09	0.06	0.024	0.028	0.08
Copper	5.0	2.02	3.10	1.20	6.02	4.20	8.051	10.52	20.56
Zinc	10.10	5.50	2.20	1.00	3.0	4.0	9.14	10.25	25.26
Iron	2.00	3.10	2.10	15.0	17.0	16.0	16.35	18.41	21.33
Manganese	22.0	5.02	2.10	2.10	5.0	4.0	1.02	22.1	23.16
Mercury	0.01	0.01	0.02	0.01	0.01	0.01	0.02	1.2	1.49

- MATERIALS AND METHODS

Selected sites:
Nine water samples were collected from Raipur district in different sites in polyethylene containers which were thoroughly cleaned with 1:1 HNO3 rinsed several times with distilled water and dried in electric oven.

- RESULTS AND DISCUSSION

The occurrence of trace elements in natural and ground water is affected both by hydro chemical factors, like mineral composition of the rocks, soil characteristics, etc., as well as by anthropogenic activities and likely to show both temporal and spatial variation.

Copper: According to limits prescribed by various authorities (WHO, ICMR, APHA, BIS) it was found that all the samples collected from the sources were free from copper, the average value of copper in all water samples are much below the permissible limits but copper is excess in S6 sample.

Iron: According to BIS and ICMR the maximum allowable concentration and the permissible concentration in drinking water in 1.0 ppm and 0.3 ppm, respectively. It is content of hemoglobin, so it is very necessary for all living organism but in excess promote iron bacteria in water. Iron is excess in S5, S7, Samples of Raipur surroundings, Raipur district.

Manganese: The maximum allowable concentration and permissible concentration of Mn in drinking water is 0.5 ppm and 0.05ppm, respectively according to WHO, BIS and ICMR (Satyanarayana and Shastri, 1983). Most of the water samples analyses had less than 100 ppb (0.1 ppm).

Zinc: Zinc is an essential plant and human nutrient. The maximum allowable concentration and permissible concentration of zinc in drinking water are 15 ppm and 5 ppm, respectively. According to WHO, ICMR, APHA the average value of zinc in all the water samples are below the permissible limit. The concentration of zinc in all water samples is below 1000 ppb (1 ppm). Hence all the samples collected from all sources are below from maximum permissible limit for Zinc.

Nickel: The permissible concentration of nickel in groundwater is 0.02 ppm. Remaining samples are within the permissible limit. S5, S6, samples are out of the limit.

Chromium: The maximum permissible limit of chromium in drinking water according to WHO and ICMR is 0.05 ppm. Small amount of chromium is essential to mammals but in excess it produces harmful effects. The obtained data shows that chromium content in water is within limits prescribed by the various authorities except slightly higher in S4, S5, S7 in Raipur district.

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Lead: It is very toxic element, which accumulates in the skeletal structure of man and animal. The maximum permissible concentration of lead in drinking water is 0.05 ppm. According to WHO and ICMR almost all the water samples had less than50 ppb of lead.

CONCLUSION

Systemic study of the chemical data obtained as results of analysis of ground water samples from Raipur dist and Andhra Pradesh are affected by one or more of nine studied trace metals. At least 60% of the population is still dependent on ground water sources for drinking purpose, especially in outer city and distant villages. According to the analysis of some water samples of Raipur district of CG, the manganese, lead and zinc are not found beyond limit, while copper, iron and chromium are found towards little higher sides on some places and nickel is found higher only in some areas of Raipur surroundings ,but these metals are essentials for our body metabolism. They play role of co-factor in activity of enzyme. Thus to keep ground water free from Cr, Fe, Mn, Pb, etc., and other ions the following recommendation should be taken in to account.

1. Chromium enriched refuge should be properly treated and then disposed off. Construction of ground water structure on dumping sites or its immediate vicinity should be avoided as Cr pollution relates to point source. 2. Industries should be set up their effluents treatment plants (ETP) independent or jointly as per norms and should remain effectively operational in order to safe guard the ground water for future generation. 3. In agricultural excessive use of nitrogenous and phosphates fertilizers should be avoided so that it does not leach down to ground water and deteriorates its quality.4. Mass awareness should be generated about the over use of pesticides, its harmful effects on quality of water and human health.

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Biomechanics of Twisting in Gymnastics: Based on Literature Review

Rajkumar Sharma,
Grade-I Gymnastic Coach, Sport Authority of India,
NSTC/STC, Malhar Ashram, Ram Bagh,
Indore (M.P.)
E-Mail- sharmagym59@yaoo.co.in

Jai Shankar Yadav
Assistant Professor
Dr. C. V. Raman University
Kota-Bilaspur (Chhattisgarh)
jaishankar.cvru.@gmail.com

I. INTRODUCTION

An understanding of how a gymnast twists in the air is still not complete, even in the mind of physicists and mathematicians; however, the past decade has seen much progress in identifying which of these mechanisms are most effective or contributory to successful twisting.

A major problem has been that, although the human body must obey the laws of physics, it does not act as a rigid system and therefore is not easily analyzed. In fact, a survey (Frohlich, 1979) of the 59 physicists who responded to a questionnaire, more than 56% believed that a somersaulting diver could not initiate a twist having left the board; something practitioners have known to be readily possible for some time.

A paper was published (Leigh & Bengerter 1967) which attempted, with the use of cinematography, to demonstrate that coaches were poorly prepared in basic theory because all in the study believed (probably correctly) their divers and trampolinists to have initiated their twists in the air, contrary to what the authors believed the film to show.

The reasons for past difficulties are not hard to understand. All "knew" that according to the principle of conservation of angular momentum, rotation could not be initiated in the absence of an applied torque. Also until the late 1960s not many aerial performances in the sense of multiple somersaults with delayed multiple twists had been seen; the common appearance of which finally did challenge theoreticians to explain. Finally it may well be, and the issue is far from resolved, that as many as three or four twisting mechanisms are active during one performance and that these mechanisms may interact throughout a complicated twisting and somersaulting performance.

Before understanding the biomechanics of twisting in gymnastics. we should know the principle of angular momentum, which is simply stated as:

Angular momentum = moment of inertia x angular velocity (AM = Iw).

1. Angular momentum can be viewed as the quantity of rotation a body has about some given axis as a result of its speed of rotation and the distribution of mass about the axis.
2. Moment of inertia (I) is a measure of how the mass of body is distributed about the axis of rotation. The further the mass is away from the object, the larger the "I" and vice versa. In fact "I" increases as the square of the distance of the mass and therefore small increase in distance can result in relatively large increases in "I."
3. Angular velocity (w) is simply the stated speed of rotation about the axis of rotation.
4. Since AM must be conserved (unless an external force or torque is applied) the product of "I" and "w" must stay constant. However the human body can change position in the air which has the effect of changing "I" and thus "w." If a gymnast tucks up in the air, "I" will decrease and then so that "AM" will be conserved, "w" will increase accordingly and vice versa.
5. No discussion of rotation is meaningful unless axis of rotation is specified.

Angular momentum can be created only by the application of an eccentric force, that is, a force that at some distance from the axis of rotation. Such a force is known as a torque and is most effective the further that it is applied from the axis.

- TWISTING MECHANISMS

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For purpose of simplification, validated twisting mechanism may be identified in the following manner:

1. Torque twists
2. Non torque twists

(i). Zero angular momentum mechanisms
(a). Cat twist or two axis theorem
(b) Hula hoop or conical twist
(ii). Non zero angular momentum mechanisms
(a) Tilt twist

1. TORQUE TWISTS

Clearly the most effective twisting mechanism is to apply a large torque relative to the longitudinal axis during take off. The gymnast will then have a considerable twisting "AM" in the air and then if the arms have been held wide (large "I"), "w" can be increased quite significantly simply by pulling the arms in (small "i").

For most twisting gymnastics skills the application of torque during take off is the major twisting mechanism.

2. NON TORQUE TWISTS

Two conditions can occur, the gymnast can begin with total body "AM" equal to zero about all axes or the gymnastics can begin with some quantity of "AM" about one of the non twisting axes (somersaulting or cartwheeling).

(i) Zero "AM" Twisting Mechanism

(a) Cat twist: It is possible to perform a limited twist by varying the relative movements of inertia of the upper and lower body, in essences, successively twisting one part of the body with small "I" against one with large "I" which will therefore twist less in the opposite direction.

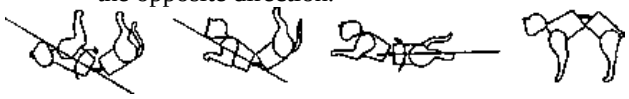

Figure 1.

(b) Hula Hoop: The simplest explanation is that if a body part is used to introduce an extraneous component of "AM," the total body must turn in the opposite direction to maintain the total "AM" at zero. The hand or arms could be rotated overhead. But more effective because of its mass is to use the trunk in a hula hoop fashion. The total body will respond by twisting in the opposite direction about the longitudinal axis.

It is important to recognize that these mechanisms under conditions of zero total body "AM" provide only for a reorientation of the body in space while certain body parts are moved and that the twisting action ceases immediately that the body actions are stopped.

(ii) Non Zero "AM" twisting Mechanism

(a) Tilt twist: If a gymnast has considerable angular momentum about the transverse (somersaulting) axis it has now been established that the most effective mechanism for initiating a non torque sustained twist is what is commonly referred to as the tilt twist. This took many years to discover because it had been neglected that "AM" is a vector quantity, that is, it has a magnitude component and a directional component. For "AM" to be conserved both components must be considered. The direction of the angular momentum vector during a somersault is along the axis of rotation (left for forward somies and vice versa).

The tilt mechanism requires the gymnast to shorten one side of the body relative to the other (by throwing the are, one up, one down, or by side flexion or both). This has the effect of tilting the somersaulting axis away form the "AM" vector the direction of which (in order to be conserved) requires the body to undertake a compensating sustained twist about the longitudinal axis as long as the tilt exists.

Though this is not a mathematical paper the simplified mathematics of what occurs can be very enlightening.

Amt = AMssine ……I)

wt = ws (Is/Is) sine ……..(II)

where t = twist s = somersault J = angle of tilt

Equation (I) gives the relationship of how much twisting "AM" is induced by a given degree of tilt, but equation (II) is especially useful once it is understood. If we assume that we wish to maximize the speed of the twist (wt) then the equation tells us the following.

1. wt will be larger, the larger the ws (the speed of the initial somersault).
2. wt will be the largest if the somersaults are performed in the layout position since the value of Is/Is is maximized if the numerator

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is maximized and the denominator minimized (a layout position in each case).

3. wt will be greatest the greater the amount of tilts or the greater the amount one side is shortened relative to the other since the value of sine increases from 0 to 1.0 as the angle o approaches 90 degrees. In other words if the body tilts sideways (J = 90 degrees; sine = 1.) completely then the total somersault is converted to twist.

The message should be clear. One of the most effective uses of the tilt mechanism is in multiple layout somersaults with late twists (i.e., double layout with full out) which gives a large value of ws maximizes the value of Is/Is and perhaps the sine because of the arch to hollow body position change.

It has been demonstrated that in backward somersaults the feasible tilt of 10 degrees will result in a twisting speed of three twists for each somersault forwards the feasible tilt is 20 degrees, which can result in 5 1/2 twists per somersault.

CONCLUSION

It is likely that in most twisting gymnastics skills there is an interaction of the various twisting mechanisms. Although the "cat twist" and the "hula hoop" mechanisms were explained in reference to zero angular momentum twists it is clear that they may also be active in non zero angular momentum twists. In these cases the "cat twist" likely assists in initiating twist and the "hula hoop" mechanism assists in and may be sufficient for sustaining it although it is not clear if these actions can be maintained consciously throughout a complex performance.

In all cases, other things being equal, a torque twist is the most effective twisting method provided it does not aesthetically detract from the performance or result in modification of other performance parameters (i.e., height or somersaulting "AM"). Ion delayed non zero "AM" twists the tilt twist mechanism is the most effectively and the only one that can create a sustained twist. It is the only in-air mechanism that is certainly under conscious control during the initiation and maintenance of complicated twisting skills.

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Spectrophotometric Analysis of Iron Content in Spinach

Namita Bhardwaj
Department of Chemistry,
Dr. C.V. Raman University, Kota, Bilaspur (C.G.
E Mail: nbnillisweet@gmail.com

Abstract: - Iron is an important mineral in our diets. Although considered a trace mineral (one that is spinach for different lengths of time in water. This will determine how much iron has been lost from the spinach and also give a good indication of which is the best way to cook spinach to preserve as much of the iron as possible. Sources of iron. The purpose of this investigation is to see the effect in iron content of spinach through boiling of deficiency condition known as anemia. Certain foods, such as spinach cooked broccoli and cauliflower[2] are natural needed in relatively small quantities), diets lacking iron can contribute to the

Keywords: - spinach, oxalates spectrophotometric, iron, absorption.

INTRODUCTION

Iron is one of the many minerals required by the human body. It is used in the manufacture of the oxygen-carrying proteins hemoglobin and myoglobin. A deficiency of iron in the body can leave a person feeling tired and listless, and can lead to a disorder called anemia. Many of the foods we eat contain small quantities of iron. The United States Department of Agriculture states that 180g of boiled spinach contains 6.43 mg of iron. In this analysis the iron present in a sample of spinach is extracted to form a solution containing Fe^{3+}(Ferric) ions. To make the presence of these ions in solution visible, thiocyanate ions (SCN^-) are added. These react with the Fe^{3+}ions to form a blood-red coloured complex:

$Fe^{3+}(aq) + SCN^-(aq) \rightarrow [FeSCN]^{2+}(aq)$

By comparing the intensity of the colour of this solution with the colours of a series of standard solutions, with known Fe3+ concentrations, the concentration of iron In spinach may be determined.

MATERIALS AND METHODS

The standard solution of Fe^{3+} ions was prepared through ferric ammonium sulphate by conventional method. 100 grams sample of spinach was boiled with 500ml of water for 10,15,20,25 and 30 minutes. Volume of remaining water after boiling was measured then bottled and stored in fridge overnight, keeping solution at constant temperature before use in the experiment.

In extract of boiled spinach usually iron is present as Fe^{2+}ions and Fe^{3+}ions. Since Fe^{2+} does not form a coloured complex with thiocyanate, permanganate ions are added to oxidize all the $Fe^{2+}$to form Fe^{3+} ions. 10 ml of 1 mol L^{-1} of ammonium thiocyanate solution is added to each 10 ml sample solution of spinach.

These additions are carefully timed so that all samples react for the same period of time. The absorbance is measured at wavelength of 480 nm for each coloured solution using spectrophotometer.

RESULT AND DISCUSSION:-

S/N	CONCENTRATION OF Fe3 +ions	ABSORBANCE
1	0.1N FAS SOLUTION	1.80
2	.05NFAS SOLUTION	1.71
3	.O3N FAS SOLUTION	1.55
4	.025N FAS SOLUTION	.468
5	.02N FAS SOLUTION	.385
6	EXTRACT OF 10 MINUTE BOILED SPINACH	.395
7	EXTRACT OF 15 MINUTE BOILED	.470*

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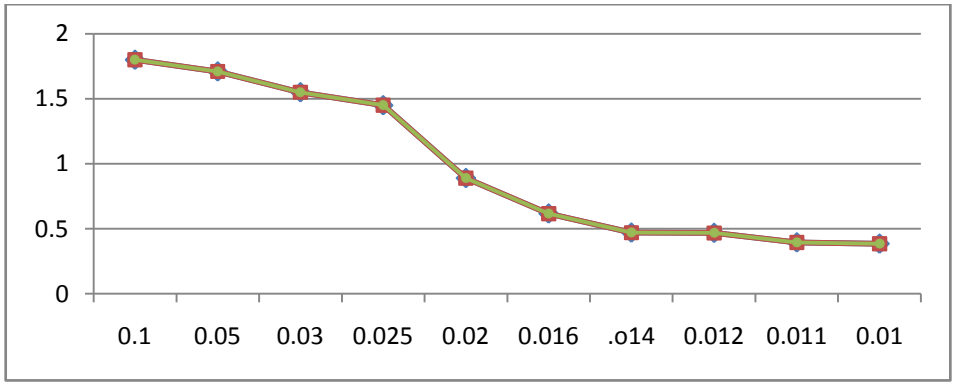
	SPINACH	
8	EXTRACT OF 20 MINUTE BOILED SPINACH	.617
9	EXTRACT OF 25 MINUTE BOILED SPINACH	.890
10	EXTRACT OF 30 MINUTE BOILED SPINACH	1.45

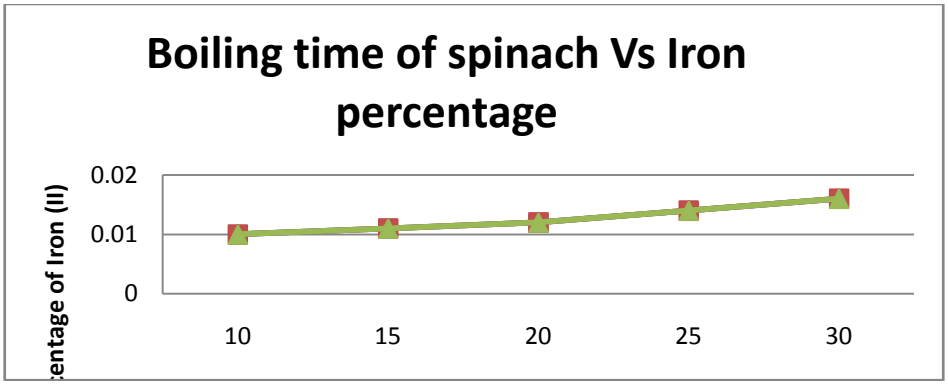
The above table shows that as the boiling time of the spinach increased, the amount of iron lost through boiling also increased. However the percentage mass of the iron lost was not that significant because it was less than 1% of the total weight of the spinach in all the different samples. According to these results, only small amounts of iron were present in the water after boiling and although there seems to be an apparent increase in the amount of iron lost through boiling, the percentage different shows that this is not a significant amount even though there was change present.

This suggests that spinach is able to retain majority of its iron content during boiling of its leaves.

GRAPH -1 ABSORBANCE VS CONCENTRATION



GRAPH- 2



The above graph shows the relationship between the boiling time of spinach and the percentage of iron (II) in the 100gms of spinach boiled. The relationship between these five averages seems to be linear and strong. In theory as the spinach boils for a longer time, it will become more susceptible to the heat and therefore lose its nutrients more readily then for a shorter amount of time[8-9]. From the results it is hard

to judge whether it is linear or exponential trend as the percentage are small and could have a gradual exponential curve forming

CONCLUSION

From the data obtained and graph drawn, we can conclude that boiling the spinach for longer length of time have an effect on the iron content in spinach. There is an obvious trend shown that as the boiling time increases for the spinach there is an increased percentage of iron (II) in water. This shows that in order to retain maximum iron in the spinach, it will only need to be boiled for a short time before consuming.

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I am very thankful to Dr. A.S. Jhadgaonkar (Ex. Vice chancellor of Dr.C.V.Raman University) for his guidance.

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Study of Air Quality and Noise Status of Surrounding Area of Mahamaya-Dulki Iron Ore Mine, Dalli-Rajhara, Dist. Balod

S S Prasad
Dept. of Environ. Sci. & Engineering
BIT Durg, 491001

Santosh Kumar Sar
Professor,
Dept. of Engineering Chemistry,
BIT Durg, 491001

Sanju Sinha
C.G. Regional Science Society,
Raipur

Abstract- The growth of mining/industry significantly contributes towards economic progress of the country; however, it brings along with it a number of environmental problems. Development process results in more demand of iron hence mining of iron ore has increased substantially in the recent past. Many of environmental problems can be avoided, if the status of the environment and impact of mining on the environment are perceived at the beginning of the mining. Dalli-Rajhara iron ore deposit area, spread over Durg-Balod-Rajnandgaon Districts in Chhattisgarh State has a large reserve of good quality iron ore. Some mining in the area is going on and increase in the area of mining, in this region, in near future, is inevitable. The present studies have been carried out to evaluate the status of the air environment and noise level in this region. Studies were made for: sulfur di-oxide (SO_2), nitrogen oxides (NO_2), suspended particular matter (PM_{10}) respirable particulate matter ($PM_{2.5}$). Monitoring was done at 10 places for three seasons.In summer season the SO_2 values were ranging between 6.4 and 9.2 µg/m^3 and NO_2 values were ranging between 7.6to13.8 µg/m^3. Suspended particulate matter (SPM_{10}) values were ranging between 100 to 280 µg/m^3 while respirable particulate matter (PM2.5) were ranging between 36 to 94 µg/m^3.Noise level were recorded in summer season during day time were ranging between 39.6 to 57.7 db(A) while in the night time the range was between 30.3 to 47.4 db(A). In rainy season the SO_2 values were ranging between 6.2 and 9.3 µg/m^3 and NO_2 values were ranging between 7.7to12.2 µg/m^3. Suspended particulate matter (SPM_{10}) values were ranging between 90 to 250 µg/m^3 while respirable particulate matter (PM2.5) were ranging between 32 to 90 µg/m^3. Noise level were recorded in rainy season during day time were ranging between 41.3 to 55.3 db(A) while in the night time the range was between 29.8 to 46.6 db(A). In winter season the SO_2 values were ranging between 6.4 and 9.4 µg/m^3 and NO_2 values were ranging between 7.3to11.8 µg/m^3. Suspended particulate matter (SPM_{10}) values were ranging between 90 to 260 µg/m^3 while respirable particulate matter ($PM_{2.5}$) were ranging between 34 to 96µg/m^3. Noise level were recorded in winter season during day time were ranging between 43.2 to 56.9 db(A) while in the night time the range was between 33.8 to 49.3 db(A). This baseline data on the atmospheric environment of the area will be useful for future evaluation of the impact of mining on the atmospheric environment of the area.

Key words: Mining, SO_2, NO_2, PM_{10}, $PM_{2.5}$, Noise.

I. INTRODUCTION

Environmental impact assessment is the formal process used to predict the environmental consequences of a plan, policy, program, or project prior to the decision to move forward with the proposed action. An impact assessment may propose measures to adjust impacts to acceptable levels or to investigate new technological solutions.The Ministry of Environment and Forests (MoEF), Govt. of India, has prepared laws on Environmental Impact Assessment in India. The main laws in action are the Water Act (1974), the Indian Wildlife (Protection) Act (1972), the Air (Prevention and Control of Pollution) Act (1981) and the Environment (Protection) Act (1986), Biological Diversity Act (2002) [8].

There is perhaps a set of 'core' criteria that must be met for an EIA system to work, and there may be additional criteria missing from Wood's list that are especially appropriate and important for small developing countries. [1].Various mining operations

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have a drastic and a strong negative effect on the local environmental quality [7][8]. Mention about some of the standards for discharging air and mine effluent as well as environmental standards for India are described. [5]

In India most of the iron ore are located below the forests, Therefore, mostsignificantenvironmental damagesduetoironoreminingare the destruction of forest cover associated with the fragmentation and destruction of wildlife habitat. Theironore mining, through exploration,exploitationandassociatedactivitiesaffecta ir, water,land,flora&fauna of whichdustisthesinglelargestairpollutant.Chhattisgarh has about 18 per cent of the total iron ore reserves of India. This state produced about 20 per cent of the total iron ore production of the country in 2002-03. The prominent deposits being those of Bastar and Durg-Balod districts.

The present studies were carried out around the Mahamaya-Dulki iron ore mining areain Dalli Rajhara range. The area, located at a distance of 111 kms South-West of Bhilai Steel Plant,is well connected by road.Environmental status study has been conducted within an area of 8 km radius around the Mahamaya-Dulki iron ore mine, which included the 10 villages where the air sampling and noise level recording stations were located:

The villages selected for present studies were:

1. Dulki,2. Kambsur,3. Pusvada,4. Nalkalan,5. Kumudratre, 6. Tuedand, 7. Dorba,

8. Kopedera, 9. Resuli, 10. Kalwar.

The present studies were made to:

1. determine status of air qualityfor
   i. SO_2
   ii. NO_2
   iii. PM_{10}
   iv. $PM_{2.5}$
2. To determine Status of noise

- MATERIALS AND METHODS

In the present study the air andnoise, were analyzed with standard methods. Air around the study area, were analyzed by the methods following MoEF (CPCB)[2] [3] [4][6]. Noise was measured by LT-LUTRON, SL-4010 Sound Level Meter.

I. Methods for Analysis of Air and Noise

i. SulphurDioxideinambientair:
Sulphur di-oxide in the ambient air was determined at selected villages. Sulphur di-oxide concentration was determined by ImprovedWestandGaekemethod [6].

ii. Nitrogen di-oxide in ambient air:
Nitrogen di-oxide in the ambient air was determined at selected villages. Nitrogen di-oxide concentration was determined by ModifiedJacobandHochheiserMethod[6].

iii. Suspended

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ParticulateMatter(PM_{10})and Respirable Particulate Matter ($PM_{2.5}$) inambient air: Suspended ParticulateMatter(PM_{10}) and Respirable Particulate Matter ($PM_{2.5}$) in the ambient air were determined at selected villages. Suspended ParticulateMatter(PM_{10}) and Respirable Particulate Matter ($PM_{2.5}$)were determined by GravimetricMethod[6].

iv. **Noise:**Noise level were recorded at selected villages by LT-LUTRON, SL-4010, Sound Level Meter both during day and night in all the seasons.

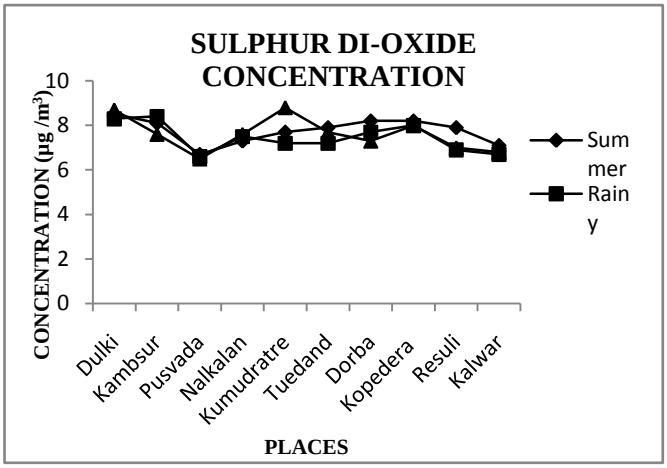
- RESULTS AND DISCUSSION

During the present studies status of the ambient air quality and noise level of the study area has been measured. Studies were carried out in three seasons viz. summer, rainy and winter during the year 2014-2015.

i. **Sulphurdi-oxideinambientair (Fig. 1.)**

Sulphur di-oxide concentration was measured in three different seasons, viz. summer, rainy and winter at 10 different places. Sulphur di-oxide concentration was found to range from 6.2 µg /m^3 to 9.4 µg /m^3 **a**t different places in different seasons. The minimum value was recorded at Pusvada and Nalkalan villages in rainy season, while the maximum value was recorded at Kumudratre village during winter season. Seasonal average values for different places ranged from 6.5 µg /m^3, recorded at Pusvada village in winter to maximum 8.8µg /m3, recorded at Kumudratre village in winter. Seasonal average values for all the sites were almost similar between 7.45 to 7.76 µg /m^3.

Fig.1.: Ambient Air quality status For SO_2.



ii. **Nitrogendi-oxideinambientair (Fig. 2.)**

Nitrogen di-oxideconcentration was measured in three different seasons, viz. summer, rainy and winter at 10 different places. Nitrogen di-oxide concentration was found to range from7.3µg /$m^3$to 13.8µg /m^3**a**t different places in different seasons. The minimum value was recorded at Nalkalan village in winter season, while the maximum value was recorded at Dulki village during summer season. The average values for different places, ranging from 7.9 µg /$m^3$to 11.9 µg /$m^3$was found to be minimumat village Nalkan in winter while the maximum was recorded at Dulki in summer. Seasonal average

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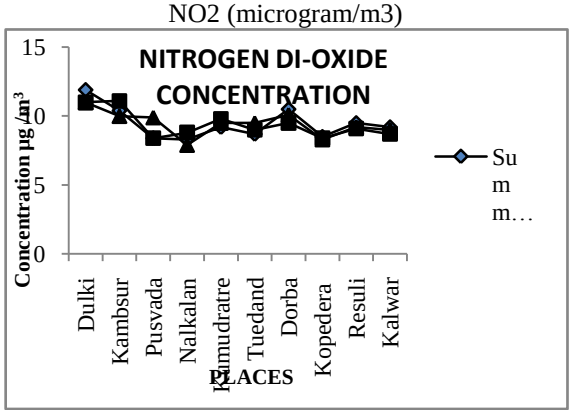
values were almost similar between 9.38 to 9.46 µg /m^3.

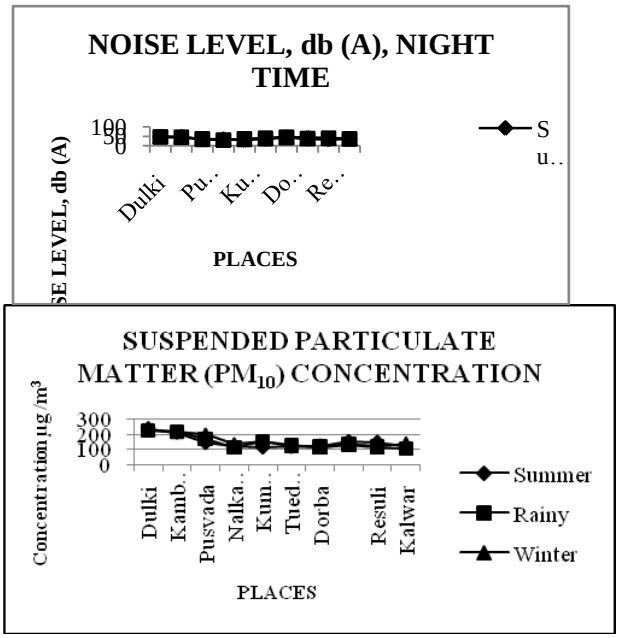
Fig.2.: Ambient air quality status for NO2 (microgram/m3)



iii. Suspended particulate matter (pm_{10})inambientair (Fig. 3.):

Suspended particulate matter (PM_{10})concentration was measured in three different seasons, viz. summer, rainy and winter at 10 different places (Table-3). Suspended particulate matter (PM_{10})concentration was found to range from 90 µg /$m^3$to 280 µg /m^3 **a**t different places in different seasons. The minimum value was recorded at Kalwar village in rainy season and Dorba village in winter season, while the maximum value was recorded at Dulki village during summer season. The average values for different places ranged within 105 to 235µg /m^3. The minimum average value was obtained at Kalwar village in rainy season while the maximum value was obtained at Dulki village in summer season. Seasonal average values were found to vary within a narrow range between 145 to 153 µg /m^3.

Fig. 3.:Ambient Air quality status (suspended particulate matter (PM $_{10}$) (µg/m3)



iv. Respirable particulate matter ($pm_{2.5}$)inambientair (Fig. 4.)

Respirable particulate matter ($pm_{2.5}$)concentration was measured in three different seasons, viz. summer, rainy and winter at 10 different places. Respirable particulate matter ($pm_{2.5}$)concentration was found to range from32µg /$m^3$to 96µg /m^3**a**t different places in different seasons. The minimum value was recorded at Kalwar village in rainy season, while the maximum value was recorded at Dulki village during winter season. The average values for different places ranged from 36 to 88 µg /m^3The minimum average value was obtained at Kalwar village in rainy season while the maximum value was obtained at Kambsur village in summer season. Seasonal average values ranged within a very narrow range between 54 to 61 µg /m^3.

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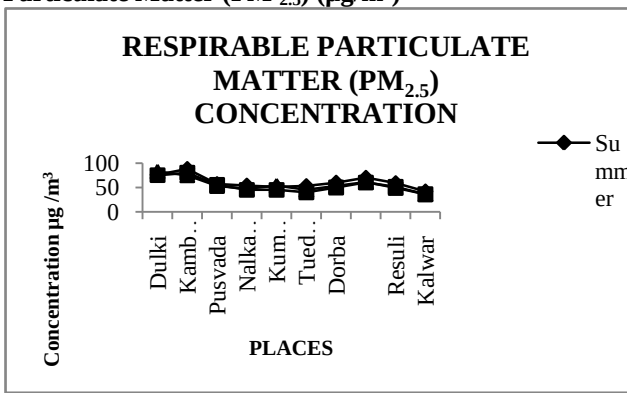
Fig.4.: Ambient Air quality status of Respirable Particulate Matter (PM $_{2.5}$) (µg/m^3)



v. Noise level of the area (Fig. 5.)

Noise levelwas measured in decibel (db). in three different seasons, viz. summer, rainy and winter at 10 different places during day and night time. Noise levelwas found to range from 29.8 db to 57.7 db **a**t different places in different seasons. The minimum value was recorded at Nalkalan village in rainy season during night time, while the maximum value was recorded at Dulki village in summer seasonduring day time. Decibel is a logarithmic unit, hence, values obtained in different seasons or the values recorded for different places cannot be averaged. However, seasonal values were averaged only to get an idea about the season having higher or lower noise levels. The averaging shows that both during day as well as night time noise values were higher during the winter season.

Fig.6.: Noise Level status at day time.

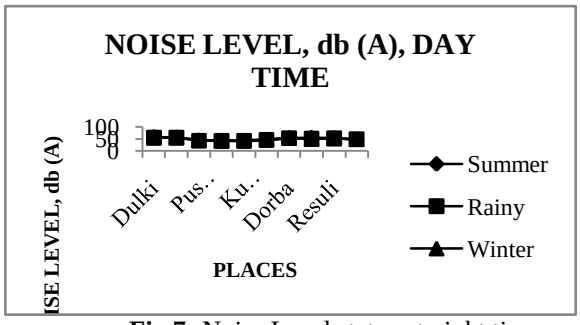


Fig.7.: Noise Level status at night time.

DISCUSSION

Sulphur di-oxide concentrationin the air of study area, ranging within 6-10µg m^{-3} is far below the prescribed upper limit of tolerance of 50 µg m^{-3}. The presently obtained values for the sulphur di-oxide, thus indicates very clean air with respect to this component of the air. Nitrogen di-oxide concentration ranging between 7 to 13 µg m^{-3} is also far below the prescribed upper limit of tolerance of 40 µg m^{-3}. The air is thus clean also with respect to the concentration of nitrogen di-oxide. Suspended particulate matter of 10 µ diameter (PM_{10}) has the concentration range of 110 to 280 µg m^{-3}. This is sufficiently higher to the prescribed limit of 60 to 100 µg m^{-3}. The values, sufficiently higher than the permissible limit appear mainly to be due to non-metalled roads around the places at which the samples were collected. The suspended particulate matter of the size 2.5 µ in diameter had the concentration of 32 to 96 µg m^{-3}. Like the PM_{10}, the concentration of $PM_{2.5}$ is also higher than the prescribed upper limit of tolerance of 40 µg m$^{-3.}$ This higher concentration is highly undesirable, because this fraction of particulate matter can easily enter the lungs and can get deposited in the alveoli of the lungs. This deposition is hazardous as the deposition can cause development of sclerosis in the lungs.

Maximum noise level of 57.7 dB (A) during day time was recorded in summer season for village Dulki is very close to the permissible limit. The day time noise levels for other places being lower than this noise level are almost lower than the upper limit of the permissible limit of the noise. The values, thus, indicate that the area is relatively calm. The night time noise level, automatically were lower than the day time values but the permissible level of noise for the night time is also lower. The observed values were higher than the permissible limit for some places but were generally lower than the permissible limit for most of the places. Thus the area of study can be considered to be calm during night time also in all the seasons of study viz. the summer, rainy and winter seasons.

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Study of Plants for Their Chlorophyll Content, Phenolic Content and Antioxidant Properties

Kavita Patel
Dr C.V.Raman University, Kota, Bilaspur

L.K.Thethwar
Ex Principal, Govt. College.

Abstract: These two plants A. paniculata and M. concanensis are widely cultivated in South East Asia for their medicinal properties A. paniculata belongs to the family Acanthaceae, Genus-Andrographis, Species-paniculata.Moringa concanensis is widely used in South East Asia as nutritional supplliment.
Both are well known for their antioxidant activities. In the present work their chlorophyll content, phenolic content and antioxidant properties.

Keywords: King of bitters, Antibioticproperties, Antipyretic, DPPH radical scavanging activity ,Dental problems, Hepatostimulant, Blood purifier.

I. INTRODUCTION

These two plants are different in their taste due to their chemical constituents in different quantities. A. paniculata contains lactones, diterpenoids, glycosides [1]. M. concanensis is a good source of proteins, Ca, iron, beta carotene converted into vitamin A in the human body [2]. It's seeds oleic acid contents are better as compared to the other oils.[3]

- **Material and Method**

1. **soil correction by fly ash**: Fresh fly ash from NTPC Korba was sun dried during the field experiments for the plants. A. paniculata and M. cancanensis. Fly ash amended soil showed rise in pH, soil conductivity, available P, organic carbon and protease activity. This protease activity hydrolysed protein into simple amino acids. Plant roots took it and synthesized its own protein [4]

The activities of amylase and invertase in soil (mg glucose g^{-1} soil h^{-1}). Soil respiration increased and morphological parameters like root length, shoot length, leaf area and leaf counts and plant yield increased as reported by other authors in Ground nut, radish etc [5].

2. **Chlorophyll estimation**: The Chlorophylls are the essential components for photosynthesis and bioactive compounds in the leaf of . A. paniculata and M. cancanensis [6].

Principal: - Chlorophyll is extracted in 80% acetone and absorption at 663 nm and 645 nm in spectrophotometer as –

(1). mg chlorophyll a/g tissue $=12.7(A_{663} - 2.69(A_{645})$ X V/1000 X w)

(2). mg chlorophyll b/g tissue $=22.9(A_{645} - 4.68(A_{663})$ X V /1000 X w)

(3). mg of total chlorophyll /g tissue $=20.2(A_{645} + 8.02(A_{643})$ X V /1000 X w)

Where A = Absorbance at specific wave length

V = Final volume of chlorophyll extract in 80% acetone

W = fresh weight of tissue extracted

Phenolics estimation:- Total phenols in A. paniculata and M. concanensis is done by using Folin-ciocalteau reagent [7]

Principal:- Phenols react with phosphomolybdic acid in Folin ciocalteau reagent in alkaline reagent to produce molybdenum blue reagent .

It is important to note that phenolic compounds in oil seed and grains in some oil seeds and grains due to chlorogenic acid . It is range exceeds 2-4g /100 g it matters .It is to be removed [8].

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Picture No. 01
Family : Acanthaceae
Genus : Andrographis
Species : paniculata
Common name : Kalmegh

Picture No. 02
Family : Moringaceae
Genus : Moringa
Species : concanensis
Common name : Konkan

- **Antioxidant measurement**

Procedure :- The antioxidant carried out in the plant materials as described below.
The decoloration due to reaction of antioxidants with stable free DPPH free radicals was measured spectrophotometrically. In A. paniculata leaf, stem and fruit extract were collectively used . Results are compared ahead. Results are described ahead.
DPPH activity was calculated using the formula Presence of inhibition of DPPH activity = (Absorbance of control - Absorbance of sample / Absorbance of control)* 100

RESULT AND DISCUSSION

Table No 1 Chlorophyll content in the leaves of A. paniculata and M. concanensis in mg/g

S.No.	A. paniculata	M. concanensis
1	75.87	59.75

Table no 2 Total phenolics :- In the leaves of A. paniculata and in the flowers of M. concanensis in mg of Gallic acid equivalent

S.No.	A. paniculata leaves	M. concanensis flowers
1	70 mg	4.912 mg/g

Table no 3 Antioxidant property is due to phenoic contents in the plant parts. According to cal. et al (2004) there is a positive linear correlation total phenolics and antioxidant property .[9][10] So antioxidant properties A. panicullata and M.concanensis in mg of Gallic acid equivalent.

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S.No.	A.panicnala leaves seeds etc[11][12]	M.concanensis fresh flower in ethanol water extract [13][14]
	80%	75%

The chlorophyll estimation suggests that A. panicalata has higher is higher as compared to that of M.Concanensis

Accordingly the phenolic contents of A.paniculata is 70 gm of Gallic equivalent and that of M.concanensis is 4.912 mg/g

So according to the studies of Cal. Y.et al the antioxidant property is higher as compared to that M. concanensis.

So, A. paniculata is antifungal, antibacterial and blood purifier, used in the treatment of leprosy, gonorrhea and seasonal fever. According to Shri M.D. et al.it inhibits cell cycle progression in human colorectal carcinoma.[15].

Similarly M. concanensis is widely used in India as analgesis, potential antitumor, antifungal, diuretic, used in ophthalmic prepration, veneral affection and lipid disorders.[16].

Finally, Antioxidants are New Generation Therapeutic base for treatment of polygenic disorders. Free radicals are reactive $[O_2^{\cdot}]^{-}$ and its similar counter parts. Others are $[Rs^{\cdot}]$, $[NO^{\cdot}]$ free radicals these are generated through environmental pollutants as reffered to by A.K. Tiwari.[17]. According to A.K. Tiwari., in foods, antioxidants have been defined as a substance present in small quantity and prevent greatly retard the oxidation of easily oxidizable matter by free radicals.

For example, phenol (AOH), the reaction of interest with $ROO^{\cdot}$ is : -

$$AOH + ROO^{\cdot} \rightarrow AO^{\cdot} + ROOH$$

This H – atom transfer reaction effect stops the chain reaction and used in the treatment of Atherosclerosis where oxidative stress especially oxidation of low density lipoproteins (LDL)[18].

In stroke, fat- laden gunk gradually builds up on the surface of passive artery walls and deposit plaque. Which grows and prevents blood the intended tissue and blood starved tissue dies and cardiac muscle succumbs, it leads to heart attack. [19]

Similarly Alzheimer's disease, Parkinson's disease , Cancer and diabetes and diabetic combinations can be controlled by the use of medicinal plants A. paniculata and M. concanensis.

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Study of Nonlinear Pulse Propagation In Cardiovascular System

A C Biyani, B G Sharma
Department of Physics,
Govt. Nagarjuna College of Science
Raipur, C.G. 492010India

***Abstract*- A study of nonlinear pressure pulse propagation in a Systemic Artery of a man has been done using nonlinear transmission line model. Model has been used to simulate steeping of pressure wave from Aorta to Brachial Artery.**

(IndexTerms- cardiovascular (cv) system, nonlinear transnmission line)

The applications of transmission line theory are well known in various fields of engineering and physical sciences. Apart from this the theory has also been applied successfully to other fields, like in Haemo- dynamics etc. There has been considerable interest in transmission line model of Haemo-dynamics in arterial tree [1]. Depending on aim and required accuracy in research, models of different dimensionality has been developed. In zero dimensional or lumped parameter [2,3] models a uniform distribution of variables like pressure, flow rate in any compartment of CV system is assumed. In higher dimensional models variation of parameters in space and time are taken care. For study of pressure wave transmission in cylindrical arteries one dimensional model is more appropriate. Apart from lumped parameter models, transmission line models are developed to describe pressure flow relationship, pulse wave velocity in arterial tree. Because of its higher precision, lower calculation complexity and broader adaptability, distributed transmission line model has been accepted widely. Since the first distributed transmission line model of human arterial tree was proposed by MacDonald and Taylor, [4-6] various transmission line models of human arterial tree have been developed and applied to analysis of pulse wave propagation in human arterial tree and haemodynamics [7-11]. The earlier electrical circuit models used passive components (resistors, capacitors, inductors) to model arterial system [12,13]. With the growing availability and increasing complexity of computers, in subsequent years, models are simulated on computer with more flexibility including nonlinear behavior [14-20]. In a work on human arterial system LR John [21] developed mathematical model based on electrical transmission analogy for calculation of peripheral impedance.

In this paper a distributed transmission lines model is used to study arterial system [13,14,22]. The electrical equivalent parameters of arterial segments are obtained by considering a short uniform arterial segment of length Δz carrying an incompressible irrotationalnewtonian fluid in the z direction, which causes a drop in pressure, Δp . Artery is assumed to be pure elastic axi-symmetric cylindrical tube. Navier-Stokes equation for flow of blood in cylindrical co-ordinates is

$$\frac{\partial v_z}{\partial t} + v_r\frac{\partial v_z}{\partial r} + v_z\frac{\partial v_z}{\partial z} = -\frac{1}{\rho}\frac{\partial p}{\partial z} + \frac{\mu}{\rho}\left[\frac{\partial^2 v_z}{\partial r^2} + \frac{1}{r}\frac{\partial v_z}{\partial r} + \frac{\partial^2 v_z}{\partial z^2}\right] \quad (1)$$

Here ρ is density of blood and μ the viscosity. v_r and v_z are components of velocity in r, z direction. Since the flow is taken to be unidirectional along the z direction and the velocity gradients along the direction of flow are very small, so all terms in LHS of above equation except time derivative can be ignored. In this study Poiseuillian flow is taken for the viscous term [23]. One gets on solving

$$-\frac{\partial p}{\partial z} = \frac{\rho}{s}\frac{\partial Q}{\partial t} + \frac{8\mu}{\pi r^4}Q \quad (2)$$

where Q is rate of flow, r is internal radius and s the area of artery. The quantity L= $\frac{\rho}{s}$ called inertance per unit length represents inertia of blood. The term $\frac{8\mu}{\pi r^4}$ =R represents resistance to flow per unit length due to viscosity. Using equation of continuity we get

$$-\frac{\partial Q}{\partial z} = \frac{dS}{dp}\frac{\partial p}{\partial t} + Gp \quad (3)$$

where G is leakage per unit length. The expression $\frac{dS}{dp}$ = C is called compliance per unit length and is shown to be equal to $\frac{2(1-\sigma^2)\pi r^2}{Eh}$, where σ is Poisson ratio [22]. Then equations (2) and (3) take the form

$$-\frac{\partial p}{\partial z} = L\frac{\partial Q}{\partial t} + RQ \quad (4A)$$

$$-\frac{\partial Q}{\partial z} = C\frac{\partial p}{\partial t} + Gp \quad (4B)$$

Using the analogy of input voltage and current for the pressure and flow within a fluid, equations (4) become hydro-electric analog of following telegraph or transmission line equations [18,21]

$$-\frac{\partial V}{\partial z} = L\frac{\partial I}{\partial t} + RI$$

$$-\frac{\partial I}{\partial z} = C\frac{\partial V}{\partial t} + GV$$

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The series inductance (L), the series resistance (R), and the shunt capacitance (C) values per unit length in the transmission line equations are given by corresponding arterial parameters given below

$L = \rho/s = \rho/\pi r^2$ (5A)

$R = (8\mu)/\pi r^4$ (5B)

$$C = \frac{dS}{dp} = \frac{2(1-\sigma^2)\pi r^3}{Eh} = \frac{3\pi r^3}{2Eh} \quad (5C)$$

takingσ =0.5.Fig 1 represents transmission line analog of short segment of artery of length Δz over which the pressure and flow rate changes by ΔP and ΔQrespectively.

Resistance term is proportional to $(1/r^4)$, compliance term is proportion to r^3, inertanceterm proportional to $(1/r^2)$. It means for large vessels (e.g. aorta and major arteries) resistance term is small as compared to inertance term. Compliance is mainly determined by larger arteries like aorta. So, one can ignore resistance term in study of pressure wave up to brachial artery to a reasonable approximation. Also it is assumed that there is no leakage of blood which is equivalent to take G = 0. Then equations (4) reduce to

$$-\frac{\partial P}{\partial z} = L\frac{\partial Q}{\partial t} \quad (6A)$$

$$-\frac{\partial Q}{\partial z} = C\frac{\partial P}{\partial t} \quad (6B)$$

\

Under the condition of subject at rest, heart can be treated to be in steady state, and as a consequence of this the arterial system can also be assumed to be at steady state, neglecting transients. So steady state transmission line equations can be used. We seek the solution of two conductor transmission line equations (4) corresponding to a small length of artery depicted in figure-(1).

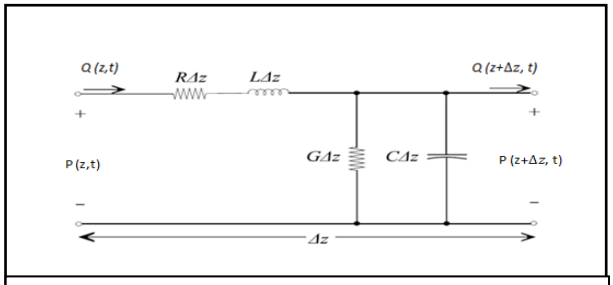

Fig 1 A transmission line analogue of small segment of artery

The problems of calculating pulsatile patterns of pressure and flow in the arterial system are complex. A non linear temporal variation of blood pressure and flow rate takes place at the root of aorta when blood is ejected from left ventricle. These variations produce complex pressure pulse patterns that are propagated throughout the arterial tree. For the analysis of these patterns, some factors must be taken care. The force that initiates the transients is itself very complex; the velocity of ventricular ejection increases rapidly with the opening of the aortic valve, then declines slowly to reach a negative nadir with the closure of the aortic valve. The distensibility of the walls of the arteries receiving this positive increment of pressure and flow has an important influence on pulse patterns. This physical property of the arterial wall is also responsible for changes in configuration and velocity of the transients as they pass over the arterial tree. The pulsatile patterns are further distorted by frictional losses and by the branching and tapering of the arteries. The resistances to forward motion of blood through the distal arteriolar beds also have their effects on the arterial pressure and flow pulses.

Inertance and compliance both terms are dependent or radius r of artery, which itself depends on pressure so L and C are function of P. Also the arteries are tapered i.e. their radii change as one moves away from aorta. So L and C depend on distance z from root of aorta also. Coefficient of elasticity E which is generally assumed to be constant is actually not so. Value of E changes as onemoves towards peripheral bed. So in transmission line equation L and C are not constant but depend on z and P. Equations (6) then become

$$\frac{\partial P(z,t)}{\partial z} = L(z,P)\frac{\partial Q(z,t)}{\partial t} \quad (7A)$$

$$\frac{\partial Q(z,t)}{\partial z} = C(z,P)\frac{\partial P(z,t)}{\partial t} \quad (7B)$$

Now effect on pressure wave pattern will be contributed by all above factors. As their contributions are not large, in this work theseare treated as additive. Some simplifications are introduced. Blood vessel is approximated with a long straight, circular cylindrical elastic tube (ignoring tapering) containing homogeneous incompressible viscous blood. Inlet of tube is considered as source of observed wave form i.e. aorta. Arterial junctions are not included in modeling. When the tube is disturbed at one place, the disturbance (wave) propagates along the tube with a specific velocity which is characterized by the geometry and the properties of both, the fluid, and the tube under consideration. When the wave amplitude is small and the wavelength is long, compared with the tube's radius R, the flow can be considered as one dimensional.

Now an equation relating vessel cross sectional area and pressure must be adopted. Constitutive relations for arterial wall material and the consequent pressure area relationships have been extensively investigated. Although arterial walls are known to be composed of a material that is to some degree nonlinear visco-elastic and Anisotropic [24] but a linear-elastic,

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incompressible membrane model of the vessel wall was assumed to be adequate. For an incompressible elastic wall material (Poisson's ratio = 0.50)

$$Dh = D_0 h_0 \qquad (8)$$

Where D_0 and h_0 are the vessel diameter and vessel wall thickness at zero transmural pressure. Using (7) and the method of analysis for stresses within the walls of thin walled vessels, the following area-pressure relationship is obtained [25]:

$$\frac{A}{A_0} = \frac{1}{1-\frac{PD_0}{h_0 Y}} \approx \left(1 + \frac{PD_0}{h_0 Y}\right) \qquad (9)$$

Where A_0 is the area of the vessel lumen at minimum pressure, *E* is the effective elastic modulus.
Now

$$C = \frac{3\pi r^3}{2Eh} \quad \text{and } C_0 = \frac{3\pi r_0{}^3}{2Eh_0}$$

or

$$C/C_0 = \left(r/r_0\right)^3 \frac{h_0}{h} = \left(\frac{r}{r_0}\right)^4 = \left(\frac{D}{D_0}\right)^4 = \left(\frac{A}{A_0}\right)^2$$

Or

$$\frac{C}{c_0} \approx \left(1 + \frac{PD_0}{h_0 Y}\right)^2 \approx \left(1 + 2\frac{PD_0}{h_0 Y}\right)$$

$= 1 + 2bP$

Where $2b = \frac{2D_0}{h_0 Y} = \frac{4r_0}{h_0 Y}$

$L = \rho/\pi r^2$ will be also be pressure dependent. In this calculation we have taken only effect on compliance which is more dominating term. It means L is taken constant.

As can be seen from table1 a typical value of $\frac{r_0}{h_0} = 6$ can be taken. Value of Y is 4×10^6 dyne/cm^2. It is equal to 3×10^3 mm of mercury. It will facilitate to take unit of blood pressure as mm of mercury.So we get $2b = 8 \times 10^{-3}$. Typical value of speed of pressure wave in human arteries is app. 500 cm/sec. [21] so time delay to brachial artery is approximately 0.08 s.

Table 1 (Ref 21)

s.n.	**Name of artery**	**Length (cm)**	**Radius (cm)**	**Wall thickness(cm)**	**r_0/h_0**
1	Ascending Aorta	4.0	1.45	0.163	8.9
2	Aortic arch	2.0	1.12	0.132	8.5
3	Bracho cephalic	3.4	0.62	0.086	7.2
4	Axillary	6.1	0.36	0.062	5.8
5	Axillary	5.6	0.31	0.057	5.4
6	Brachial	6.3	0.28	0.055	5.1
7	Brachial	6.3	0.26	0.053	4.9
8	Brachial	6.3	0.25	0.052	4.8
9	Brachial	4.6	0.24	0.050	4.8

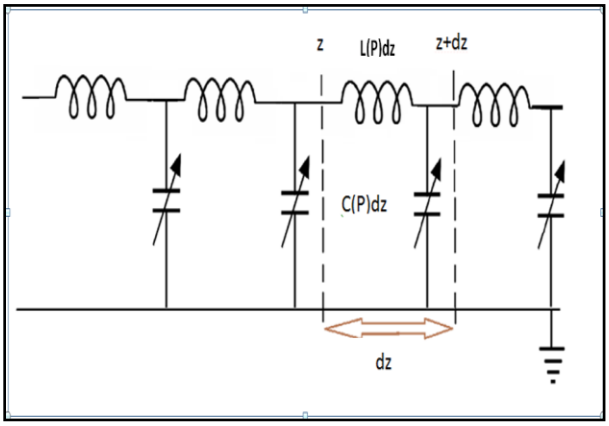

Figure 2-Equivalent circuit of a transmission line model of artery with nonlinear inertance L (P) and non linear compliance C(P) per unit length.

As the amplitude of the pressure P and the blood flow rate Q increases, the nonlinear effects cannot be ignored. In this condition the compliance C and inertance L per unit length are no longer constant but are function of the pressure. Instead of the linear partial differential equations (6) we have a system of first order nonlinear diff. equations

$$\frac{\partial P}{\partial z} = -L(P)\frac{\partial Q}{\partial t} \qquad (11a)$$

$$\frac{\partial Q}{\partial z} = -C(P)\frac{\partial P}{\partial t} \qquad (11b)$$

Equations (11) have a solution of the form

$$P = f\{z \pm [LC(P)]^{-\frac{1}{2}} t\} \qquad (12)$$

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And velocity of propagation

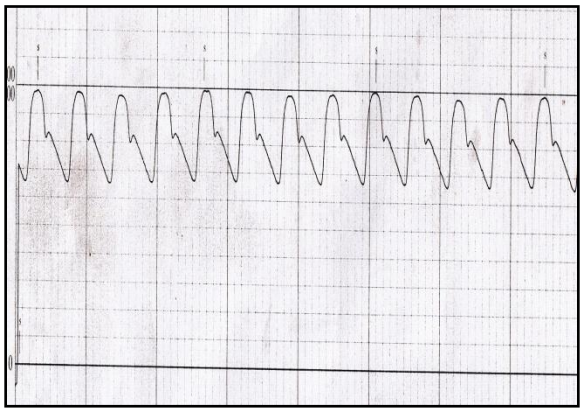
$$[LC(P)]^{-\frac{1}{2}} = \frac{1}{\sqrt{LC0(1+2bP)}} = \frac{1}{\sqrt{LC0}}(1 - bP) \quad (13)$$

of a waveform is pressure dependent.

In present study we obtained in vivo pulse at aorta and brachial artery. Recorded pulses are shown in fig (3). There is steeping of pulse as it reaches brachial artery. Peaking of pulse can also be seen. It is found that steeping can be explained by introducing pressure dependent nonlinearity in compliance tube.

From equation (10) the compliance C(P) increases with increasing pressure P, the high-pressure parts of the waveform will propagate slower than the faster moving low pressure parts. Qualitatively, as time evolves, the peak of a pressure pulse lags behind the bottom, and a wave with a steepening back, can develop

(a): Aorta



(b) Brachial artery

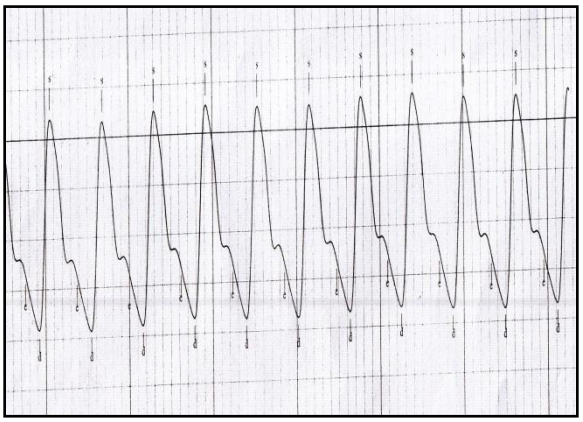
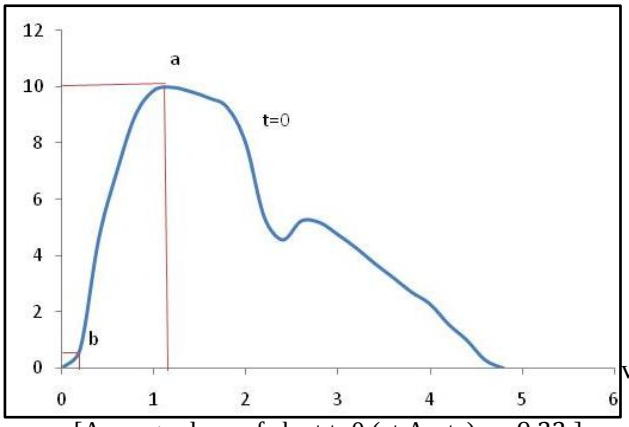


Fig (3)- In vitro time variation graphs of pressure wave at (a) aorta and (b) end of brachial artery



[Average slope of ab at t=0 (at Aorta) = 9.33]

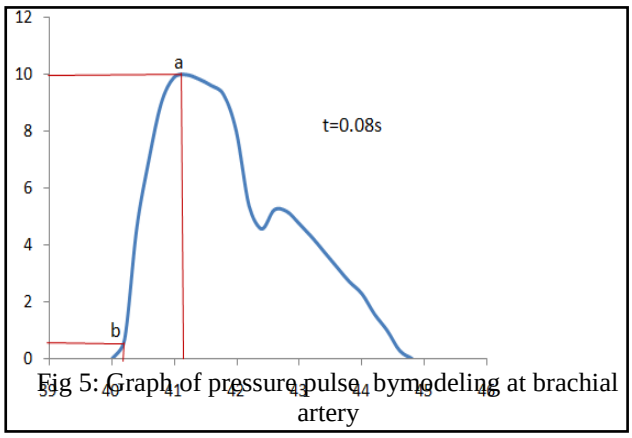


Fig 5: Graph of pressure pulse bymodeling at brachial artery

[Average slope of ab at t=0.08 (at Brachial artery) = 9.47]

RESULT AND DISCUSSION

The nonlinearity produced in compliance due to distensibility leads to the steepening of pressure wave in

artery to a reasonable extent. In this work nonlinear behavior of inertance is not taken in to consideration. The authors propose that this factor also contributes to pulsatile pattern. The generalization can lead the simulation to closer to reality. Peaking of pulse, as it propagates in arterial system is not explained by this pressure dependent nonlinearity. It is hoped that it is possible to simulate if dispersion and nonlinearity both are taken in to account. Tapering of artery also affects the pattern. But its inclusion makes the problem complex. However,still the study ofprofile change of pressure and flow rate pulse through cardio vascular system with proposedassumptions may prove to be an important diagnostic tool. Hardening of artery will produce the pulses which do not significantly change their shape during propagation.

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नारी के खिलाफ अपराध कैसे रूके?

अलका पंत
विभागाध्यक्ष, हिंदी विभाग
सी.एम.डी.स्नातकोत्तर महाविद्यालय
बिलासपुर छ.ग.

ए. भवानी राव
एम.ए. (हिंदी) पीएचडी शोध छात्र
डॉ.सी.वी.रमन विश्वविद्यालय
करगीरोड,कोटा बिलासपुर छ.ग.

I. समस्या पर चर्चा और अपनी सैध्दांतिक पृष्ठभूमि

महिलाएं साधारणतः प्रत्येक समाज का एक महत्वपूर्ण अंग है जिनकी संख्या लगभग पुरूषों के समान ही होती है। जहां तक भारतीय समाज का प्रश्न है, स्त्रियों की स्थिति काफी उच्च रही है । विशेषतः हिन्दू समाज में पुरूषों के अभाव में स्त्री को, स्त्री के अभाव में पुरूष को अपूर्ण माना गया है इसी कारण हिंदू समाज में स्त्री को पुरूष की अर्द्धांगिनी कहा गया है। धीरे–धीरे स्मृतिकाल, धर्मशास्त्र काल तथा मध्यकाल में इनके अधिकार छिनते गये और पुरूषों की तुलना में इनकी स्थिति में गिरावट आई इन्हें परातंत्र, निस्सहाय और निर्बल मान लिया गया है। अंग्रेजी शासनकाल में देश में राजनीतिक और सामाजिक क्षेत्र में जागृति आने लगी । समाज सुधारकों एवं नेताओं का ध्यान स्त्रियों की स्थिति को सुधारने की ओर गया । यहां कुछ वर्षो में स्त्रियों की स्थिति में काफी सुधार हुआ है।

महिला अधिकार के लिए देश में पिछले दो वर्षो में नई रोशनी नजर आई, जब निर्भया की शहादत ने पूरे राष्ट्र को उद्वेलित कर दिया था । दामिनी, गुड़िया और काजल पर अत्याचार के खिलाफ पूरा देश उठ खड़ा हुआ । एक दृश्य बहुत द्रवित करने वाला था । दिल्ली में आंदोलन के दौरान एक नन्ही बालिका के हाथों में मौजूद तक्ती पर लिखा था, ''नजर तेरी गन्दी और पर्दा मैं करूं ।'' इस बालिका ने तक्ती के जरिये समूचे पूरे समाज को आईना दिखाया है।

अंतर्राष्ट्रीय महिला दिवस हमने हाल ही में मनाया है और इस

मौके पर उपलब्ध आंकड़े बताते है कि महिलाएं, पुरूषों से किसी

लिहाज से पीछे नहीं है। देश में करीब 2.70 करोड़ महिलाएं कमाती है और अपने दम पर परिवार चलाती है । जहां तक देश में महिलाओं की सुरक्षा का सवाल है, कानून तो है, लेकिन उन्हें दरकिनार कर अपराध होते रहे है। 2009 में सीबीआई के अनुमान के मुताबिक 30 लाख लड़कियों की तस्करी की गई जिनमें से 90 फीसदी देह व्यापार में धकेल दी गई । नेशनल क्राइम ब्यूरो का कहना है कि 1971 से 2012 के बीच दुष्कर्म के मामलों में 880 फीसदी बढ़ोतरी हुई है। गत तीन वर्षो में कन्या भ्रूण हत्या के 1.2 करोड़ मामले दर्ज हुए है, यहां तक कि ग्रामीण इलाकों की 56 महिलाएं सुरक्षा कारणों से स्कूल कालेज नहीं जाती। हर साल 9 हजार महिलाएं दहेज की बलिवेदी पर कुर्बान हो जाती है।

दुनियां भर में नारी को समानता का अधिकार दिया गया है, लेकिन अलिखित कायदा यही है कि उसे बचपन से लेकर बुढ़ापे तक जुल्मों का शिकार बनाया जाता है । भारत में तो भ्रूण हत्या, बाल विवाह, दहेज, सती, देवदासी, और विधवाओं के प्रति हेय–दृष्टि जैसी पुरातन परंपराओं के नाम पर नारी दासता के पन्नों पर हर रोज प्रताड़ना की नई कहानी लिखी जाती है । कानून तो है ही लेकिन समाज पूरी तरह जागरूक होगा तभी नारी के स्वाभिमान व सम्मान की रक्षा होगी । दूसरा पहलू यह भी है कि साक्षर, स्वावलम्बी और आत्म–निर्भर होने पर ही महिला सशक्त होगी ।

विकास व साक्षरता के दावों के बीच देश में स्त्री–पुरूष अनुपात का फासला कम होने के बजाय बढ़ रहा है । अनुमान है कि देश में हर साल 50 लाख बालिकाएं जनम ही नहीं ले पाती । गौ– हत्या के प्रति शास्त्रों का उदाहरण देने वाला यह समाज बालिका शिशु की हत्या और कन्या भ्रूण की हत्या पर खामोश क्यों है ? पंजाब– हरियाणा जैसे राज्यों में ही नहीं, चंडीगढ़ व दिल्ली जैसे आधुनिक महानगरों में भी स्त्री–पुरूष अनुपात का फासला बढ़ रहा है। इंडियन एशोसियेसन के अनुसार देश में हर वर्ष 50 लाख कन्या भ्रूण का गर्भपात होता है। भ्रूण परीक्षण संबंधी पीएनडीटी, अधिनियम 1994 में लागू किया गया था , लेकिन अब तक वह कागजों में ही सीमित है। महाराष्ट्र में एक स्वयं सेवी संस्था के सर्वेक्षण में यह बात सामने आई थी कि भ्रूण परीक्षण के बाद जो 8 हजार गर्भपात कराये गये थे उनमें 7999 बालिकाएं थी ।

एमनेस्टी इंटरनेशनल के मुताबिक दुनिया में हर 15 सेकेण्ड में एक महिला मारपीट या किसी प्रकार के अत्याचार का शिकार होती है । हर साल करीब 7 लाख महिलाएं दुष्कर्म की पीड़ा झेलती है। रिपोर्ट का दुखद पहलू यह है कि 40 फीसदी भारतीय महिलाएं पति की प्रताड़ना की शिकार बनती है यह आंकड़ा तो तब है जब घरेलू हिंसा व यौन शोषण के 50 प्रकरणों में से एक ही पुलिस तक पहुंचता है।

महिला अधिकारों के लिए लड़ने वाली एक अंतर्राष्ट्रीय संस्था का सर्वे कहता है कि भारत महिलाओं के लिए चौथे नंबर का सबसे खतरनाक देश है। अफगानिस्तान, कांगो और पाकिस्तान ही हमसे पहले है । भारतीय दंड संहिता आईटी एक्ट, स्त्री का अशिष्ट रूपण (रोकथाम) अधिनियम 1986 तथा घरेलू हिंसा अधिनियम 2005 में सुरक्षा के तमाम प्रावधान है, लेकिन बढ़ती समस्याओं के आगे वे नाकाफी है । मीडिया ने हैवानियत की घटनाएं

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उजागर करने में कोई कसर नहीं छोड़ी पर यह महानगरों तक ही सीमित है। ग्रामीण इलाकों में ऐसे मामले सामने लाने के लिए भागीरथी प्रयासों की आवश्यकता है । कई बार खबरों की स्पर्धा में इलेक्ट्रानिक मीडिया इसे सनसनीखेज बना देते है, जिससे नारी की पीड़ा और बढ़ जाती है । स्थिति में तब फर्क आयेगा जब सोच में बदलाव आयेगा । अभी तो समाज में पुरूष प्रधान मानसिकता हावी है। बीबीसी पर दिये इंटरव्यू पर दिल्ली दुष्कर्म और हत्या के मुख्य आरोपी के घटना के लिए पीड़ित को ही दोषी बताना हकीकत उजागर कर देता है। हमारे धर्मगुरू खाप पंचायतें और कट्टरपंथी संगठन भी अपनी ऊल–जुलूल बंदिशों व बेतुके फैसले से महिलाओं की असुरक्षा में इजाफा कर देते है।

निर्भया की शहादत ने निश्चित रूप से महिलाओं के अधिकारों के लिए नई क्रांति का सूत्रपात किया है। कानून और दंड प्रक्रिया संहिता में सकारात्मक बदलाव से महिला अधिकार को नये आयाम मिले है उन्हें अपनी बात कहने के लिए दर–दर नहीं भटकना पड़ता । उनकी रिपोर्ट पर तत्परता से कार्यवाही होती है। दिल्ली में हाल ही मे हुए दुष्कर्म की 24 घंटे के भीतर टैक्सी ड्राइवर की गिरफ्तारी, मध्यप्रदेश में दुष्कर्म और हत्या के मामलों में 17 लोगों को मृत्यु दंड तथा 500 से भी अधिक प्रकरणों में आजीवन कारावास दर्शाता है कि अपराधी कानून के शिकंजे से नहीं छूट सकेंगे । सारे उपायों के बाद भी महिलाओं के खिलाफ अपराध इसलिए नहीं थम रहे, क्योंकि हमें दो मोर्चो पर कार्रवाही करनी होगी सामाजिक बदलाव और कानून में सुधार । सामाजिक स्तर पर हमें स्कूल स्तर पर छात्र–छात्राओं को समानता के सबक देने होंगे जिससे धीरे–धीरे समाज के स्तर समानता की भावना पैदा होगी । कानून के स्तर पर हमें महिलाओं को हर्जाना मांगने की अनुमति देनी होगी । इसके अलावा इंटरनेट पर मौजूद आशालीन सामाग्री पर किसी तरह की लगाम लगानी होगी ।

पारिवारिक एवं व्यवहारिक समस्याएं सामाजिक समस्याएं ही है जिसका उल्लेख हम पूर्व में कर चुके है । इसके अतिरिक्त स्त्रियों की एक समस्या स्त्री पुरूषों की भूमिका में विभेद करने की है । यद्यपि भारतीय संविधान में स्त्री–पुरूषों के अधिकार की समानता पर जोर दिया गया है फिर भी कुछ क्षेत्र जैसे सेना आदि में उनकी सेवाएं नहीं ली जाती है। स्त्रियों को प्रमुख रूप से घर से संबंधित माना गया है और उन्हें गृहकार्य का कार्य करना होता है । पत्नी और मां की भूमिकाएं ही उनकी प्रमुख भूमिकाएं मानी गयी है । स्त्रियां चाहे खेतों में, कारखानों में, भवन निर्माण, या खदानों में काम करें और चाहे सफेद पोश नौकरियां करे उनसे उसी प्रकार गृह कार्यों के निर्वाह की आशा की जाती है जिस प्रकार एक गृहस्थी तक सीमित की जाती है । बाह्य संसार में उनकी भूमिका को पुरूष की भूमिका की तरह स्वीकार नहीं किया गया है। घर के बाहर पुरूष चाहे शारीरिक श्रम का कार्य करे, किंतु वही कार्य करना उसके लिए घर में अपमानजनक माना जाता है और स्त्री से ही उसे करने की अपेक्षा की जाती है। खाना बनाना व कपड़े सीना आदि कार्य पुरूष व्यवसाय के रूप में तो अपना सकता है परंतु यह कार्य घर में स्त्रियों के लिए छोड़ दिये जाते है । परिवार में और उसके बाहर के कार्यो निर्णय लेने में भी स्त्रियों की अपेक्षा पुरूष ही महत्वपूर्ण भूमिका निभाते है।

जब स्त्रियों का कार्यक्षेत्र घर में ही तय कर दिया हो और बाह्य जीवन में उनके किसी भी प्रकार के योगदान की अपेक्षा नहीं की गई हो तो उन्हें राजनीतिक जीवन से लेना देना ही क्या है ? यही कारण है कि भारत में स्त्रियों में राजनीतिक चेतना नहीं रही, और वे राजकाज में भागीदार नहीं हुए । स्त्रियों की स्थिति को सुधारने के लिए कुछ सुधार आंदालनों का प्रयत्न किया गया। 20 वीं सदी के प्रारंभिक वर्षो में महिला संगठनों की स्थापना हुई जिन्होनें राजनीतिक अधिकारों की मांग की । 1917 में सरोजिनी नायडू ने ब्रिटिश पार्लियामेंट में स्त्रियों को पुरूषों के समान मताधिकार की मांग की । 1921 में संपन्न एवं शिक्षित महिलाओं को मतदान का अधिकार दे दिया गया ।

गांधी जी ने भी स्त्रियों के राजनीतिक अधिकारों पर बल दिया और स्वतंत्रता आंदोलन में उनसे प्रेरित होकर कई महिलाओं ने भाग लिया । स्वतंत्रता प्राप्ति के बाद महिलाओं ने विधायकों, सांसदों, राज्यपाल, मंत्री, मुख्यमंत्री और प्रधानमंत्री तक का दायित्व सम्हाला है इससे स्पष्ट है कि उनमें राजनीतिक चेतना बढ़ी है फिर भी पुरूषों की तुलना में अब भी पिछड़ी हुई है।

II. संदर्भ

एक सवाल महिलाओं की राजनीतिक प्रतिनिधित्व का भी है उम्मीद किया जाना चाहिए कि इस साल महिला आरक्षण विधायक ठंडे बस्ते से निकल कर संसद में आयेगा और बहस महिलाओं के एक–तिहाई प्रतिनिधित्व को सुनिश्चित करने के लिए अपने मुकाम तक पहुंचेगी जब नारी, पुरूषों के समान स्वतंत्रता अनुभव करेगी और खुले, स्वच्छ तथा स्वस्थ वातावरण में कोंपलें फूटेंगी तब कवि की ये पंक्तियां सार्थक होगी ।

बेटियां शुभकामनाएं है, बेटियां पावन दुवाएं है ।

गर्म झोंकों से बचाएं शहर को, बेटियां ताजा हवाएं है।

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छत्तीसगढ़ के बिलासपुर नगर में सीमान्त कामगारों का सामाजिक–आर्थिक विश्लेषण :एक भौगोलिक अध्ययन

अब्दुल जावेद कुरैशी
सहायक प्राध्यापक
एल.बी.एस. महाविद्यालय, बलौदा
जांजगीर–चाम्पा (छ.ग.)

राजेश कुमार खोटे
व्याख्याता
शा.उ.मा.वि., बेलतरा
बिलासपुर (छ.ग.)

सारांश – भारत देश की लगभग 75% जनसंख्या गाँवों में निवास करती है जिनका प्रमुख व्यवसाय कृषि (खेती) है परन्तु हमारे यहाँ सिंचाई की पर्याप्त सुविधा नहीं होने के कारण यहाँ कृषि कार्य में वर्ष भर रोजगार उपलब्ध नहीं हो पाता। सभी स्थानों में खरीफ एवं रबी की फसल नहीं बोयी जाती। ऐसी स्थिति में कृषक रोजगार की तलाश में ग्रामीण क्षेत्रों से शहरी क्षेत्रों की ओर अस्थायी रूप से जीविकोपार्जन हेतु हस्तांतरित होते है। चूँकि उनका प्रमुख कार्य कृषि है इस कारण से वे अन्य कार्यों में बहुत ज्यादा कुशल नहीं होते जिनके कारण उन्हें यहाँ पर कुशल श्रमिकों व अन्य समस्याओं से जूझना पड़ता है।

प्रस्तुत शोध कार्य सीमांत कामगारों के सामाजिक, आर्थिक विश्लेषण के माध्यम से सकारात्मक एवं नकारात्मक परिणाम उनके जीवन में आने वाली समस्याओं, कठिनाईयों को जानने, समझने एवं उजागर कर उसे दूर करने का उपाय बताने सुझाने का प्रयास किया गया है।

I. प्रस्तावना –

मानव का अध्ययन ही जनसंख्या का अध्ययन है। जनसंख्या का प्रभाव मानव जीवन के प्रत्येक क्षेत्र में परिलक्षित होता है। राष्ट्र की विकास संबंधी सभी गतिविधियाँ इससे प्रभावित होती है। भारत में सम्पूर्ण मानव जाति का सातवाँ भाग निवास करता है। आज विकसित और विकासशील देशों का विभाजन वहाँ की जनसंख्या की उपलब्धियों पर आधारित है। भारत अपनी विशाल जनसंख्या को विकास का अवसर नहीं दे पा रहा है, जिससे भारत एक महान देश बन सके। इसके विपरीत यहाँ जनसंख्या सबसे बड़ी समस्या बनी हुई है।

जनसंख्या भूगोल एक ऐसा पक्ष है जिसका ज्ञान सभी नागरिकों को होनी चाहिए क्योंकि परिवार से ही समाज और फिर देश बनता है। अतः परिवार का आकार कैसा हो इसकी जानकारी देश के सभी नागरिकों को होना चाहिए।

आंग्ल भाषी विश्व में जनसंख्या भूगोल विषय का इतिहास सन् 1953 ई. से प्रारंभ हुआ। प्रो. जी.टी. ट्रिवार्था (1953) ने ''Association of American Geographers'' के समक्ष अपने अध्यक्षीय भाषण में जनसंख्या भूगोल को भूगोल की एक स्वतंत्र शाखा के रूप में विकास की पहल की। तत्पश्चात् संयुक्त राज्य अमेरिका और विश्व के अन्य विश्वविद्यालयों ने उसका अनुगमन किया और जनसंख्या भूगोल के महत्व को अंगीकार करने से इसके शिक्षण एवं शोध की प्रगति में तेजी आयी। इस कारण जनसंख्या भूगोल, भूगोल की विशिष्ठ शाखाओं में एक अत्यंत लोकप्रिय शाखा है।

भारत में प्रथम श्रेय पंजाब विश्वविद्यालय के भूगोल विभाग को है जिसने 1960 वे दशक के प्रारंभिक वर्षों में स्नात्कोत्तर स्तर पर जनसंख्या भूगोल शिक्षण और उसमें शोध प्रारंभ किया। तब से विभाग के शैक्षणिक क्रियाकलापों में इस पर विशेष बल दिया जाता रहा है। यह विभाग आज जनसंख्या शोध हेतु देश का एक प्रमुख केन्द्र है।

II. जनसंख्या भूगोल की परिभाषा –

जनसंख्या एक केन्द्रीय महत्व वाला संदर्भ बिन्दु है जिसके परिपेक्ष्य में अन्य समस्त तत्वों को देखा व परखा जाता है ''जनसंख्या भूगोल एक उदीयमान नवीन शाखा है जो भूगोल विज्ञान रूपी वृक्ष के नवीन अंकुर के समान है'' प्रमुख भूगोलवेत्ताओं की परिभाषा नीचे वर्णित है –

1. **जी.टी. ट्रिवार्था** के अनुसार –

''धरातल पर बसे लोगों की प्रादेशिक भिन्नता संबंधी ज्ञान में ही जनसंख्या भूगोल के सारतत्व निहित है।''

2. **जान. आई. क्लार्क** के मतानुसार –

''जनसंख्या भूगोल, जनसंख्या के वितरण, संरचना, स्थानांतरण व वृद्धि में प्राप्त क्षेत्रीय विभिन्नता तथा प्राकृतिक वातावरण के अंतर्संबंधों को प्रदर्शित करता है।''

जनसंख्या भूगोल के संबंध में अमेरिकी विद्वानों की यह धारणा रही है कि जनसंख्या भूगोल क्षेत्रीय विषमता उत्पन्न करने वाले कारक के रूप में मानव का अध्ययन है।

परिकल्पनाये (मान्यतायें) –

1. सीमांत कामगार अधिकतर बिलासपुर के आस–पास के ग्रामीण क्षेत्रों से आते है।

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2. सीमांत कामगारों को नियमित रोजगार उपलब्ध नहीं होता जिसके कारण वे बरसात के दिनों में कृषि कार्यों के लिए मूल निवास चले जाते है।
3. अधिकतर सीमांत कामगारों में निरक्षरता पायी जाती है।
4. सीमांत कामगारों को ठेकेदार के अधीनस्थ काम करने पर पर्याप्त मजदूरी नहीं मिलती है।
5. सीमान्त कामगारों के निवास क्षेत्रों में मूलभूत सुविधाओं का अभाव पाया जाता है।
6. सीमांत कामगार अपनी आय (कमाई) का एक भाग (हिस्सा) मादक पदार्थों (नशीले पदार्थों, मदिरा, गांजा, सिगरेट, बीड़ी, तम्बाकू) पर व्यय कर देते है।

III. प्रविधियाँ –

प्रस्तुत शोध अध्ययन में प्राथमिक एवं द्वितीयक आंकड़ों को आधार बनाया गया है। प्राथमिक आंकड़े हेतु शोधकर्ता बिलासपुर नगर के क्षेत्र जरहाभाठा, मगरपारा, तालापारा, तारबाहर, तोरवा, बंधवापारा, चांटीडीह, इमलीभाठा, नयापारा, कोनी क्षेत्र के आंकड़े एवं व्यक्तिगत जानकारी परिवेक्षण एवं भ्रमण कर एकत्रित किये गये। सर्वेक्षण हेतु प्रश्नावली तैयार करते समय इस बात का ध्यान रखा गया कि सीमान्त कामगारों की सामाजिक एवं आर्थिक पक्षों के मात्रात्मक एवं गुणात्मक पहलू प्रश्नावली में समाहित हो सके।

द्वितीयक आंकड़ों के लिए प्रकाशित एवं अप्रकाशित जनगणना पुस्तिका गजेटियर जिला सांख्यिकीय पुस्तिका एवं राजस्व विभाग के अभिलेख, जिला हस्त पुस्तिका एवं नगर निगम बिलासपुर से प्राप्त जानकारी को सम्मिलित किया गया है। शोध अध्ययन में तथ्यों के विश्लेषण में इन जानकारियों का भरपूर उपयोग किया गया है।

III. अध्ययन के विश्लेषण –

प्रस्तुत शोध अध्ययन ''छत्तीसगढ़ के बिलासपुर नगर में सीमान्त कामगारों का सामाजिक–आर्थिक विश्लेषण एक भौगोलिक अध्ययन'' के विश्लेषण हेतु जरहाभाठा, मगरपारा, तालापारा, तारबाहर, तोरवा, बंधवापारा, चांटीडीह, इमलीभाठा, नयापारा, कोनी क्षेत्र के कुल 100 परिवारों का सर्वेक्षण किया गया। प्रत्येक क्षेत्र से 10–10 परिवारों से साक्षात्कार निर्देशिका के माध्यम से प्रश्नावली का निर्माण किया गया जिसमें कुछ प्रमुख बिंदुओं पर उत्तरदाताओं से इस संबंध में जानकारी प्राप्त की गई।

1. सामान्य पारिवारिक जानकारी
2. कार्य एवं मजदूरी संबंधी जानकारी
3. मकान संबंधी जानकारी
4. पेयजल संबंधी जानकारी
5. बिजली, सड़क, नाली संबंधी जानकारी
6. स्वच्छता संबंधी जानकारी
7. स्वास्थ्य संबंधी जानकारी

1. सामान्य पारिवारिक जानकारी –

इस जानकारी के अंतर्गत प्राप्त उत्तरों का विश्लेषण करने पर पाया गया कि 80 प्रतिशत से अधिक सीमांत कामगारों का मूल निवास बिलासपुर नगर के आस–पास के ग्रामीण क्षेत्र बिल्हा, चकरभाठा, धमनी, नगपुरा, सकर्रा, घुरू, अमेरी, उस्लापुर, घुटकू, गनियारी, मोछ, सकरी, बैमानगोई, गतौरी, सेंदरी, सेमरताल, लगरा, पंधी, मोपका, चिल्हाटी, दर्रीघाट, मस्तूरी, धूमा, सिलपहरी, सेवार, कढ़ार आदि करीब चालीस गाँवों के कामगार काम करते है। 90% सीमांत कामगारों का परिवार एकाकी है जिसमें दो या तीन बच्चे हैं। 5 प्रतिशत ऐसे कामगार भी है जो पुत्र की आस में चार लड़कियाँ संतान भी है। इलेक्ट्रिशियन, वेल्डिंग एवं प्लंबर कार्य को छोड़कर बाकी वर्ग के 80 प्रतिशत कामगारों की संख्या निरक्षर है। पूछने पर यह भी ज्ञात हुआ कि वे अपने बच्चों को पूरा संरक्षण नहीं दे पाते जिसका प्रमुख कारण अपने साथ–साथ अपनी पत्नी को भी काम पर ले जाना है यही कारण है कि वे अपने बच्चों को भी शिक्षा नहीं दे पा रहे है।

2. कार्य एवं मजदूरी संबंधी जानकारी –

कार्य एवं मजदूरी से संबंधित उत्तर के माध्यम से सीमांत कामगारों के द्वारा प्राप्त उत्तरों के विश्लेषण से यह ज्ञात हुआ कि 80% उत्तरदाताओं के माध्यम से उन्हें कृषि के क्षेत्र में वर्ष भर रोजगार उपलब्ध नहीं हो पाना आर्थिक तंगी प्रमुख कारण है। 55% कामगारों को स्वयं के प्रयास से, 35% कामगारों को अपने परिचित के माध्यम से शेष 10% अन्य कारणों से इस कार्य का चयन किये। 60% उत्तरदाताओं के द्वारा ज्ञात हुआ कि उन्हें प्रतिदिन 8 से 10 घंटे कार्य करने पड़ते है शेष 40% कामगार 8 घंटे कार्य करने की जानकारी मिली। मजदूरी की दर से 80% कामगार असंतुष्ट पाये गये। 60% कामगार अपने मालिक/ठेकेदार के व्यवहार से संतुष्ट नहीं पाये गये। 80% कामगारों के द्वारा खतरों से सुरक्षा के इंतजाम नहीं होने की जानकारी प्राप्त हुई।

3. मकान संबंधी जानकारी –

मकान संबंधी जानकारी के विषय 70% उत्तरदाताओं के द्वारा किराये पर खपरापोश (कच्चा मकान) होने की जानकारी प्राप्त हुई। 20% कामगारों के

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द्वारा ठेकेदार द्वारा रहने के लिए कच्चा मकान उपलब्ध कराये जाने की जानकारी प्राप्त हुई। 10% ऐसे कामगार भी मिले जिन्होंने अपने स्वयं के कच्चे मकान बनाकर रहने की जानकारी दी है। अधिकांश उत्तरदाताओं द्वारा दो कमरों का कच्चा मकान होने की जानकारी प्राप्त हुई जो उनकी जरूरतों को पूरा नहीं कर पाने एवं मजबूरी में रहने की जानकारी प्राप्त हुई।

4. पेयजल संबंधी जानकारी –

पेयजल संबंधी प्रश्नों के माध्यम से 80% कामगारों के द्वारा नगर निगम द्वारा टेपनल के माध्यम से पेयजल की सुविधा उपलब्ध कराये जाने की जानकारी मिली जिसकी संख्या अपर्याप्त है और उन्हें लगभग 100 मीटर दूर से पेयजल लाये जाने की जानकारी मिली है। शेष 20% कामगारों ने सार्वजनिक हेंडपम्प के माध्यम से पीने का पनी उपलब्ध होने की जानकारी दी जिससे शुद्ध जल नहीं मिले की जानकारी मिली है। नल बिगड़ने पर मरम्मत करने में विलंब होने की जानकारी प्राप्त हुई है। पेयजल की समस्या इमलीभाठा, चाटीडीह, तालापारा, नयापारा एवं बंधवापारा में ज्यादा है।

5. बिजली, सड़क, नाली संबंधी जानकारी –

इन बिंदुओं पर प्राप्त जानकारी के अनुसार बिजली की व्यवस्था आंशिक रूप से ठीक है परंतु तालापारा, चांटीडीह, कोनी, जरहाभाठा, बंधवापारा के झुग्गी–झोपड़ी वाले क्षेत्रों में रात्रि में कम वोल्टेज की समस्या की जानकारी प्राप्त हुई। सड़कों की व्यवस्था बहुत ज्यादा व्यवस्थित नहीं है। तालापारा, मगरपारा, कोनी, जरहाभाठा, चांटीडीह में सड़के तो बनी है परंतु ये टेढ़ी–मेढ़ी होने के कारण नालियों में गंदे पानी के एकत्र होने के कारण बीमारियों के फैलने का खतरा बना रहता है। इन क्षेत्रों में प्राप्त जानकारी के अनुसार नालियों की नियमित रूप से सफाई भी नहीं होती है। कीट नाशक दवाओं का भी छिड़काव कभी कभार किया जाता है नियमित रूप से नहीं। बरसात के दिनों में बीमारियों की संभावना बढ़ जाती है।

6. स्वच्छता संबंधी जानकारी –

इस विषय पर प्रश्न पूछे जाने पर क्षेत्रों में नालियों की नियमित रूप से सफाई नहीं होने पर बस्ती में सुलभ शौचालय की व्यवस्था है परंतु उसके साफ–सफाई रख–रखाव बहुत अच्छी स्थिति में नहीं है। जरहाभाठा, मगरपारा, तालापारा, चांटीडीह, तोरवा, कोनी, इमलीभाठा आदि क्षेत्रों में मच्छरों की समस्या बहुत ज्यादा होने की जानकारी मिली है। बस्ती में नगर निगम द्वारा स्वच्छता अभियान भी कभी–कभार चलाया जाता है। कीटनाशक दवाओं का छिड़काव भी नियमित रूप से नहीं किया जाता है जिससे इन क्षेत्रों में बीमारियों के फैलने का खतरा बना रहता है।

7. स्वास्थ्य संबंधी जानकारी –

स्वास्थ्य संबंधी प्रश्नों के माध्यम से अधिकांश क्षेत्रों में प्राथमिक स्वास्थ्य केन्द्र नहीं होने की जानकारी मिली इनमें जरहाभाठा, मगरपारा, तालापारा, चांटीडीह, नयापारा, कोनी, बंधवापारा आदि क्षेत्रों में बीमार होने पर निजी चिकित्सकों के पास जाने की जानकारी मिली। बच्चों के टीकाकरण की भी व्यवस्था नहीं होने की जानकारी प्राप्त हुई। अधिकांश कामगारों को परिवार नियोजन कार्यक्रम की जानकारी तो है परंतु वे इसे अपनाने की बात स्वीकार नहीं करते। मादक पदार्थों के संबंध में पूछे जाने पर 80% कामगारों के द्वारा पान, गुटका, तम्बाकू, बीड़ी, मदिरा सेवन करना स्वीकार किया गया जिसके कारण उनकी आय का एक बड़ा हिस्सा मद्य–सेवन पर खर्च हो जाता है। इसके सेवन से उनके पारिवारिक वातावरण पर भी प्रभाव पड़ता है।

स्मार्ट कार्ड के संबंध में पूछे जाने पर 60% कामगारों के पास स्मार्ट कार्ड का होना बताया गया परंतु इसके उचित उपयोग एवं सुविधाओं का किस प्रकार लाभ उठाया जाये इसके संबंध में उन्हें जानकारी नहीं होने की बात सामने आयी है।

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सारिणी क्रमांक – 01

सीमान्त कामगारों का भवन निर्माण क्षेत्र में कार्यानुसार विवरण तालिका

क्र.	क्षेत्र/मोहल्ला	राजमिस्त्री		मजदूर कुल, रेजा		पत्थर लगाने वाले मार्बल टाईल्स		प्लम्बर फिटर		इलेक्ट्रिशियन		पुताई करने वाले		कांक्रीट मिश्रण करने वाले		वेल्डिंग करने वाले		मोजाईक टाईल्स पॉलिस करने वाले		चौकीदार	
		पु.	म.	पु.	म.	पु.	म.	पु.	म.	पु.	म.	पु.	म.	पु.	म.	पु.	म.	पु.	म.	पु.	म.
1.	जरहाभाठा	01	–	03	04	01	01	01	01	01	–	01	01	01	01	–	–	–	02	01	–
2.	मगरपारा	01	–	04	05	01	01	01	01	01	–	01	01	01	01	01	–	–	01	–	–
3.	तालापारा	01	–	04	06	01	01	01	01	01	–	01	01	–	01	–	–	–	01	01	–
4.	तारबाहर	01	–	04	05	01	01	01	01	01	–	01	01	01	01	–	–	01	01	–	–
5.	तोरवा	02	–	03	05	01	01	01	01	01	–		01	01	01	01	–	–	01	–	–
6.	बंधवापारा	01	–	04	04	01	02	01	01	01	–	01	01	01	01	–	–	–	01	01	–
7.	चांटीडीह	01	–	01	03	01	02	01	01		–	01	02	01	01	02	–	01	01	01	–
8.	इमलीभांठा	01	–	02	03	01	02	01	02	01	–	02	02	–	–	01	–	01	01		–
9.	नयापारा	01	–	01	03	01	02	01	02	01	–	01	01	01	01	01	–	01	01	01	–
10.	कोनी	01	–	02	04	01	01	01	01	01	–	01	02	01	01	01	–	–	01	01	–
	योग	**11**	–	**28**	**42**	**10**	**14**	**10**	**12**	**09**	–	**10**	**13**	**08**	**09**	**07**	–	**04**	**11**	**06**	–

स्त्रोत : प्रतिदर्श सर्वेक्षण 2015

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प्राचीन भारत में विज्ञान का विकास एवं वर्तमान राष्ट्र के विकास व सुरक्षा के लिये विज्ञान व प्रौद्योगिकी सर्वोपचार हैं

एस.डी. झा
प्राचार्य
ठा. छेदीलाल शास.स्ना.महा
विद्यालय जांजगीर (छ.ग.)

स्वाती इड़कर
पी.एच.डी.(इतिहास) छात्रा
बिलासपुर (छ.ग.)

प्रस्तावना :–

प्राचीन युग में मानव एक बेहद दयनीय अवस्था में रहता था, तन पर कपड़े के स्थान पर वृक्षों के पत्ते, खाने के लिए कन्दमूल, जंगली फल या शिकार किए गए जानवरों का कच्चा मांस धीरे–धीरे इंसान ने पत्थर रगड़ कर अग्नि उत्पन्न की, वृक्ष काटकर पहिए क आविष्कार किया. बस यहीं से विज्ञान एवं प्रौद्योगिकी का जन्म हुआ और आज दिन–प्रतिदिन निरन्तर नई–नई खोजें हो रही हैं तथा आदि मानव से विकसित होकर मानव एक सामाजिक व्यक्ति या राष्ट्र का सम्मानित नागरिक कहलाता हैं।

अनगिनत आविष्कारों के कारण मनुष्य का जीवन पहले से अधिक आरामदायक हो गया है. मोबाइल, इंटरनेट, ईमेल्स, मोबाइल पर 3जी और इंटरनेट के माध्यम से फेसबुक, ट्विटर ने तो वाकई मनुष्य की जिंदगी को बदलकर ही रख दिया हैं. जितनी जल्दी वह सोच सकता है, लगभग उतनी ही देर में जिस व्यक्ति को चाहें मैसेज भेज सकता है, उससे बातें कर सकता हैं. चाहे वह दुनिया के किसी भी कोने में क्यों न हो? यातायात के साधनों से आज यात्रा करना अधिक सुविधाजनक हो गया हैं. आज महीनों की यात्रा दिनों में तथा दिनों की यात्रा चंद घण्टों में पूरी हो जाती है. इतनी द्रुतगति की ट्रेनें, हवाई जहाज यातायात के रूप में काम में लाए जा रहे हैं. दिन–व–दिन इनकी गति और उपलब्धता में और सुधार हो रहा हैं. चिकित्सा के क्षेत्र में भी विज्ञान ने हमारे लिए बहुत सुविधाएं जुटाई हैं. आज कई असाध्य बीमारियों का इलाज मामूली गोलियों से हो जाता हैं. कैंसर और एड्स जैसी बीमारियों के लिए डॉक्टर्स और चिकित्साविशेषज्ञ लगातार प्रयासरत् हैं. नई–नई कोशिकाओं के निर्माण में भी सफलता प्राप्त कर ली गई हैं.

सिक्के के दो पहलुओं की ही भाँति इन आविष्कारों के लाभ–हानि दोनों हैं. एक ओर परमाणु ऊर्जा जहाँ बिजली उत्पन्न करने के काम में लाई जा सकती हैं. वहीं इससे बनने वाले परमाणु हथियार मानव के लिए अत्यन्त विनाशकारी हैं. हाल ही में जापान में आए भूकम्प के बाद बड़ी त्रासदी रहीं. अतः मनुष्य को अपनी आवश्यकता और सुविधानुसार मानवता की भलाई के लिए इनका लाभ उठाना चाहिए न कि दुरूपयोग कर इनके आविष्कारों पर प्रश्न चिन्ह लगाना चाहिए. विज्ञान वह व्यवस्थित **ज्ञान** या **विद्या** है. जो विचार, अवलोकन, अध्ययन और प्रयोग से मिलती हैं. जो किसी अध्ययन के विषय की प्रकृति या सिद्धान्तों को जानने के लिए किए जाते हैं. विज्ञान शब्द का प्रयोग ज्ञान की ऐसी शाखा के लिए भी करते हैं, जो तथ्य, सिद्धान्त और तरीकों को प्रयोग और परिकल्पना से स्थापित और व्यवस्थित करती हैं. इस प्रकार कह सकते हैं कि किसी भी विषय का क्रमबद्ध ज्ञान को विज्ञान कह सकते हैं. ऐसा कहा जाता है कि विज्ञान के 'ज्ञान–भण्डार' के बजाय **वैज्ञानिक विधि** विज्ञान की असली कसौटी है, असल में विज्ञान शब्द का उपयोग लगभग हमेशा प्राकृतिक विज्ञानों के लिए ही किया जाता हैं।

विज्ञान एवं मानव विकास –

जीव की उत्पत्ति जिस प्रकार हुई तथा मानव का उत्तरोत्तर विकास का क्रम क्या रहा होगा? इस रहस्य में विज्ञान का पर्दा उठाता है तथा जीव उत्पत्ति से लेकर मानव विकास का क्रम प्रस्तुत करता है, जीव कोशिका, केन्द्रक, भ्रूण, रक्त संरचना, गुण–सूत्र आदि की व्याख्या विज्ञान द्वारा ही सम्भव हो सकी हैं.

विज्ञान एवं ब्रह्माण्ड –

विज्ञान ने ही ब्रह्माण्ड की रचना एवं व्याख्या प्रस्तुत की हैं. ग्रहों, तारों, उपग्रहों, उल्का पिण्डों, बादलों एवं आकाश की विस्तृत व्याख्या करके मनुष्य के उत्तरोत्तर विकास की हमेशा सहायता की हैं.

विज्ञान एवं स्वास्थ्य –

प्राचीनकाल में मानव विभिन्न प्रकार की लाइलाज बीमारियों से पीड़ित होकर काल के ग्रास बन जाते थे. विज्ञान ने वर्तमान में लगभग सभी बीमारियों हेतु टीके, दवाएं एवं वैक्सीन तैयार कर ली हैं तथा अनेक असाधारण लाइलाज बीमारियों तथा इन्फेक्शन हेतु एन्टीडॉटन तैयार करने में मानव की बहुत मदद की हैं. आज टीबी, कैन्सर, चेचक, मलेरिया, डेंगू, अपंगता आदि भयंकर बीमारियाँ एवं महामारियाँ लाइलाज नहीं हैं. विज्ञान की बदौलत ही इलाज सरल रूप में विद्यमान हैं. वह दिन दूर नहीं जब हैपटाइटिस एवं एच.आई.वी. बीमारी भी जड़ से खत्म की जा सकेगी. टेस्ट ट्यूब बेबी को ईजाद करके आज विज्ञान जीवनदाता बन चुका है.

विज्ञान तथा यातायात –

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बीते हुए कल में दो कोस की दूरी पैदल या बैलगाड़ी से घण्टों में तय की जाती थी तथा रास्ते पगडन्डी तथा सँकरे रूप में थे, लेकिन आज विज्ञान ने मनुष्य के लिए अच्छी सड़कें, रेलगाड़ी की सुविधा हवाई यात्रा, स्टीमर, पनडुब्बी तथा पोत द्वारा लम्बी दूरी कुछ मिनटों में दूरी तय करने की सुविधा प्रदान की है, विज्ञान ने तेज गति से चलने वाले जेटयान व समुद्र की लहरों में तेज चलने वाले नौसैनिक यानों के निर्माण में अहम् भूमिका निभाई हैं. यह कह सकते हैं कि विज्ञान ने दूरी घटाकर सीमाओं को मिला दिया हैं.

विज्ञान एवं शिक्षा –

विज्ञान ने उत्तरोत्तर प्रगति करके ऐसे उपकरण तथा तकनीकी तैयार कर ली, जो शिक्षा में आवश्यक सहायक सामग्री के साथ–साथ एक ऐसा वातावरण तैयार करता है, जिसमें सीखने के ज्यादा अवसर प्राप्त होते ही आज जैसे कम्प्यूटर, इन्टरनेट तथ सॉफ्टवेयर के प्रयोगो ने शिक्षा की अत्यधिक सरल, प्रभावी तााि अपडेटेड बना दिया हैं. इन्टरनेट के माध्यम से शिक्षार्थी विकिपीडिया, ई–जान कोश, ई–लाइब्रेरी आदि से नवीन ज्ञान की प्राप्ति करता हैं.

- भोजन, आवास, यातायात, चिकित्सा, मनोरंजन, कृषि, उद्योग आदि सभी क्षेत्र विज्ञान से प्रभावित हैं.
- विभिन्न क्षेत्रों में विज्ञान के कार्य – यातायात – आज विज्ञान ने मानव के जीवन की दूरियों को बेहद ही कम कर दिया हैं, पहले जहाँ मानव को एक स्थान से दूसरे स्थान तक जाने में कई–कई वर्ष लग जाते थे, वहीं आज मानव कई मीलों की दूरियां को कम समय में पार कर लेता है. बेहद ही कम समय में मनुष्य ने हेलीकॉप्टर, हवाई जहाज, कार आदि सभी यातायात के साधन ईजाद कर लिए हैं.
- मनोरंजन – आज का मनुष्य दिन–पर–दिन कड़ा परिश्रम करके सफल होना चाहता हैं, लेकिन इस परिश्रम के बाद हर इंसान को मनोरंजन की आवश्यकता होती हैं.
- आज रेडियों, टेलीविजन, डीवीडी प्लेयर, थ्रीडी सिनेमा, कम्प्यूटर, इन्टरनेट आदि ऐसी कई चीजें हैं, जिन्हें विज्ञान द्वारा ईजाद किया गया हैं. कम्प्यूटर और इन्टरनेट के वीडियो कॉलिंग द्वारा तो हम दूर बैठे हमारे रिश्तेदारों से आमने–सामने बात कर सकते हैं.
- कृषि को आज काफी विकसित क्षेत्र बना दिया हैं. विज्ञान द्वारा तैयार इस्पात, खाद व उपकरण, खाद्य पदार्थ, वाहन, वस्त्र, आदि बनाने के असीमित कारखानें हैं. कुटीर उद्योगों में भी विज्ञान की सहायता से पर्याप्त विकास हुआ हैं.

निष्कर्ष

– आज पूर दुनिया में विज्ञान की पताका लहरा रही हैं. जीवन तथा विज्ञान एक–दूसरे के पर्याय बन गए हैं. विज्ञान से मानव को असीमित शक्ति प्राप्त हुई हैं. आज मनुष्य विज्ञान की सहायता से पक्षियों की भाँति आसमान में उड़ सकता हैं. गहरे–से–गहरे पानी में सांस ले सकता हैं. पर्वतों को लाँघ सकता हैं तथा कई मीलों की दूरियों को चंद घण्टों में पार सकता हैं. आज मनुष्य ने विज्ञान की सहायता से कई बड़े क्षेत्रों में सफलता पाई हैं. जैसेकि चिकित्सा, सूचना क्रान्ति, अंतरिक्ष विज्ञान, यातायात आदि. विज्ञान के चमत्कार : ईधन, सूचना, कम्प्यूटर उपकरण आदि ऐसे कई अनोखे साधन विज्ञान ने दिए हैं, जिनसे जीवन बेहद सरल और सम्पन्न हो गया हैं. बिजली द्वारा संचालित पंखे, ए.सी., टीवी, कूलर, लाइट्स आदि कई साधन मानव को विज्ञान से प्राप्त हुए हैं. अब तो विज्ञान ने बिजली के कई ऐसे उपकरण प्रदान किए हैं, जिनसे मानव का काम और भी आसान बन गया हैं. जैसे – वेक्यूम क्लिनर, सोलर गैस मोबाइल फोन, हीटर आदि. विज्ञान द्वारा किए गए यह सभी आविष्कार मनुष्य के लिए वरदान साबित हो रहे हैं. इन सभी बातों से पता चलता है कि राष्ट्र के विकास व सुरक्षा के लिए विज्ञान व प्रौद्योगिकी सर्वोपचार हैं. इसीलिए मानव को सोचना होगा कि इसका उपयोग कब और कैसे किया जाए ?

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आधुनिक महिला कहानीकार और उनकी कहानियों में सामाजिक चिंतन

राजेश चतुर्वेदी
प्राध्यापक
शासकीय पातालेश्वर महाविद्यालय,
मस्तुरी

रोशनी त्रिपाठी
हिन्दी
डॉ. सी.वी. रमन विश्वविद्यालय,
कोटा

सारांश –

भारतेन्दु युग से ही हिन्दी साहित्य में कहानियों का सृजन प्रारम्भ हो गया था। भारतेन्दु युग से वर्तमान युग तक की यात्रा में हिन्दी कहानी को अनेक युगों से गुजरना पड़ा है। इन विविध युगों में कहानीकारों ने अपने सामाजिक चिंतन के सर्वथा भिन्न – भिन्न दृष्टिकोणों से कहानियों को समृद्ध बनाया है। सामाजिक चिंतन की विविधता से कथावस्तु की दृष्टि से भी हिन्दी कहानी अपना स्वरूप बदलती रही। आधुनिक महिला कहानीकारों ने अपनी कहानियों में समाजिक चिंतन के विविध पक्षों को सफलतापूर्वक प्रस्तुत किया। सामाजिक चिंतन ने ही कहानियों को यर्थाथ के धरातल से जोड़ा एवं व्यक्ति के हृदय तक पहुंचाया। आधुनिक महिला कहानीकारों ने सामाजिक चिंतन के अंतर्गत पारिवारिक, धार्मिक, मनोवैज्ञानिक, नैतिक चिंतन अपनी कहानियों में किया। हिन्दी महिला कहानीकारों की कहानियों का रचना संसार व्यापक है। इन महिला कहानीकारों की पहुंच अब केवल नारी प्रेम और दमित वासनाओं की परिधि तक सीमित नहीं है, बल्कि अन्य सामाजिक, राजनैतिक, पक्षों तक उनकी पहुंच पाई जाती है। इन महिला कहानीकारों के अंतः मनःस्थिति की चेतना सभी जगह दिखायी देती है जो कहानी की श्रेष्ठता का मूल आधार है।

''साहित्य समाज का दर्पण है'' – यह उक्ति पूर्णतः सत्य है, क्योंकि प्रत्येक साहित्य, साहित्यकार के अनन्य चिंतन एवं मनन का परिणाम है। साहित्यकार समाज के प्रत्येक व्यक्ति, वस्तु, परिस्थितियों एवं कार्यों पर चिंतन करता है, और तत्पश्चात् प्राप्त विचारों को लेखनी से मूर्त रूप प्रदान करता है। यह सामाजिक चिंतन साहित्यकार अनेक दृष्टिकोणों से करता है – जो सामाजिक, धार्मिक, पारिवारिक, नैतिक, आर्थिक, मनोवैज्ञानिक आदि होते है।

महिला कहानीकारों ने भी अपनी कहानियों में समाज के विविध पक्षों पर चिंतन किया है। साहित्य और समाज का घनिष्ठ संबंध है, अतः साहित्य सामाजिक चिंतन से परिपूर्ण होता है। हिन्दी की महिला कहानीकारों का इतिहास अत्यन्त प्राचीन नहीं है। सन् 1980 के पश्चात् महिला कहानी लेखिकाएँ प्रकाश में आयी। आधुनिक काल में हिन्दी कहानी की शुरूआत महिला द्वारा लेखन से ही होती है। कुछ विद्धानों के मतानुसार हिन्दी की पहली कहानी की रचनाकार है – **श्रीमती राजेन्द्र बालाघोष** (बंग महिला) इनकी रचना **''दुलाई वाली''** का रचना काल 1900 ईस्वी है।

सन् 1950 के पूर्व हिन्दी कहानी ने प्रौढ़त्व प्राप्त कर लिया था, किन्तु यह निःसंकोच कहा जा सकता है कि, सन् 1950 के बाद की महिला कहानीकारों ने कहानी को समृद्ध विकसित और उन्नतिशील बनाने में विशेष योगदान दिया। इन 50 वर्षो में अनेक हिन्दी महिला कहानीकारों ने अपनी अद्‌भुत सर्जन प्रतिभा से पुरूष कहानीकारों के सामानान्तर ख्याति अर्जित की है। यह ख्याति कहानियों में सामजिक चिंतन का ही परिणाम है। इनमें मन्नू भण्डारी, कृष्णा सोबती, ऊषा प्रियंवदा, मेहरून्निसा परवेज, दीप्ति खण्डेलवाल, ममता कालिया, मृदुला गर्ग, अचला शर्मा, सूर्यबाला, मनाली चक्रवर्ती, चित्रा मुदगल, डॉ. अलका सरावगी आदि है।

महिला कहानी लेखिका मेहरून्निसा परवेज की ''पांचवी कब्र'' कहानी में गंभीर नैतिक चिंतन एवं ''अंतिम चढ़ाई'', ''बूंद का हक'', ''ढहता कुतुबमीनार'' में पारिवारिक चिंतन स्पष्टतः परिलक्षित होता है। ''कयामत आ गई है'' तथा ''ओढ़ना'' बदले नैतिक मूल्यों तथा निजी अस्मिता की संघर्ष गाथाएँ है। ''जमाना बदल गया है'' में संयुक्त परिवार के विघटन तथा नई और पुरानी पीढ़ी के संघर्ष को दर्शाया गया है। इनमें भी पारिवारिक चिंतन है। मन्नू भण्डारी के कहानी संग्रह ''मैं हार गई'', ''यही सच है'', ''एक प्लेट सैलाब'' आदि में जहां नारी के मन में उठने वाले भावों का मनोवैज्ञानिक चित्रण है, वहीं मनाली चक्रवर्ती की कहानियों में मजदूर वर्ग की महिलाओं की आर्थिक तंगी, बेबसी के चित्रण में उनका आर्थिक चिंतन अत्यन्त मर्मस्पर्शी है।

कृष्णा सोबती पचासोत्तरी हिन्दी महिला कहानिकारों में महत्वपूर्ण कहानीकार है। इनकी कहानियों में राजनैतिक चिंतन के साथ – साथ सामाजिक चिंतन भी हुआ है। इन्होंने देश विभाजन की यातनाओं और विड़म्बनाओं को भोगा है। ''सिक्का बदल गया'', ''डरो मत'', ''मैं तुम्हारी रक्षा करूंगा'', ''मेरी मां ने कहा'' आदि उनके प्रसिद्ध कहानी संग्रह है।

मैत्रेयी पुष्पा के कथा संग्रह ''चिन्हार'' में नारी शोषण के चित्रण में मनोवैज्ञानिक चिंतन और सामाजिक चिंतन दोनों ही है। उन्होनें स्पष्ट किया है कि सामान दायित्व को निभाने के पश्चात् भी प्रत्येक काल में पुरूष के वर्चस्व का पलड़ा भारी रहा है एवं उसी की निर्मित मान्यताएं ही लागू होती है।

सूर्यबाला की कहानियां मध्यमवर्गीय समाज के परिचित यथार्थ को सादगी के साथ अंकित करती है। उनके कहानी ''गृह प्रवेश'' में असुरक्षा का तनाव है, वहीं ''मटियाला तीतर'', ''गीता चौधरी का आखिर सवाल'' में सामाजिक विषमताओं का लेखा–जोखा रचनात्मकता के साथ चित्रित हुआ है।

ऊषा प्रियंवदा की प्रसिद्ध कहानी ''वापसी'' लेखिका की प्रसिद्धि का आधार बना है। संयुक्त परिवार की प्रणाली में बसा देश बीसवीं शताब्दी

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के मध्यकाल तक आते – आते नई परिस्थितियों की आंधी में उड़ने लगता है। यहां तक की एकल परिवार में भी संबंधों का आधार सिर्फ अर्थ ही अर्थ रह जाता है। इस प्रकार यह कहानी लेखिका के पारिवारिक सामाजिक एवं आर्थिक चिंतन को व्यक्त करता है, जो अद्‌भुत है।

आधुनिक महिला कहानीकार डॉ. अलका सरावगी की कहानियों में भी सामाजिक चिंतन – मनन दृष्टिगोचर होता है। डॉ. सरावगी के प्रथम कहानी संग्रह – ''कहानी की तलाश में'' 17 कहानियां है, जो सामाजिक एवं मनोवैज्ञानिक चिंतन से परिपूर्ण है एवं स्त्री, पुरूष के प्रगाढ़ संबंध को प्रकट करती है एवं दूसरे कहानी संग्रह ''दूसरी कहानी'' में 18 कहानियां है जो व्यक्ति के मनोभावों को कुशलतापूर्वक व्यक्त करते है। इन कहानी संग्रहों में अप्रतिम मनोवैज्ञानिक चिंतन का प्रकटीकरण है। वहीं इनमें आर्थिक एवं पारिवारिक तथा धार्मिक चिंतन भी है।

इस प्रकार स्पष्ट है कि, आधुनिक महिला कहानीकारों ने अपनी कहानियों में विविध दृष्टिकोण से सामाजिक चिंतन किया जो व्यक्ति को तत्कालीन देश काल एवं परिस्थिति से भलीभांति अवगत कराती है, साथ ही पाठक को समाज के अनगिनत पहलुओं पर चिंतन करने के लिये भी प्रेरित करती है।

संदर्भ ग्रन्थ :–

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महाकवि कालिदास के ग्रंथों मे पर्यावरण संचेतना

वेदप्रकाश मिश्र
ऐसोशिएट प्रोफेसर,
संस्कृत विभागाध्यक्ष
डॉ.सी.वी.रामन् विश्वविद्यालय
करगीरोड कोटा, बिलासपुर (छ.ग.)

कृष्ण कुमार भास्कर
शोधछात्र
एम.फिल्.(संस्कृत)
डॉ.सी.वी.रामन् विश्वविद्यालय
करगीरोड कोटा, बिलासपुर (छ.ग.)

सारांश

— संस्कृत साहित्य के इतिहास में महाकवि कालिदास का पर्यावरण एवं प्रकृति के चित्रण को निखारते हुए उसकी अद्‌भुत छटा का निरूपण करने में विशेष योगदान है। पृथ्वी में जो वनस्पति, फूल, पेड़–पौधे इत्यादि है वे पृथ्वी के लिए नववैद्य के सामान है एवं जो वृक्ष है उसमे मुख्य रूप से देवी देवताओं का निवास स्थान मना गया है इसलिए सामाजिक लोगों मे इनके प्रति रक्षा के लिए प्रेरणा मिलती है वन में वृक्षों का विनाश हो रहा है तो इसमे वृक्षों पर ही आपत्ति नही आती अपितु जलवायु में भी परिवर्तन होता है, तापमान मे वृद्धि होती है साथ ही साथ मानव जीवन में अनेक समस्याओं का जन्म भी होता है । हमारी संस्कृति जिसमे अहिंसा, जीवों के प्रति दयाभाव, प्रकृति पूजन आदि मूलाधार है। इस शोध पत्र से पर्यावरण के प्रति लोगों को जागृत करना, राज्य एवं राष्ट्र का विकास करना तथा ऐसा प्रयास करना की आने वाले विद्यार्थियों के साथ–साथ पर्यावरणविद्‌ों के लिए भी ज्ञानवर्धक बन सकें।

कालिदास के ग्रंथों में पर्यावरण संचेतना

कुलगुरू महाकवि कालिदास के काव्यों में नाना प्रकार से प्रकृति एवं पर्यावरण के दृश्यों का वर्णन किया गया है। पर्यावरण संचेतना की दृष्टि से महाकवि कालिदास ने सभी जगह मानव रूपी पर्यावरण का अध्ययन किया है वैदिक साहित्य के साथ–साथ कालिदास के ग्रंथों में भी पर्यावरण के प्रति सामान्य लोगों को जागृत करने और पर्यावरण संचेतना के विकास के लिए विभिन्न प्रकार के उपाय बताये गये है जिनका संक्षिप्त वर्णन इस प्रकार किया जा सकता है –

1.रघुवंश महाकाव्य में पर्यावरण संचेतना –

पर्यावरण के सुंदर और मनोहारी चित्रण रघुवंश महाकाव्य में कालिदास ने वृहत्त रूप में किया है जहां पर वन्य प्राणियों, जीव–जंतुओं और वृक्षों को ऋषियों के संतान के रूप में चित्रित किया गया है जिनका पालन–पोषण और रक्षा ऋषिगण किया करते है जिसका सुंदर चित्रण इस प्रकार दृष्ट्‌व्य है–

"आकीर्णमृषिपत्नीनामुटजद्वाररोधिभिः,
अपत्यैरिव नीवारभागधेयोचितैर्मृगैः।
संचारपूतानि दिगन्तराणि कृत्वा दिनान्ते निलयायगन्तुम्,
प्रचक्रमे पल्लवरागताम्रा, प्रभा पतङ्गस्य मुनेश्चधेनुः।।"[1]

यहां वन्य प्राणियों एवं जीव–जंतुओं को ऋषियो की पत्नियॉ अपनी संतान के समान स्नेह करती और उनको भोजन खिलाकर उनकी रक्षा किया करती थी इसके साथ ही संध्या काल के समय सूर्यास्त का सुंदर चित्रण कवि ने यहां पर प्रस्तुत किया है।

इस प्रकार पर्यावरण के प्रति ऋषियों का अगाध प्रेम और संबंध को चित्रित करके पर्यावरण संचेतना हेतु प्रेरित किया गया है।

2. कुमारसंभव में पर्यावरण संचेतना –

कालिदास ने कुमारसंभव में प्रकृति की रमणीयता का चित्रण मंगलाचरण के रूप में इस प्रकार प्रस्तुत किया है–

" अस्यत्युत्तरस्यां दिशि देवात्मा,
हिमालयो नाम नगाधिराजः ।
पूर्वापरौ तोयनिधीवगाह्य,
स्थितः पृथिव्या इव मानदण्डः।।"[2]

यहां मंगलाचरण के रूप में हिमालय पर्वत की महिमा और प्राकृतिक सौंदर्य का गुणगान किया गया है ।

इसी संदर्भ में चंद्रोदय तथा वनों का सजीव चित्रण कुमारसंभव के आठवें सर्ग में इस प्रकार किया गया है –

"अङ्‌गुलीभिरव केशसंचयं संनिगृह्य च तिमिरमरीचिभिः,
कुङ्‌मलीकृतसरोजलोचनं चुम्बतीव रजनीमुखं शशी।"[3]

3.'मेघदूत' में पर्यावरण संचेतना –

कालिदास को 'मानव हृदय का कवि तथा प्राकृतिक सौंदर्य का कवि' कहा जाता है वे प्रकृति के सूक्ष्म द्रष्टा है महाकवि का यह खंड काव्य प्रकृति चित्रण की सर्वोत्तम रचना है मेघदूत के प्रत्येक श्लोक में पर्यावरण की आशा भरी आत्मा की वेदना का चित्रण किया गया है जिसके अंतर्गत संयम, गंभीर, प्रशांत एवं व्याकुलता का स्पष्ट दर्शन पाठक को होता है। इसमें अनेक स्थल है जहां मनुष्य और पर्यावरण के घनिष्ठ संबंध का मार्मिक चित्रण प्रस्तुत किया गया है जो इस प्रकार है–

"मामा काशप्रणिहित भुजं निर्दयाश्लेषहेतो–
र्लब्धायास्ते कथमपि मया स्वप्नसंदर्शनेषु।

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पश्यन्तीनां न खलु बहुशो न स्थली देवतानां,
मुक्तास्थूलास्तरूकिसलयेष्वश्रुलेशाः पतन्ति।।"[4]

यहां प्रकृति भी यक्ष की विरह वेदना तथा करूण दशा को देखकर अपनी सहानुभूति प्रकट करती है कि जब यक्ष स्वप्न में अपनी प्रियतमा के अलिंगन के लिए आकाश में भुंजाएँ फैलाता है तब वन, वृक्ष, जीव–जंतु और देवताओं के नेत्र से आंसू बहने लगते है। संक्षिप्त में भावार्थ यह है कि मनुष्य और पर्यावरण एक दूसरे के अभिन्न अंग है तथा जब किसी एक को दुःख व क्षति पहुंचती है तो दूसरा भी उससे प्रभावित होता है । अतः पर्यावरण का संरक्षण हम सबका कर्त्तव्य है तथा यही भाव पर्यावरण संचेतना कहलाता है।

4. ऋतुसंहार में पर्यावरण संचेतना –

ऋतुसंहार को कालिदास की प्रथम रचना माना जाता है। महाकवि कालिदास ने अपनी इस काव्य रचना मे ग्रीष्मऋतु से बसंतऋतु तक सभी छः ऋतुओं के पर्यावरणीय सौंदर्य का चित्रण अपने प्रिया को संबोधित करते हुए किया है। कालिदास ने ऋतुसंहार में ग्रीष्म की प्रचण्डता के साथ–साथ बसंत की सरसता का मनोहारी चित्रण प्रस्तुत किया है जो प्रकृति को आलम्बन रूप में इस प्रकार चित्रित करती है–

"विशुष्ककण्ठोद्गतसीकराम्भसो गभस्तिभिर्भानुमतोऽनुतापिताः।
प्रवृद्धतृष्णोपहता जलार्थिनो न दन्तिनः केसरिणोऽपि बिभ्यति।।"[5]

अर्थात् यह कैसा प्रचण्ड ग्रीष्म है कि सूखे कण्ठ से जल को ग्रहण करने वाले, सूर्य की प्रचण्ड किरणों से तप्त एवं अत्यधिक प्यासे जल की इच्छा करने वाले हाथी प्यास से व्याकुल होने के कारण सिंह से भी नही डरते हैं।

अतः कवि ने ऋतुसंहार में प्राकृतिक दृश्यों का रमणीय चित्रण प्रस्तुत किया है।

5. मालविकाग्निमित्रम् में पर्यावरण संचेतना –

कवि कालिदास का प्रकृति चित्रण अनुपम है इनके काव्य में समुद्र, सरोवर, वन, सूर्य, चन्द्र, रात्रि, दिन, वनस्पति, लता एवं पशु–पक्षियों आदि प्राकृतिक वस्तुओं का चित्रण किया गया है। यहा बसंत ऋतु का वर्णन करते हुए कालिदास ने बताया है कि इसमें इतनी शोभा का बाहुल्य हो गया है जिसके सामने स्त्रियों का श्रृंगार भी परास्त हो गया है।

राजा अग्निमित्र कहते है कि –

"सर्वशोकतरूणां प्रथमं सूचितवसन्तविभवानाम्।
निर्वृत्तदोहदेऽस्मिन्सङ्क्रान्तानीव कुसुमानि।।"[6]

अर्थात् लाल अशोक की लालिमा ने स्त्रियों की बिम्बाधरों की लालिमा का अतिक्रमण कर दिया काले, श्वेत एवं लाल कुरबक पुष्प ने स्त्रियों की मुख की चित्रकारी का तिस्कार कर दिया काले भंवरो से लिपटे हुए तिलक पुष्प ने स्त्रियों की मस्तक की बिन्दी का अतिक्रमण कर दिया लगता है बरूत की शोभा स्त्रियों की प्रसाधन का अनादर करने में उतारू है।

(6) विक्रमोर्वशीयम् मे पर्यावरण संचेतना –

महाकवि कालिदास रस सिद्ध, वरद् पुत्र थे उन्होंने साहित्य की जिस विधा का भी स्पर्श कर दिया वही सरस और मनोहारिणी हो गयी। नाट्यकला सर्वाधिक हृदयहारिणी साहित्य की विधा है इसमें सभी को प्रवाहित करने की अद्भुत क्षमता है कालिदास की प्रकृति वर्णन में इतनी रमणीयता, भव्यता एवं स्वाभाविकता है कि पाठकों एवं श्रोताओं के मन बर्बश इसमें रम जाते हैं।

विक्रमोर्वशीयम् में प्रकृति की रमणीयता का स्थान–स्थान पर बहुत ही सुंदर चित्रण किया गया है जिसका संबंध पर्यावरण से हैं। उर्वशी के प्रथम दर्शन के अवसर पर महाराज पूरूरवा उसकी दिव्य शोभा निहार कर अपने मन में इस प्रकार विचार करते है :–

"आविर्भूते शशिनि तमसा मुच्यमानेव रात्रि –
नैंशस्यार्चिर्हुतभुज इव च्छिन्नभूयिष्ठधूमा ।
मोहेनान्तर्वरतनुरियं लक्ष्यते मुक्तकल्पा,
गंङ्गारोधः पतनकलुषा गच्छतीव प्रसादम्।।"[7]

यहां राजा पुरूरवा चित्रलेखा से कहते है कि तुम्हारी सखी उर्वशी बेहोशी के दूर हो जाने पर ऐसी लग रही है जैसे चन्द्रमा के उदय होने पर रात अंधकार रहित हो तथा रात के समय धुंआ रहित आग की लपटे हो या गंगा की उस धारा के समान जो कगार के गिर जाने से कुछ पल के लिए मटमैली होकर फिर से पुनः पूर्व के समान निर्मल हो गयी हो।

इस प्रकार पर्यावरण से संबंधित सभी तत्वों पर मुख्य रूप से प्रकाश डाला गया है। नायक एवं नायिका का संबंध वायु, पर्वत, वृक्ष, जल, कमल, जंगल, वनस्पति आदि से सम्मिलित किया गया है अतः प्राकृतिक शक्ति में ही दैव दर्शन होता हैं।

7.अभिज्ञानशाकुन्तलम् में पर्यावरण संचेतना –

महाकवि कालिदास विरचित नाटक अभिज्ञानशाकुन्तलम् पर्यावरण संरक्षण और संचेतना की प्रेरणा देती है क्योंकि इसके नायक और नायिका को पर्यावरण के संरक्षक और पालक के रूप में इस प्रकार चित्रित किया गया है –

" किं तावद व्रतिनामुपोढतपसां विघ्नैस्तपो दूषितं,
धर्मारण्यचरेषु केनचिदुत, प्राणिष्वसच्चेष्टितम्। अहोस्वित्प्रसवो
ममापचरितैर्विष्टाम्भितो,
वीरूधा–मित्यारूढ़बहुप्रतकर्म परिच्छेदाकुलं मे मनः।।"[8]

यहां राजा दुष्यन्त तपोवन के वृक्ष, वनस्पतियों, ऋषियों एवं जीव–जंतुओं की चिंता करते हुए कहते है कि वन में कहीं पर उपद्रवकारी राक्षसों ने तपस्या करने वाले ऋषियों के तप में तो बाधा नही डाल दिया है ? या कहीं कोई तपोवन के प्राणियों को तो नही सता रहा है ? या मेरे पापों के कारण वनस्पतियों एवं लताओं व वृक्षों का फलना–फूलना बंद तो नही हो गया ? इस प्रकार की अनेक आशंकाए मेरे मन उठ रही है जिससे मै विचलित हो गया हूं।

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अतः इस प्रकार पर्यावरण चेतना का विकास तभी संभव है जब हम प्रकृति से प्रेम करे और उसकी चिंता अर्थात देखभाल करें। महाकवि कालिदास अपनी सभी कृतियों में बाह्य एवं अन्तःप्रकृति दोनो का सजीव चित्रण प्रस्तुत किया है और यह भी स्पष्ट किया है कि पर्यावरण और मनुष्य का संबंध प्राचीनकाल से ही स्थापित है तथा दोनो एक दूसरे के अभिन्न अंग है इसलिए दोनों मे से किसी एक को यदि क्षति, दुःख होता है तो उसका प्रभाव भी दोनों पर समान रूप से पड़ेगा।

इसलिये मानव समाज को प्राचीनकाल की भांति पर्यावरण से पुत्रवत् व्यवहार और प्रेम करना होगा और साथ ही उसकी देख–रेख व पालन–पोषण कर उसकी रक्षा करनी होगी तभी दोनो एक दूसरे को खुशी और समृद्धि दे सकते है यही पर्यावरण के प्रति जागरूकता और संचेतना है।

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कसडोल तहसील में पर्यटन के विकास एवं संभावनाएँ

प्रशांत गौरहा
विभागाध्यक्ष भूगोल,
डॉ.सी.वी.रामन् विश्विद्यालय कोटा बिलासपुर (छ.ग.)

सारांश –

1948 तक हीराकुण्ड बांध के पूर्व तक महानदी के प्रवाह तट पर स्थित बस्तियों में ईसा पूर्व 1600 ई. से लेकर 1947 के पूर्व के इतिहास की घटी घटनाओं का गवाह या क्षेत्र रहा है, वर्तमानव में विकास को तरसता यह भू–भाग अपनी पहचान खोने को विवश है।

छत्तीसगढ़ प्रदेश बनने के बाद भी यह क्षेत्र गरीबी, निरक्षरता, अपराध, नक्सलों के हलचल जैसे दुर्गुणों से लोगों में भय व्याप्त होने लगा है।

स्वप्रेरित यह क्षेत्र अपनली पहचान पर्यटन क्षेत्रों के विकास के द्वारा कबन सकता है। यहाँ प्राप्त अवशेष 1600 ई.पू. रामायण काल, 600 ई.पू. बौद्धकाल, 300 ई.पू. पौराणिक काल, 06 शताब्दी समुद्रगुप्ता, 10 श. हैहयवंशी नरेश, 11 शता. नवीन पूराण, 06 शता. बौद्ध मतावली, 18 शता. भोसला नरेश से 1861 में अंगेजो के हाथ में आने पर पर्यटन क्षेत्रों में नों के बीच रेस्ट हाउस बनाया गया तथा प्राकृतिक क्षेत्रों को चिन्हांकित कर विकसित किया गया। शहीद वीरनारायण सिंह की पहचान का क्षेत्र वर्तमान में सतनाम पंथी के लिये गिरौदपुरी अपनी समृद्धि को बढ़ा रहा है, ऐतिकासिक, रातनैतिक, धार्मिक, प्राकृतिक अभ्यारणर जैसे पर्यटन केंद्रों को विकसित कर सड़क मार्गों के उन्नयन से क्षेत्र का विकास संभव है।

अध्ययन क्षेत्र की भौगोलिक विशेषताएँ –

छत्तीसगढ़ राज्य के बलौदाबाजार जिला का यह तहसील 21^0 से $21^0$44'उत्तरी अक्षांश तथा $82^0$14' से $82^0$42' तथा पूर्वी देशान्तर में 67988 वर्ग हेक्टेयर क्ष्ज्ञेत्र में त्रिभूजाकार फैला है, उत्तर में जांजगीर, दक्षिण में महासमुंद जिला पूर्व में बिलाईगढ़ एवं पश्चिम में बलौदा बाजार तहसीलव स्थित है।

उत्तर मैदानी दक्षिण पर्वतीय एवं पठारी, तटवर्ती कछारी भूभाग जो कड़प्पा काल के एवं ग्रेनाइट चट्टानों से बना है, उत्तर, पूर्व एवं पश्चिमी भाग समुद्र सतह से 200 मीटर तक उंचा है जबकि दक्षिण मध्य भाग 700 मी. उंचा है। उत्तर से महानदी पूर्व में जोंक नदी एवं उसकी सहायक अपवाह तंत्र विकसित है। उष्ण मानसूनी 26.53% से औसत ताप तथा 83.25% कन्हार 4.81% मिट्टी का विस्तार है। कुल क्षेत्रफल का 14.37% आरक्षित 4.32% सुरक्षित वनों का क्षेत्र है।

यहां 152 राजस्व ग्राम 26 पटवारी हल्का, 60 जन घनत्व यहां 1,41,620 जनसंख्या जिसमें 70501 पुरूष एवं 71122 महिला है, जन घनत्व 02 व्यक्ति प्रतिवर्ग हैक्टेयर है लगभग कसडोल में 10,000 एवं तुरतुरिया मात्र 04 व्यक्ति निवास करते हैं, सड़के एवं नदी के किनारे गांव बसे है जनसंख्या अधिक एवं 60 वर्ष से अधिक जनसंख्या कम है अर्थात् जन्म एवं मृत्युदर दोनों अधिक है। कुल जनसंख्या का 65% समान्य जाति शेष जातियां जनजातियां है। (13.50 तथार 20.0 प्रतिशत) मात्र 30% साक्षर जिसमें महिला 06% पुरूष 24% है। असंगठित मजदूरों की संख्या अधिक है खेतीहार मजदूर कास्तकारों की संख्या कम है।

18.70% वन, 7.83% कृषि के लिये अप्राप्य, 13.47% चारागाह, 03% पड़ती तथा 55.17% निरफसल का क्षेत्र है। खरीफ से अनाज में धान के अलावा कोदा, कुटकी रबी में दालें एवं तिलहर लिया जाता है। महानदी तटीय क्षेत्रर मिर्च, धनिया, आलू के लिये उपयुक्त क्षेत्र है सब्जी एवं फल ग्रीष्म में लिया जाता है, जिसके बाजार विस्तृत है।

गिरौदपुरी एक तीर्थ –

पूरे भारतवर्ष में सतनाम संप्रदाय की एक शाखा से संस्थापक गुरू घासीदाय का जन्म स्थान गिरौदपुरी है। यह लगभग एक हजार की आबादी वाला एक ग्राम है। जो भौगोलिक स्थिति के अनुसार 82^0 34 50'' पूर्वी देशांतर और 21^0 35 45'' उत्तरी अक्षांस पर बसा है। इसकी स्थिति समुद्र सतह से 338 मीटर की उंचाई पर है। तहसील कसडोल के मुख्यालय कसडोल से दक्षिण–पूर्व दिशा में 25 कि.मी. की दूर पर गिरौदपुरी तक पहुचा जा सकता है। म.प्र. राज्य परिवहन निगम की बस इस गांव तक चलती है। मेले के अवसर पर सभी दिशाओं से विशेष बसे चलती है।

इतिहास –

माना जाता है कि सतखोजन दास व सत्या के पूर्वज पुष्कर दीप में रहते थे, दोनों ने घोर तपस्या की, जिससे सतपुरूष प्रकट हुआ और सतखोजन दास का आर्शीवाद दिया कि तुम्हारे वंश में एक महान संत पुरूष आयेगा। संत–खोजनदास का वंश बढ़ता गया और इस वंश के सगुनदास का जन्म हुआ। वे पुष्कर दीप से जंबू दीप में आकर बस गये। वे पंजाब के नारकौल और करनाल में भी रहे। इतिहास इस बात का गवाह है कि सतनाम संप्रदाय पंजाब में विकसित हुआ है। 1672 में जब औरंगजेब ने पंजाब के सतनाम संप्रदाय के लोगों पर धार्मिक और नैतिक अत्याचार शुरू किया तब मेदनीदास पंजाब से भागकर म.प्र. के छत्तीसगढ़ अंचल के जंगलों में छिप गये। मेदनीदस गिरौदपुरी में आकर

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बस गए। जहां उनके पुत्र संत मंहगूदास से गुरूघासीदास का जन्म हुआ।

गिरौधपुरी में प्रतिवर्ष फरवरी माह में मेला लगता है यह मेला फाल्गुन शुक्ल पक्ष पंचमी में लगता है जहां देश भर से लाखों श्रद्धालु यहां पहुचते है। यह मेला 03 दिन लगता है। इस स्थल पर प्रमुख दर्शनीय स्थल इस प्रकार है :–

निवास स्थान –

यह बाबाजी का जन्म स्थली है, इस निवास स्थान के मुख्य द्वार पर जैतखाम बना है, जो संत घासीदास के समय का बना हुआ है। सतनाम मतावलियों के अनुसार जैतखाम पर सफेद झण्डा लहराता रहता है जो असत्य पर सत्य की विजय का प्रती है। निवास स्थान के रूप में एक कदा है, जहां संत का जन्म हुआ था। जिसे हमेशा साफ–सुथरा पवित्र वातावरण मे रखा जाता है।

सफुरा का मठ –

संत घासीदास की पत्नि सफुरा का मठ हरे भरे पेड़ों की छांव में एक छोटे से सुंदर तालाब के किनारे स्थित है,जो श्रद्धालुओं का आकर्षण का केंद्र है।

तपोभूमि –

गिरौधपुरी से मात्र आधा किलोमीटर की दूरी पर दक्षिण–पूर्व दिशा में स्थित है यहां एक 35 फीट लंबा चबुतरा है, यहां संत लोग बैठकर धार्मिक प्रवचन करते है। यह वह स्थान है, जहां गुरूघासीदास ने तप किया, धुनी रमायी, सतनाम को आत्मसात कर सतपुरूष के दर्शन किए। किवंदंतियों के अनुसार अस तपोभूमि के 11138 वर्गफीट क्षेत्र में अनेक चमत्कारिक घटनायें घटित हुई है। जिन्हें सुनकर श्रद्धालु यहां आते है।

मुख्य मंदिर –

18 फीट लम्बे और 18 फीट चौड़े चबुतरे पर 08 फीट उंचा मंदिर बना हुआ है। दक्षिण दिशा में मंदिर प्रवेश हेतु 04 सीढ़ियां है, जो क्रोध मोह हिंसा और लोभ को पारकर मंदिर प्रवेश का दर्शन सिखाता है। मुख्य मंदिर के सामने दो छोटे मंदिर और मंदिरों के बीच एक चबुतरा है। जिस पर घासीदास बैठकर ध्यान किया करते थे। इस मंदिर में मेले के समय प्रतिवर्ष लाखों की संख्या में दर्शनार्थी आते है। यहां दर्शनार्थियों द्वारा चाही गयी इच्छाएं पूर्ण हो जाती है ऐसा मानना है।

पंचवटी धाम –

तपोभूमि स्थल पर संत घासीदास के उपदेश को मूर्तरूप देने हेतु पांच मंदिर बनाये गये है, जिससे पंचवटी धाम बना ळें

संत अखाड़ी –

इस स्थान पर जो तपोभूमि स्थल पर स्थित है गुरू घासीदास संतो और जन–सामान्य के समक्ष उपदेश प्रवचन किया करते थे। यहां आज भी संत–गणों के द्वारा समाधि लिए जाने का वृतांत मिलता है।

पदचिन्ह –

तपेभूमि में एक स्थान पर मनुष्य और शेर के पंजो के निशान पाये जाते है। पैर का निशान गुरू घासीदास का मानते है और दूसरा शेर के पंजे का निशान बताया जाता है कि शेर के रूप में सतपुरूष द्वारा घासीदास को भय दिखाने हेतु लिए अवतार का चिन्ह है।

चरणकुण्ड –

यह एक 25 फीट गहरी बावती है जो ऊपर 45 फीट चौड़ी और 36 फीट लंबी है। इस कुंड रूपी बावली में उतरने के लिए 25 सीढ़ियां है, ऐसी मान्यता है। चरणकुण्ड से गंगा अवतरित हुई थी और दूध की धारा के रूप में प्रकट हुई थी। तब उस धूनी की गर्मी से प्रलय मच गया था। जिसे शांत करने के लिए सुष्टिकर्ता ने गंगा मैया को भेजा। इस कुण्ड को म.प्र. शासन ने वर्ष 1981 में सुरक्षा की दृष्टि से सीमेंट कांक्रेट से मजबूत बना दिया है। इस स्थल पर पूरे भारत के कई लाख श्रद्धालु आते है। और सभी इस चरण कुण्ड का चल पीते है तथा स्नान करते है। जहां पूर्व में अनेक हादसे घटित हो चुके है। वास्तविकता चाहे जो हो किन्तु कुण्ड के पास वातावरण शीत और सुखद है तथा चारो ओर प्राकृतिक सौंदर्य पर्यटक को आकर्षित करता है।

अमृतकुण्ड –

चरणकुण्ड से मात्र 300–400 मीटर की दूरी पर दो पहाड़ियों के बीच झुरमुट के भीतर एक कुण्ड है जो चारो ओर परतदार चट्टान से घिरा है कुण्ड के भीतर जल इन्हीं चट्टानों की परतों के बीच से रिसता है। इस कुण्ड का जल भूरा मटमैला गंगा जल सदृश्य है। इस जलकुण्ड की श्रद्धालु पूजा करते है।

छाता पहाड़ –

छाता का अर्थ छतरी है जो पानी और धूप से रक्षा करता है। यहां जंगल इतने घने है कि यदि इस पहाड़ पर पहुचा जाये जो मनुष्य धूप और वर्षा से सुरक्षित हो जावेगा। इस स्थान का नामकरण कोई 400–500 वर्ष पूर्व हुआ है। अतः यदि आज वृक्षों की इतनी सघनता है तो 400–500 पूर्व वर्ष निःसंदेह इतना घना रहा होगा कि जनजातीय भावार्थ में इसे छाता पहाड़ नाम दे दिया गया। इस पहाड़ पर चट्टानी गुफा है जहां धूप पानी टंड के साथ–साथ जंगली जारनवरों से भी मनुष्य अपनी रक्षा कर सकता है।

गिरौधपुरी का संपूर्ण क्षेत्र पहाड़ी और वन से युक्त होने के कारण सतनाम संप्रदाय के मतावलियों के लिए वार्षिक मेले में आकर्षण का केन्द्र रहता ही है। किन्तु प्राकृतिक सौंदर्य के कारण सामान्य पर्यटक भी यहां नियमित रूप से अवकाश के दिनों में आते है। इस धार्मिक–प्राकृतिक स्थल पर घासीदास के जीवन से जुड़े पर्यटन उत्पाद के अलावा पहाड़ी चट्टानों झरनों का भी विशाल संग्रह है।

तुरतुरिया –

एच.एम.लाही रायपुर कमिश्नर ने स्थल विकसित किया। कसडोल तहसील का यह दूसरा महत्वपूर्ण प्राकृतिक दृश्यों से भरा

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धार्मिक महत्व का प्रमुख केन्द्र है। तहसील मुख्यालय कसडोल रायपुर से 113 कि.मी. रायपुर बलौदा–बाजार–सरायपाली मार्ग पर स्थित है। बलौदा–बाजार–रायपुर से 84 कि.मी. और कसडोल बलौदाबाजार से 21 कि.मी. पूर्व दिशा में स्थित है। कसडोल से दक्षिण दिशा में 20 कि.मी. पर बालमदेही नाले के तट पर अत्संत मनोरम प्राकृतिक स्थल तुरतुरिया है जो मातागढ़ पहाड़ी की तलहटी में बसा है। वर्षाकाल को छोड़कर पूरे वर्ष निजी साधनों से यहां पहुंचा जा सकता है। तुरतुरिया आने के अनेक रास्ते है जिनमें रायपुर बलौदाबाजार के अलावा रायपुर महासमुंद होते हुए सिरपुर से तुरतुरिया सिरपुर एक बौद्धकालीन पर्यटन स्थल है किन्तु अब यह नये जिलों के निर्माण के कारण महासमुंद जिले में चला गया है। सारंगढ़ से अपने वाले कसडोल होकर तुरतुरिया जायेंगे। कसडोल से सिरपुर मार्ग पर ठाकुरदिया तक पक्की सड़क है जहां से भीतर जंगल रास्ते में 07 कि.मी. कच्चे, उबड़खबड़ रास्ते पर तुरतुरिया स्थित है।

भौगोलिक स्थिति –

यह स्थान 22^0 29′45′′ उत्तर अक्षांस और $82^0$22′. 50′′ पूर्व देशान्तर पर स्थित है। समुद्र समह से इस स्थान की ऊंचाई 300 मीटर है।

धरातलीय खान –

यह एक पर्वतीय विषम धरातलीय रचना का प्रदेश है। बालमदेही नाला जो महानदी में गिरता है के तट पर मातागढ़ की पहाड़ी की गोद में यह स्थान बसा है। चारो ओर घने वन और पहाड़ियां है।

बलमदेही नाले के तट पर समतल व मैदानी भाग में प्रतिवर्ष यहां विशाल मेले का आयोजन किया जाता है। मध्यप्रदेश वन विभाग द्वारा इस स्थान को पर्यटकों के लिए सुविधायुक्त बनाया है। मातागढ़ की पहाड़ी से एक जलस्त्रोत भूमिगत रूप से नीचे आता है और एक स्थान पर जहां अब गोमुख बना दिया गया है से एक कुण्ड में गिरता है। इस जलधारा के गिरने की आवाज के आधार पर अर्थात आंचलीक भाषा में इस तरह जल गिरने की आवाज तुरतुर कहलाती है।

बलार डेम –

बलार जलाशय परियोजना अंतर्गत निर्मित एक विशाल बांध है। जहां प्राकृतिक सौन्दर्य का अवलोकन करने हेतु एक सुरक्षित समतल मैदान पर रूकने की व्यवस्था की गयी है। जो पर्यटकों को आकर्षित करता है।

यह स्थान कसडोल असनिंद जंगल मार्ग पर मिरगिदा ग्राम के पास बनाया गया है। बलार नाले पर बनाये गये इस बांध का प्रमुख उद्देश्य यहां के कृषिकों को आवश्यकतानुसार सिंचाई उपलब्ध कराना है। इस बांध की सिंचाई क्षमता 13750 एकड़ है। इससे महानदी और जोक नदी के दोआब क्षेत्र के कोई 23 ग्रामों को सिंचाई सुविधा मिलेगी।

यह बांध दो पहाड़ियों को जोड़ कर बनाया गया है जो भाखरा बांध के सदृश्य दृश्य उपस्थिति करता है। पर्यटकों के लिए बलार बांध इसलिए भी आकर्षण का केन्द्र है क्योकि यहां वन्य पुशु पेयजल की तलाश में आ जाते है और पर्यटक इन्हें देख पाने की आस में आता रहता है। अवकाश के दिनों में आस–पास के परीय पर्यावरण के क्षेत्र से लोग मनोरंजन के क्षर्ण व्यतीत करने पहुंचते रहते है।

–: बार नयापारा अभ्यारण :–

मध्यप्रदेश शासन ने बार नवापारा सुरक्षित वनप्रांतर में उपलब्ध शेर, तेन्दुआ, भालू, बायसन, सांभर, चीलत, चौसिंगा, कोटरी, जंगली कुत्ते, जंगली सुअर, बनबिलाव, जंगली बिल्ली, लकड़बग्घा, मोर, भेड़िया, खरगोश तथा 244 वर्ग किलोमीटर क्षेत्र में फैले बहुमूल्य वृक्षों के महत्व को देखते हुए इसे अभ्यारण्य घोषित कर दिया है। इस अभ्यारण्य में जंगली जानवरों के पीने हेतु पानी का तालाब है। जिसके पास एक वाच टावर बनाया गया है। इस टावर पर चढ़कर और रात्रि का इंतजार करते हुए वन्यजीवों का इस तालाब में पानी पीते हुए देखा जा सकता है।

बार नवापारा क्षेत्र के अभ्यारण के अतिरिक्त पर्यटन की दृष्टि से महत्वपूर्ण निम्न क्षेत्र है :–

सिद्ध खोल –

यह कसडोल से मात्र 09 कि.मी. पर स्थित एक जलप्रपात है। जिसकी वर्ष के 08–10 माह तक अद्भूत दर्शनीय दृश्यावली रहती है।

देवधारा –

कसडोल से लगभग 35 कि.मी. की दूरी पर स्थित यह भी एक जलप्रपात है किन्तु इस प्रपात की धारा पतली और ऊंचाई भी कम है।

देवपुर हिल्स –

देवधारा से कोई 13–14 कि.मी. दूर देवपुर की पहाड़ियां है जिसकी समुद्र सतह से ऊंचाई 2800 फीट है। और इसे रायपुर जिले की सबसे ऊंची जगह मानते है। इस पहाड़ी चोटी से शिवरीनारायण, बलौदाबाजार साफ दिखाई देता है। जहां से शिवरीनारायण दिखाई देता है इस स्थान को शिवरीनारायण प्वाइंट कहा जाता है।

सिंहनगढ़ –

यहां से खण्डहर एवं भग्नावशेष पाये जाते है। उससे ऐसा प्रतीत हो है कि यहां बौद्ध संस्कृति कभी अपने वैभव में थी। बताते है कि यह स्थान महायान बौद्ध सम्प्रदाय के लोगो की कर्मभूमि था और उसी युग की बौद्ध ऋषिकन्याओं का आगम था। सिंहनगढ़ की पहाड़ी गुफा पहाड़ी पर चौरस समतल मैदान सघन वन पर्यटकों को आकर्षित करता है।

नारायणपुर –

कसडोल से मात्र 11 कि.मी. दूर पुरातत्व विभाग द्वारा संरक्षित नारायपुर मंदिर है जो महानदी के तट पर बसा है। और वन विभाग ने नदी तट पर छतरियां लगाकर पर्यटन के लिये आकर्षण उत्पन्न किया है। यहां मंदिर भोरमदेव और खुजराहो शैली पर पत्थरों पर मूर्तियां तराशकर बनाया गया है।

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सोनाखान –

जोंक नदी तट पर बसे इस गांव सोनाखान को मध्यप्रदेश सरकार के तात्कालीन मुख्यमंत्री अजुर्न सिंह ने वीरनाराण सिंह की स्मृति स्वरूप इसे विकसित कर दिया है। 1000 एक हजार से ऊपर की आबादी वाले इस गांव से अस्पताल, स्कूल छात्रवास आदि सभी आवश्यक कार्यालय उपलब्ध है। वीरनारायण सिंह का किला भग्नावेश के रूप में आज भी विद्यमान है।

इस सभी स्थानों पर पर्यटकों के लिये सिंचाई, वन और लोक निर्माण के द्वारा विश्रामगृह बनाये गये है। कुछ विश्रामगृह पहाड़ी चोटीयों पर तथा कुछ वनो से घिरे प्रदेश के बने होने के कारण पर्यटकों का मन बरबस मोह लेते है।

1. न्वांगांव का रेस्टहाऊस
2. देवपुर का रेस्टहाऊस
3. पकरीद का रेस्टहाऊस (यह बार और देवपुर के मध्य है)
4. बार का रेस्टहाऊस

–:: पर्यटन की संभावना ::–

पर्यटन संभावना युक्त क्षेत्रों, स्थलों को मुख्यतः प्राकृतिक दृश्य अर्थात नदी, नाले, झरने पहाड़ पठार, वनसंपदा और वन्य जीवन पुरातात्विक ऐतिहासिक स्थल, स्मारक, धार्मिक तीर्थ और आधुनिक औद्योगिक तीर्थ कल कारखाने आदि में विभक्त किया जा सकता है। सकडोल तहसील के अंतर्गत एवं सीमावर्ती क्षेत्रों में ऐसे विभिन्न महत्वपूर्ण स्थान है जो दर्शनीय है और पर्यटन संभावनायुक्ति है।

प्राकृतिक सौन्दर्य के स्थलों में इस तहसील का सिद्ध खोल जल प्रपात जो सकडोल से मात्र 09 कि.मी. दूर है प्रमुख है। पर्यटन संभावनायुक्त ऐतिहासिक पुरातात्विक स्थलों की सूची भी इस तहसील में बड़ी लम्बी हो सकती है। क्योंकि इस अंचल में बौद्ध धर्म की मतावलम्बी अपनी लम्बी पैदल यात्रा के दौरान इस तहसील के अनेक मैदानी, पठारी प्रदेशो में नदियों के तटवर्ती स्थानों पर मंदिर बनाकर बिहार बनाकर रहते है। सिरपुर तुरतुरिया सिंहनगढ़ इसके प्रमुख उदाहरण है जिनको और भी अधिक विकसित करने की संभावना है। इसके अलावा ऐतिहासिक दृष्टि से वीरनारायण सिंह के जन्म एवं कर्मस्थली के रूप में सोनाखान प्रमुख है। जिसका विकास किया जाना पर्यटन के विकास की संभावना की दृष्टि से प्रमुख है। सिरपुर सीमावर्ती क्षेत्र की प्रमुख ऐतिहासिक और धार्मिक स्थल है, जहां पर होने वाले पर्यटन के लिये कसडोल तहसील अच्छा बाजार बन सकता है। पुरातात्विक महत्व की दृष्टि से नारायणपुर का विकास पर्यटन की संभावना की दृष्टि से महत्वपूर्ण है।

पर्यटन स्थलों का महत्व स्वाभाविक ही पर्यटकों से जुड़ा रहता है। और इस अंचल में पर्यटन का स्वभाव अधिकांश स्थानीय तथा धार्मिक प्रकार का है। इसलिए पर्यटन या सैर–सपाटे के कार्यक्रम में कहीं–न–कहीं धार्मिक स्थल जोड़ लिया जाता है। साथ ही पर्यटन संभावना की दृष्टि से यह विशेष महत्वपूर्ण होता है कि किसी स्थल के साथ उसकी पहचान का कोई विशिष्ट बिन्दु निश्चित हो, जिसे देखकर यह औसत रूप से इसे तुरतुरिया कहा गया। कुण्ड में गिरने वाले जल के नीचे स्नान करते हुए लोग अपनी संतान प्राप्ति की इच्छा करते है जो पूरी होती है। ऐसा इस अंचल में विश्वास है इच्छा पूरी होने के उपरांत वही दंपति पुनः अपनी मनोकामना पूर्ण होने के उपलक्ष्य में ऊपर स्थित राम–लक्ष्मण मंदिर में भेंट चढ़ता है। ऊपर मातागढ़ पहाड़ी पर जहां से इस जलप्रपात का उद्‌गम है, मनोकामनापूर्ण होने पर बकरे की बली देने का रिवाज है, जो मध्यप्रदेश शासन द्वारा अब प्रतिबंधित कर दिया गया है।

पर्यटन के लिए इस धार्मिक सामाजिक मान्यता के अलावा प्रकृति का मनोरम दृश्य महत्वपूर्ण है। चारो ओर पहाड़ियां घने वन, पहाड़ी चढ़ाई, सूर्योदय का आनंद, हर व्यक्ति पक्षियों का कलवर, रात्रि में जंगली हिंसक पशुओं की चिंघाड़ प्रफुल्लित और भयभीत करती रहती है। बुंदिया बांघ, तेंदुआ, भालू प्रायः दिखार्द देते है। नीचे नदी के पास किवंदंति के अनुसार वाल्मिकि मुनी का आश्रम बताया जाता है। कुछ खण्डहरनुमा कमरों की कतार है जिसे बौद्धकालीन भिक्षुक बताया जाता है।

निष्कर्ष –

कसडोल तहसील के महानदी तट क्षेत्र से प्राचीन बस्तियां है जिनका महत्व एवं वैभव पूर्व के इतिहास में मिलता है। मध्यवर्ती क्षेत्र प्राकृतिक कारणों से दर्शनीय है जबकि पूर्वी क्षेत्र वर्तमान में गिरौदपुरी या बलार बांध के कारण अस्तित्व में आया है। निःसंदेह पूरा तहसील पर्यटन की दृष्टि से महत्वपूर्ण है, साथ ही यहां की फसलें भी ग्रीष्म में नदी तट पर मनोरम दृश्य होते है। मात्र इन क्षेत्रों का प्रचार प्रसार का अभाव, सड़क मार्गो का अभाव दूर कर दिया जाये जो पर्यटन की समस्त दशायें स्वयं स्थापित हो सकती है। क्षेत्र की आर्थिक सम्पन्नता एवं राज्य के लिये आय का स्त्रोत बन सकता है। अंग्रेजों ने इस क्षेत्र की प्राकृतिक केन्द्रों का पर्यटन एवं रेस्टहाऊस बनाकर महत्व दिया, परन्तु धार्मिक केन्द्रों को महत्व नहीं दिया जो जीर्ण हैं, तुरतुरिया, नारायणपुर, सिंहनगढ़ की बौद्धगुफा आदि मात्र अपनी स्थानीय प्रथा , मेला के कारण अस्तित्व में है। इसे सुदृढ़ करना भावी पीढ़ी के लिये आवश्यक भी है।

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