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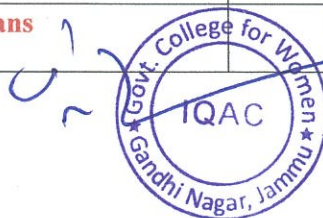
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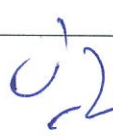
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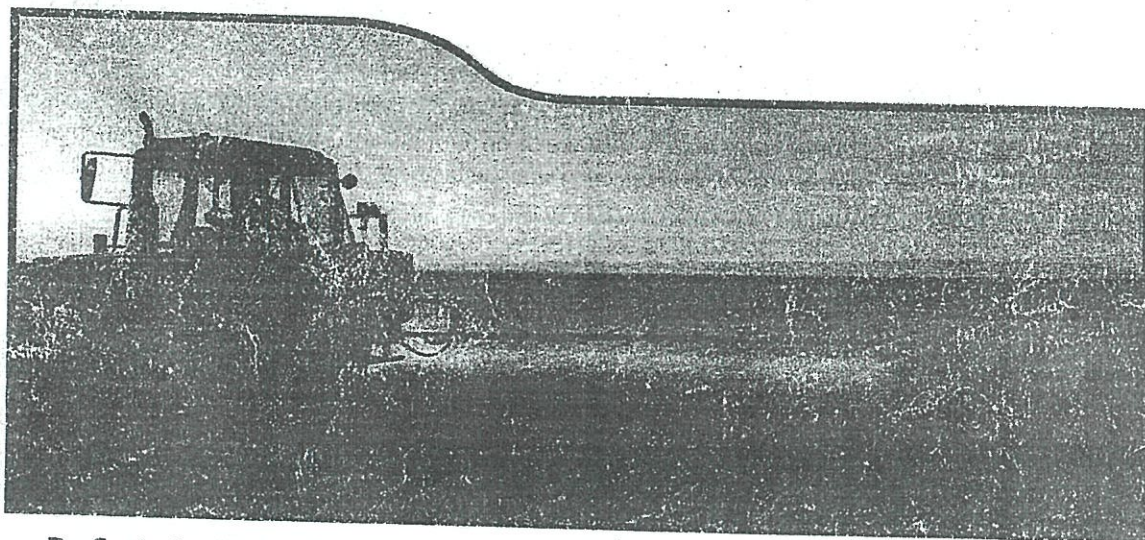
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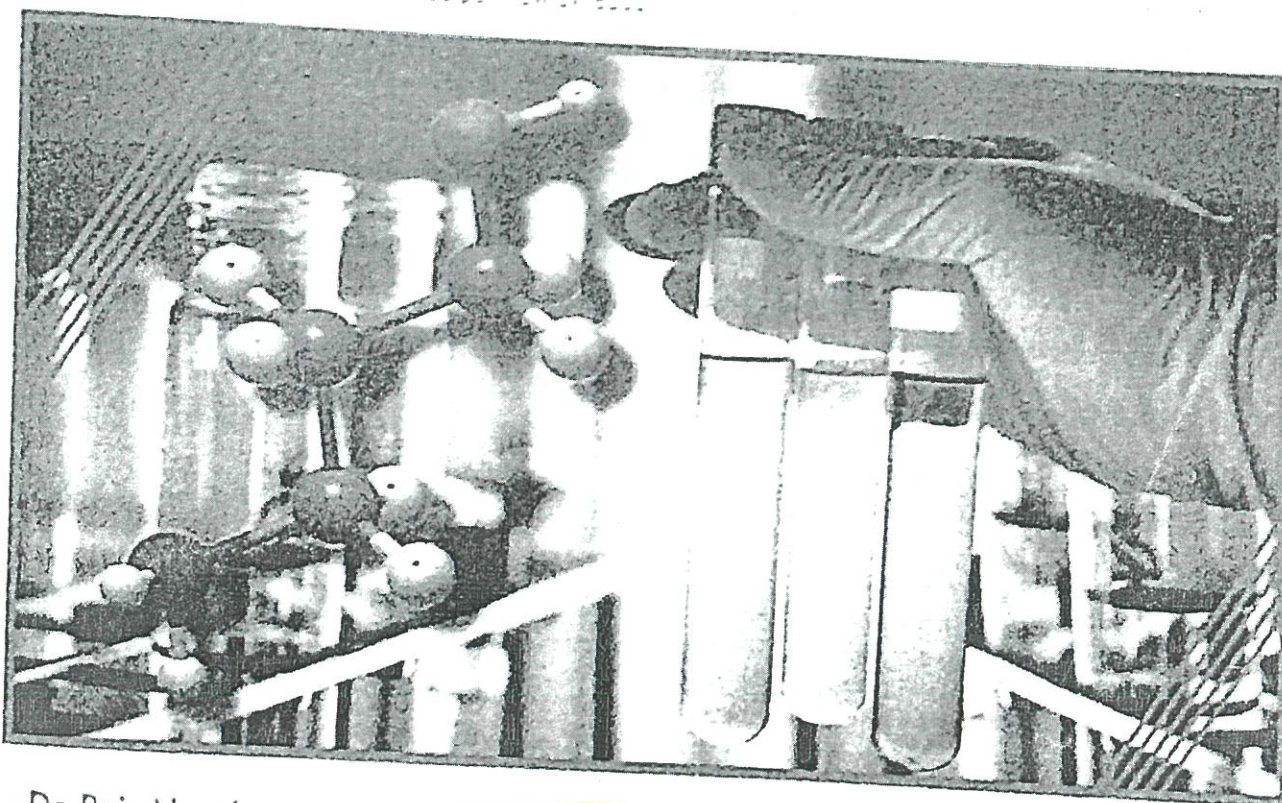


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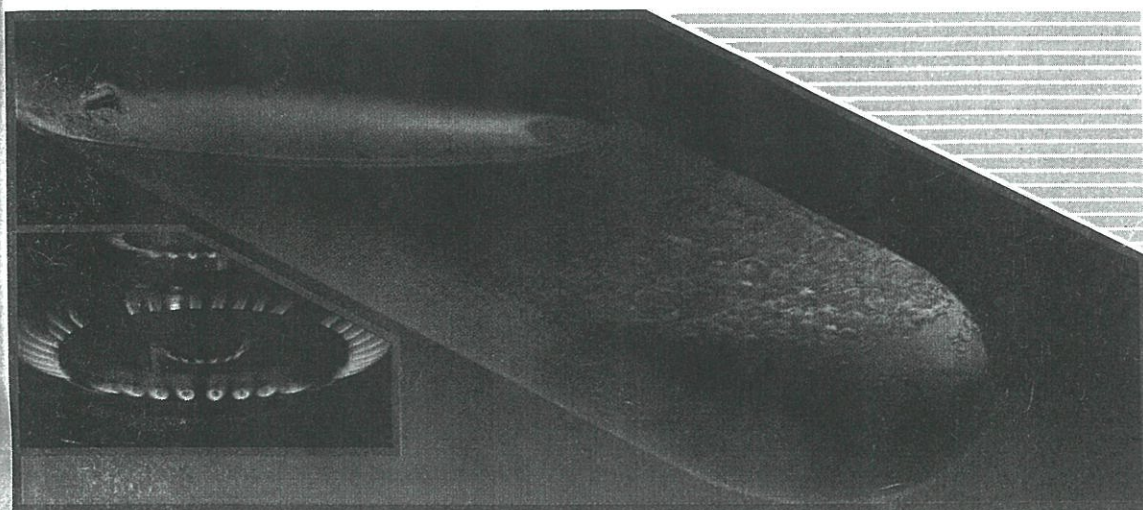
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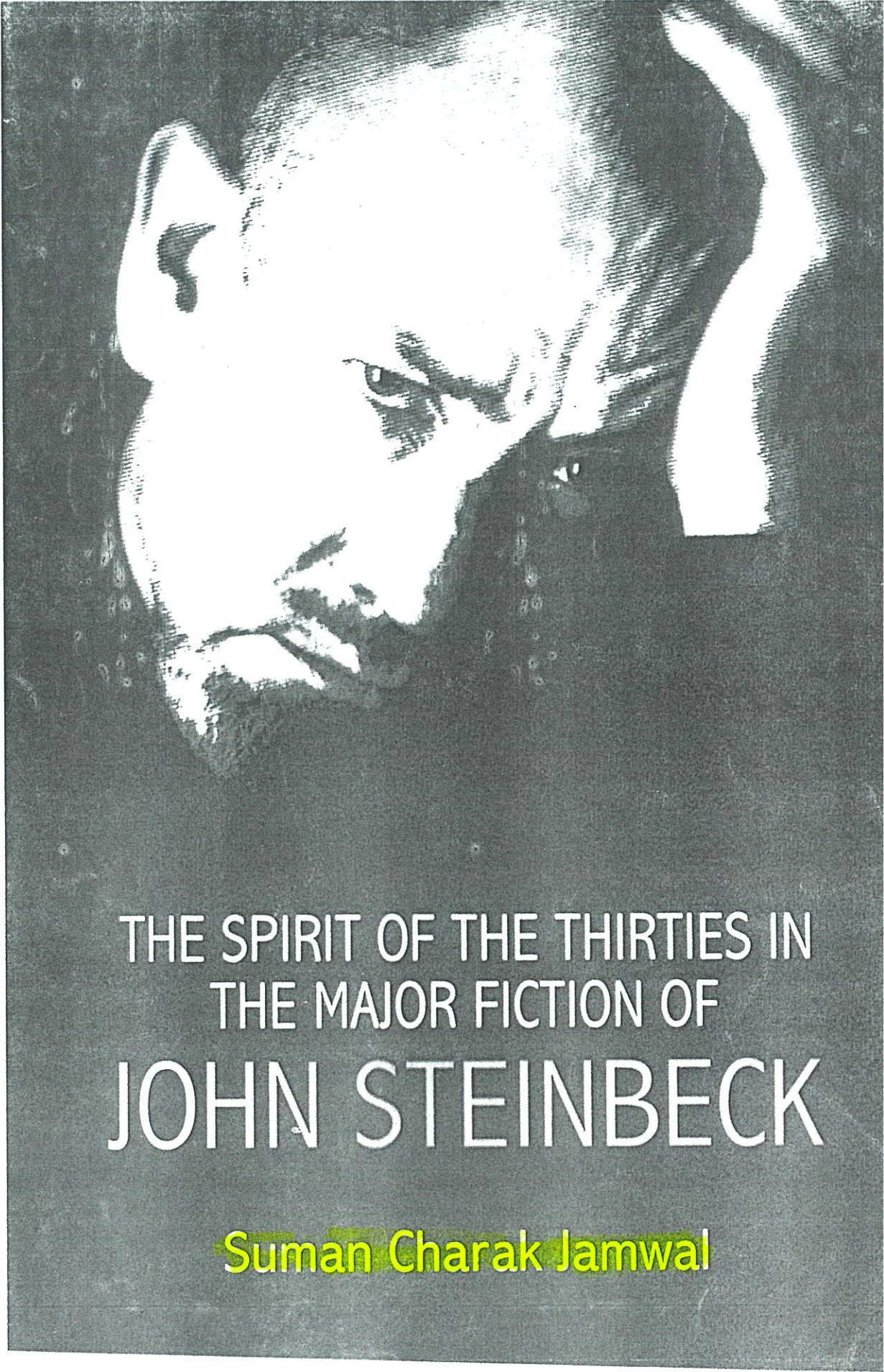
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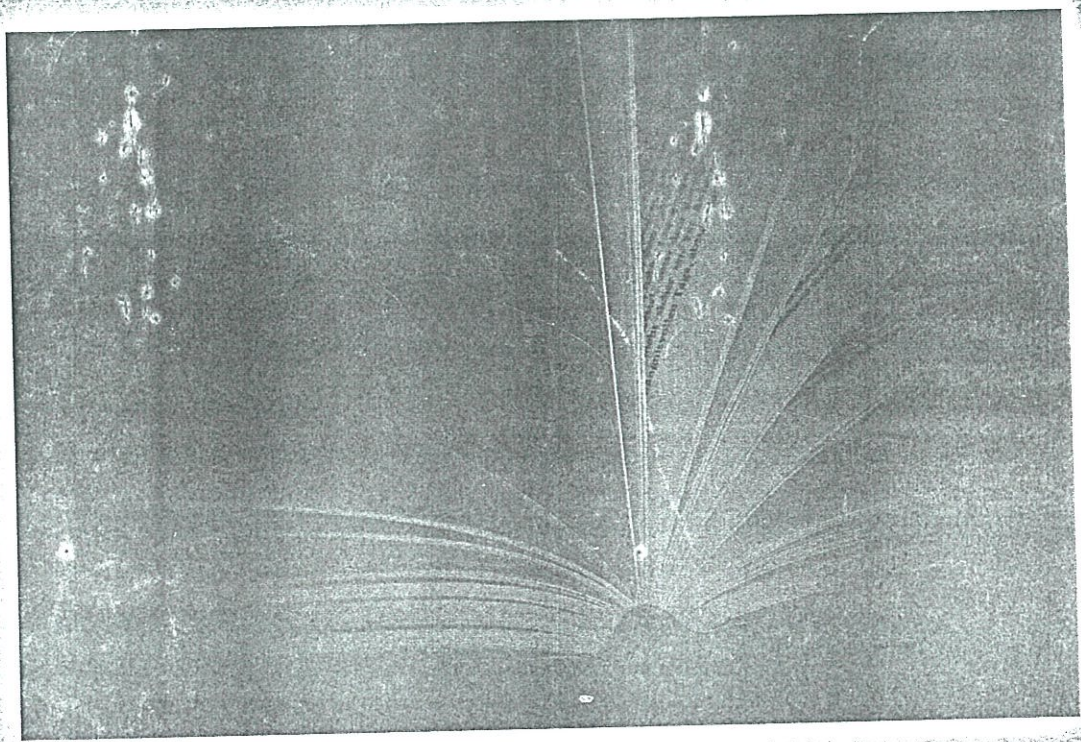
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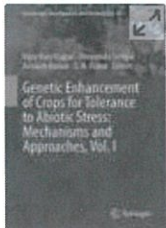
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Abstract

Stress is inevitable in the life cycle of living organisms, including plants. Being sessile, plants are more prone to the deleterious effects of environmental stress. Therefore, plants have developed complex mechanisms to survive under

these challenging conditions. Tolerance, avoidance, and resistance are the three major strategies followed by plants to counter the recurring biotic and abiotic stresses. These mechanisms involve genes associated with several interconnected pathways, which lead them towards better stress tolerance. Plants resort to various modifications in their morphological traits, physiology, and so forth in response to stress.

Modulations in various regulatory mechanisms, including epigenetic modifications, play a pivotal role in developing stress tolerance in plants. These involve changes in either the plant homeostasis or heritable changes in gene expression pattern. The trans-generational changes are brought about, more often, by dynamic changes in epigenetic marks rather than development of stress resistant alleles via gene mutation. A large number of stress resistant transgenics have been developed over the years all over the world. However, the traditional breeding has remained indispensable. Much emphasis has been laid on identification and characterization of stress resistance genes and developing transgenic crop varieties, while the epigenomic aspects have been given less importance. The present chapter focuses on the essential components of epigenetic machinery, different epigenetic alterations involved in conversion of active euchromatin to silent heterochromatin and vice versa during stress, and integration of epigenetic data with breeding

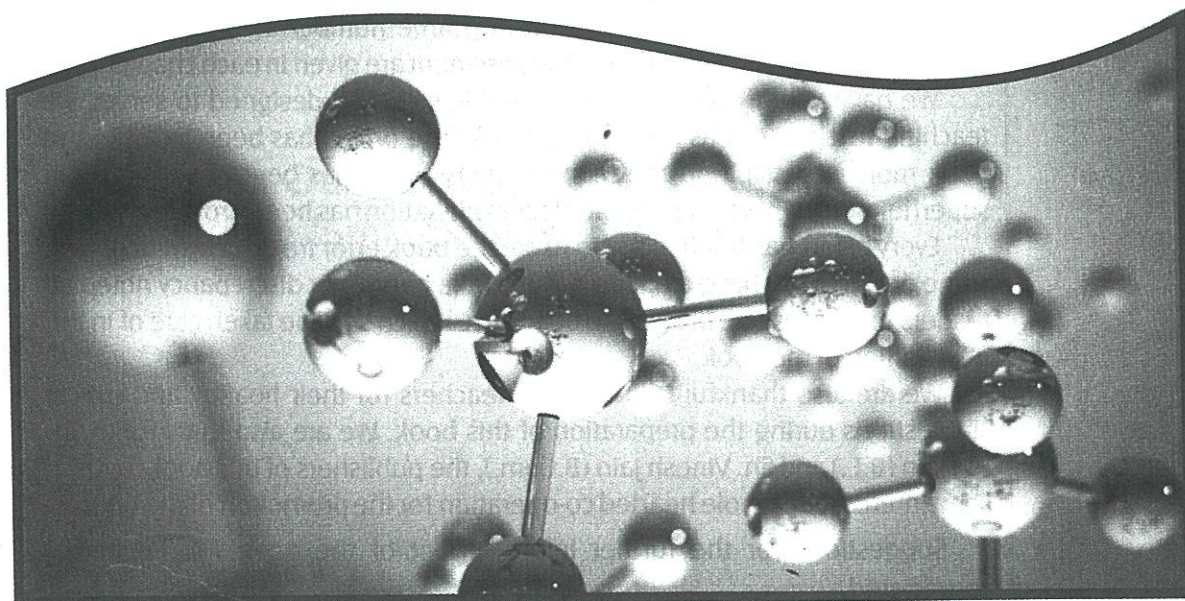


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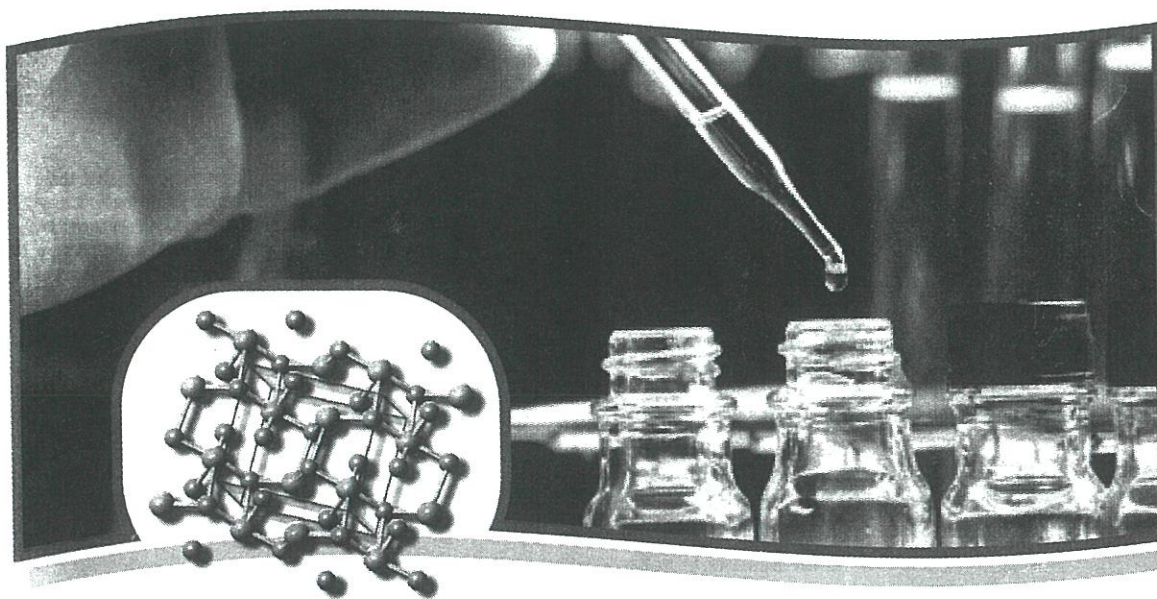


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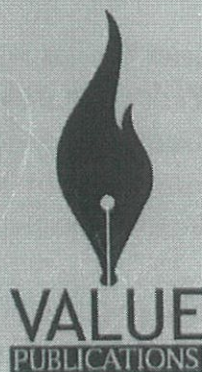
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Chapter 11

Dichotomy of Literary Encounter

A Comparative Study of Indo-Canadian Diasporic Writings

Kiran Kalra

We live in an age of globalization which can be most appropriately described by the phrase "floating the borders." E. M. Forster's "Only Connect" seems to be the 'mool mantra' or the defining principle of this age. We undoubtedly feel proud to call ourselves citizens of this 'one world' in which the distances are diluting, everybody is extending his/her hand to reach out to the other and where apparently, one can claim that at last, the 'meeting of streams' is taking place.

Globalization has led to large scale migrations from Africa, the Caribbean and the Asian Subcontinent to Europe. While international migration is considered to be a healthy trend, and is believed to have shaped the multi-cultural societies of the world like that of Canada, it is also responsible for creating a sense of "alienation" and "marginalization" among a section of migrants. This new phenomenon of globalization has brought forth new aspects of life and thus has introduced new areas in the study of art, literature and culture. In fact, it has paved the way for the growth of new genres in the field of art and literature. As a result of these large-scale immigrations, 'expatriation' has emerged as a literary phenomenon of immense importance in this century.

Chapter 11

Dichotomy of Literary Encounter A Comparative Study of Indo-Canadian Diasporic Writings

Kiran Kalra

We live in an age of globalization which can be most appropriately described by the phrase "floating the borders." E. M. Forster's "Only Connect" seems to be the 'mool mantra' or the defining principle of this age. We undoubtedly feel proud to call ourselves citizens of this 'one world' in which the distances are diluting, everybody is extending his/her hand to reach out to the other and where apparently, one can claim that at last, the 'meeting of streams' is taking place.

Globalization has led to large scale migrations from Africa, the Caribbean and the Asian Subcontinent to Europe. While international migration is considered to be a healthy trend, and is believed to have shaped the multi-cultural societies of the world like that of Canada, it is also responsible for creating a sense of "alienation" and "marginalization" among a section of migrants. This new phenomenon of globalization has brought forth new aspects of life and thus has introduced new areas in the study of art, literature and culture. In fact, it has paved the way for the growth of new genres in the field of art and literature. As a result of these large-scale immigrations, 'expatriation' has emerged as a literary phenomenon of immense importance in this century.

The human story begins in the land of their adoption, where an immigrant has to face many difficulties. "The South Asian migration to Canada has established a diaspora whose immediate need was to articulate its feelings, emotions and responses to the new society.... Writers like M.G. Vassanji, Rohinton Mistry, Neil Bissoondath, Uma Parmeswaram, Himani Bannerjee, and others have, through their literature projected the dilemmas and the struggles of the South Asian Diaspora, thereby giving their ethnic existence a 'voice'" (Narula 14). The first problem that an immigrant in Canada comes face to face is adjusting to its difficult landscape. Canada is a country which faces extreme climatic conditions: six months of extreme winters are followed by six months of shedding. The Canadian wilderness with its vast tracts of snow, endless prairies and innumerable lakes make a great impact on the lives of Canadian people (Prabhavathy 69). Apart from the hostile weather conditions and challenge of cultural assimilation, another problem that a South Asian, in particular, has to face in Canada, is that of racism. The humiliation of racism that one has to go through is very suggestively reflected in these lines by Lakshmi Gill:

Blue ice
(O my Canada)
can I call
you mine
foreign sad
brown that I
am.
(Gill 6)

This paper proposes to underline the dichotomy confronted by an emigrant writer who is caught helplessly in the labyrinth caused by the country of original homeland and the country of adoption and it attempts to study the new contexts in comparative literary studies contributed by the diasporic writers. Writers like M.G. Vassanji, Rohinton Mistry, Uma Parmeswaram, Bharti Mukherjee and many others, have added new concepts to the traditional understanding of literature, its conventions and boundaries.

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Diasporic writing has emerged as a new literary trend and the diasporic literature of the Indian subcontinent is now receiving huge international fame and recognition. Diasporic writers have introduced new themes and diverse techniques in their works. Their literature indulges in nostalgia and at the same time assimilates with the new place and people. In the case of the immigrants in a new land, the longing for the homeland is countered by the desire to belong to the new home, so the migrant remains a creature of the edge, or in the words of Rushdie, "the peripheral man" (Singh). This 'peripheral man' can be seen as the central character in almost all of the writings of the diaspora. Mr. Biswas in V.S. Naipaul's *A House for Mr. Biswas* is a perfect example of the typical "diasporean hero." Instead of considering expatriation as a painful experience in alienation and isolation, South Asian diasporic writers are coming up with their varied and diverse responses to the experience of migration. A sense of rootlessness, homelessness, marginalization, identity crisis and yearning for the homeland are undoubtedly some of the most important and common themes in their literature but they offer a varied variety in their treatment of these themes. Where Naipaul's protagonist constantly struggles to own a house, a piece of land, which can give him an identity of his own in the land of his adoption, in Vassanji's *The Gunny Sack*, a gunnysack acts as a metaphor for the past and the ancestral lineage, which incidentally is of no importance for anyone in the next generation, except the protagonist Kala willingly agrees to carry it. Another peculiar feature of diasporic writings is that one finds a curious attachment of the author to the traditions, religions and languages of his country of origin. In their own different ways, these writers try to recreate their homelands in their writings through memory, nostalgia and imagination.

M.G. Vassanji is one of the most prominent voices of the 'hyphenated-Canadians', the immigrant minorities in Canada. In his novels like *The Gunny Sack* and *The Book of Secrets* he examines the issues regarding identity, displacement and race relations. Vassanji's novel *The Assassin's Song* is of great interest to the Comparatists because in this novel he brings in various

elements of traditional influences, intertextuality and has made many cross references. The narrative of *The Assassin's Song* is embedded with cultural inheritance of the place of origin of both, the author as well as the narrator, which is Gujarat in India. The author depicts diverse harmonies through literary and cultural influences. In the thematic treatment on the one hand, intensions of the migration and border crossing are described while on the other hand we read about the cultural confluences which come to the fore through the mythology of the Pirbaag shrine.

Rohinton Mistry, on the other hand, is a Parsi-Indo-Canadian diasporic writer whose works explore the everyday lives of *Parsis* living in Bombay, India. According to T.M. Luhrmann, the Parsis were influential during the British Raj. They viewed the issue of independence with mixed feelings since many of them identified with Western culture. There was regret for the passing of an old way of life (during the Raj) and they linked their changed social fortunes to the departure of the British (14). This theme is interspersed throughout the stories of Rohinton Mistry. Mistry's *Such a Long Journey* narrativizes the pressures and tensions of a minority community struggling for its existence. Mistry's *A Fine Balance* is set during the Emergency period in India and exposes the social and political imbalance during Indira Gandhi's regime. Though India is a multicultural and multilingual country and its constitution guarantees equal rights to all its citizens, yet people are discriminated on the basis of caste, class and gender. Mistry portrays his protagonists as victims of caste inequalities, class struggle and gender discrimination. *A Fine Balance* is an intricate interweaving of the stories of Dina Dalal, a Parsi widow who bravely strives for a free and independent existence; young Meneck Kohlah who grapples with problems of existence and the Chamaar-turned-tailors Ishwar and Omprakash. In *A Fine Balance* Mistry presents a realistic account of the life of India in late 1990's. It was this increasing alienation with post-Independence India that led Mistry to migrate to Canada.

Both Mistry and Vassanji deal with the lives of immigrant minority communities. Their keen observations enable them to

capture the fears and frustrations of immigrants, the trepidation of the racist attacks on them and they do not forget to take into account the hostile conditions that make their lives miserable and survival difficult. It has been observed that:

Wherever an immigrant arrives, whether Dar-es-Salaam or Toronto, whether East Africa or Canada, he is always eyed with suspicion, he is an outsider, and he has to start afresh every time, adapting to the changing contexts to be able to survive. He may carry his culture and history with him, but he has to forge a new identity that is a composite of his earlier identity and the new socio-cultural identity that is required of him. (Narula 54-55)

In Vassanji's *No New Land*, the protagonist Nurdin Lalani, whose ancestors had migrated from India to East Africa, had to undergo a second migration from Africa to Canada due to the African Nationalist policies. Apart from the hostile weather conditions of Canada, he finds difficulty in finding a house for himself. But nevertheless, he manages to find a house in the comfort zone of Don Mills where members of his Shamsi community lived. His feeling of dislocation and alienation gets further accentuated by his joblessness. He is troubled by the fact that he is not the sole bread earner of the family, in fact; it is his wife Zera who is running the family. Therefore, he takes up whatever odd job comes his way. He realizes that he was harboring lusty thoughts. He even tries eating pig but is soon overpowered by a deep sense of guilt: "Eat pig and become a beast" (127). He could make out that he was coming down in his self-esteem and expectation as he starts feeling the 'tremors of change inside him' (84). Nurdin puts the blame for these changes in him on "the Canadian air" (136).

Nobel Gustad, the protagonist of Mistry's *Such a Long Journey* on the other hand, was sad and angry because of his son's betrayal when he refused to become a doctor. Another reason for his bitterness was the betrayal from his best friend Major Jimmy Billmoria, who lives in Khodadad building. Billmoria had disappeared one morning without any information. Later Gustad comes to know that he had gone to join RAW, a wing of Indian Intelligence Service. Due to this sudden disappearance of his friend, Gustad starts doubting their

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friendship. "...What happened to the great friend Jimmy Bilimoria? Our Major uncle? Where is he now, who used to come here all the time? Who I treated like brother? Gone! Disappeared! Without saying a word to us. That's friendship. Worthless and meaningless!" (49)

An important reason for isolation and marginalization of immigrants by the host society is that the immigrants neglect the importance of cultural exchange. The *Shamsi* community inside the Don Mills created a system of their own, following their own traditional values and practices. Nurdin could only find himself wavering between the statue of Goddess Laxmi in the building (symbolizing Indian tradition and Customs) and the huge jobbing in the sky building of CN Tower (symbolizing modern values). In the close tight world of Don Mills, Nurdin's fellow migrants attempts to forget their past and forge their identities which becomes evident in Toronto's Dar immigrant gatherings, where it was considered uncouth to recall their previous life.

The world of Khodadad Building was also an insular one, "an island like space" and "a microcosm of the Parsi community in India." Genetsch writes, "[t]he compound [...] is a space where Gustad can derive meaning from practicing his religion in comfortable seclusion" (153). Genetsch also notes, focusing on home, "With the exception of burial, marriage and initiation rites, the majority of rituals to be celebrated can be celebrated at home. The most important ritual in Zoroastrianism is 'kusti', a prayer in the course of which the threads of a praying belt ('kusti') are tied and untied in a special order" (143). The self-imposed isolation of this place is emphasized by the black paper that has covered the windows of Gustad's house since the war with China in 1962. Though the black paper was used as a possible means of protection during blackout warnings against enemy's air strikes but eventually it becomes a trope which extends to his interior psychic universe. Gustad's wife, Dilnavaz, remarks, "With the black paper everywhere, even starlight and moonlight is blocked out" (64). In Genetsch's view: For Gustad [...] the paper is a mechanism of defence holding chaos, i.e. an erosion of meaning, at bay. The everyday reality of 1971,

together with the psychological reality of his traumas, is unpleasant and threatening for the protagonist of Mistry's first novel. Both have the power to unsettle the microcosm of his world (152).

Ironically it is an immigrant/exile always who is expected to assimilate in the new culture and we forget that the culture should also be accommodating enough to assimilate him. In Nurdin's case "Not only does Nurdin fail to assimilate in Canada, Canada also fails to accommodate Nurdin" (Genetsch 31). Just as immigrants consider the new environment of the adopted country to be a threat to their cultural identities and show reluctance in assimilation, similarly their existence, also, according to Cohen, "represent a threat to the nation-state and the liberal-democratic order" (192). Vijay Mishra, following Zizek's examination of the nation as a Thing to be enjoyed by a given community or race (Zizek 1993), suggests that "the way of life" of the dominant community is seen to come under threat by the other (multicultural community, diaspora) since the latter has ways of enjoying the Nation that do not necessarily complement the nation's enjoyment of itself. If the enjoyment of the Nation Thing is the property of a specific community, then the "Other" is always seen as someone who wishes to "steal (the nation's) enjoyment" (Zizek 203). This, according to Mishra leads to the exclusion of the diaspora from the national imaginary and further leads to racism. Nurdin, also, faces racism in the novel when a white girl accuses him of rape. This act of racism can also be viewed in the light of Edward Said's *Orientalism* which critiques the misrepresentation of the Orient as a mystic place of exoticism, moral laxity and sexual degeneracy in the Western discourse.

In his novels, Vassanji makes an intensive study of India—its culture, its traditions, its folklores, its beliefs and practices, its people and their dreams and aspirations. But above all they are novels about the experience of diaspora, of their protagonists as well as of the author. Through the narrative of the novels, one can see the yearning of the author, if not to return, but to understand and appreciate his homeland (where he hasn't been living since his family were migrants in Africa). Immigrants to

new land always find it difficult to break their bonds with the homeland and, as a result, they always have a yearning to return. The experiences and feelings of immigrants can be best summed up by these lines:

We
the migratory birds
are here this season
thinking
we'll fly back to our home
for sure. (Kalsey 37)

On the other hand, Mistry's representation of India is that of an insider. For him India is not the country of his dreams. He has to face the harsh realities of Indian caste system which does not easily accept people belonging to lower castes. In India one can aspire to move up the social ladder of class but it is impossible to break the shackles of caste system. Though belonging to the Parsi community, he and his protagonists are privileged in the sense that they are not caught in the vicious web of caste system but that also means that they do not belong to the place and are always considered as outsiders. To add to their woes their homeland no longer exists and there is no place where they can hope to return one day.

The homeland that both wish to reclaim through their writings is the same yet different, the "imaginary homeland" of Vassanji is more pure and ideal than Mistry's whose close connection with India creates a love-hate, bitter-sweet relationship.

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DIASPORIC WRITINGS

NARRATIVES ACROSS
SPACE AND TIME

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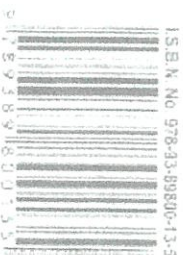
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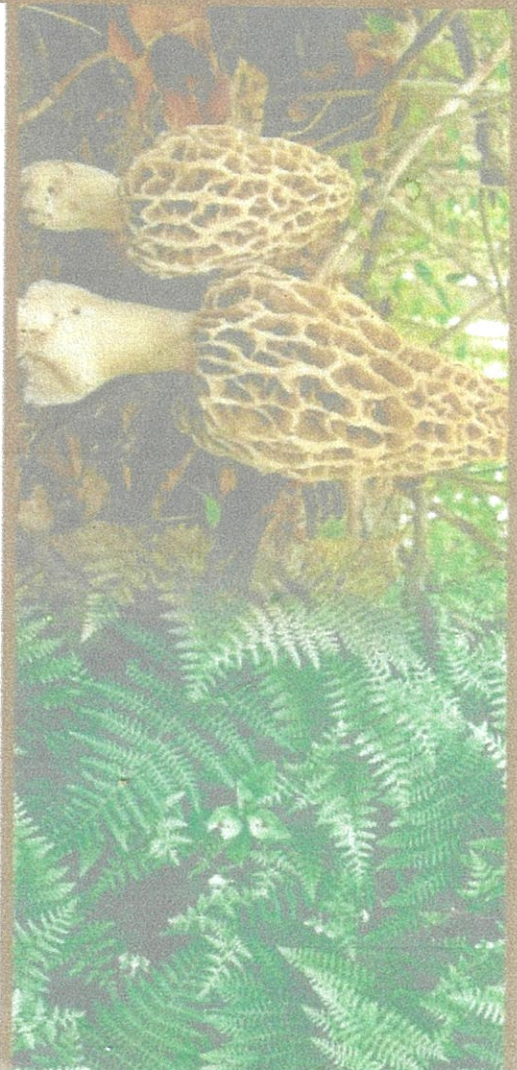
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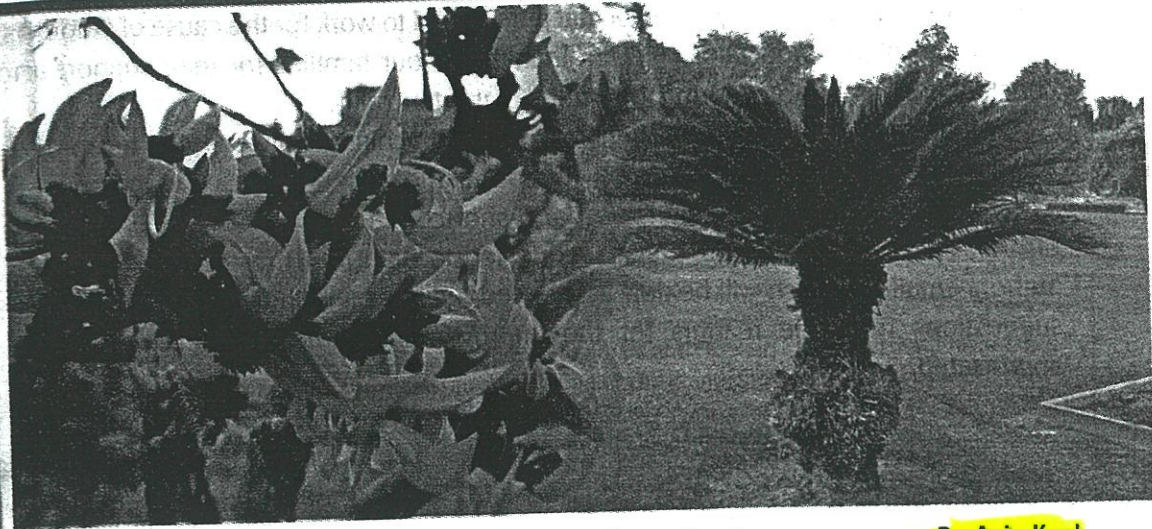


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individuals. Explain the mode of inheritance of seed colour and texture. Apply chi-square test to confirm goodness of fit of given ratio.

- **Exercise** : Two plants of *Pisum sativum*, one with green inflated pods and the other with yellow constricted pods were crossed. F_2 generation of the cross produced 181 plants with green inflated pods, 59 plants with green constricted pods, 61 plants with yellow inflated pods and 19 plants with yellow constricted pods. Give the phenotype of F_1 individuals and explain the mode of inheritance of pod shape and colour in F_2 generation. Apply chi square test to confirm goodness of fit of the given ratio. 82

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chi-square test to confirm goodness of fit of the given cross.

- **Exercise** : F_2 progeny of a fowl produced 259 white and 61 coloured individuals. This progeny was raised by performing a cross between pure white leghorn variety with pure white Plymouth variety of fowl. Work out the cross. Give the phenotype of F_1 individuals and explain the mode of inheritance of feather colour. Apply chi-square test to confirm goodness of fit of the given ratio. 94
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CHA

1.1. INTRO

Cell is the basic unit of all living organisms. It is the smallest unit of structure and functional unit of activities. Cells are contained units.

1. All cells are eukaryotic.
2. All cells are eukaryotic.
3. Cells in animals are eukaryotic.
4. Lysosomes are present in animal cells.
5. Each cell has a nucleus.
6. All cells are eukaryotic.
8. Each cell has a nucleus.
9. Cell activities are regulated.
10. Each cell has a nucleus.
11. Each cell has a nucleus.

Organisms

Unicellular organisms consist of one cell. These organisms are prokaryotic (bacteria, cyanobacteria, etc.) and eukaryotic (yeast, amoeba, etc.). Multicellular organisms consist of many cells. These organisms are eukaryotic (plants, animals, etc.).

Fungi, Plantae, etc.

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قاسمی کتب خانہ

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ڈاکٹر جاوید اقبال مغل چونکہ میرے شاگرد رہے ہیں۔ ان کی قابلیت اور صلاحیت سے اچھی طرح واقف ہوں۔ نہایت ہونہار، شریف النفس اور مخلصانہ ہیں۔ محنت اور لگن ان کا نصب العین رہا ہے۔ ان کی مثنوی پر اس سے قبل ایک کتاب یعنی "مثنوی کی کار نگاری" ۲۰۱۳ء میں منظر عام پر آچکی ہے۔ جسے ادبی حلقوں نے کافی سراہا ہے، بلکہ کی تحفہ دریافتوں سے نکلنے والے اردو رسائل و جرائد میں ان کے متعدد مضامین شائع ہوتے رہے ہیں۔

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Consumer Clothing Disposal Behaviour: A Comparative Study among Urban and Rural Women (30-50 yrs) in Jammu

Sanmeet kaur^a, Ramandeep Kour^b

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Abstract

With the growing population and improvement of living standards, the consumption of textile has subsequently increased and the overconsumption of clothing has had a significant environmental impact on society. Clothing consumption can be regarded as an aspect of sustainability issues, in which consumers feel responsible to contribute to sustainable consumption by disposing of their used clothing in the right way. Hence, there is a need to understand how consumers can dispose of their unwanted or used textile products. The survey was conducted among a hundred women, fifty each from rural and urban areas, randomly selected from tehsil Jammu. The data was analyzed using descriptive statistics percentage, chi-square, t-test, and co-relation. According to the results, almost half of the respondents of the survey in tehsil Jammu would like to dispose of their clothes sustainably by donating to charities/servants and by giving them to friends/relatives. Most of the respondents preferred their used or unwanted clothes for reutilization. Reutilization is one of the better ways of reducing post-consumer textile waste. The respondents considered a lack of time and knowledge as the most important factors for non reutilization of textile products. All most all of the respondents were aware of the environmental issues caused by the clothing disposal, which was little, more in urban respondents. Environmental awareness and socio personal profile of the respondents had a great effect on clothing disposal behaviour. This study contributes to the literature by revealing new insights about consumer disposal behaviour.

Keywords: sustainable consumption, Reutilization, Clothing Disposal Behaviour, Awareness of the Environment.

Awareness

Introduction

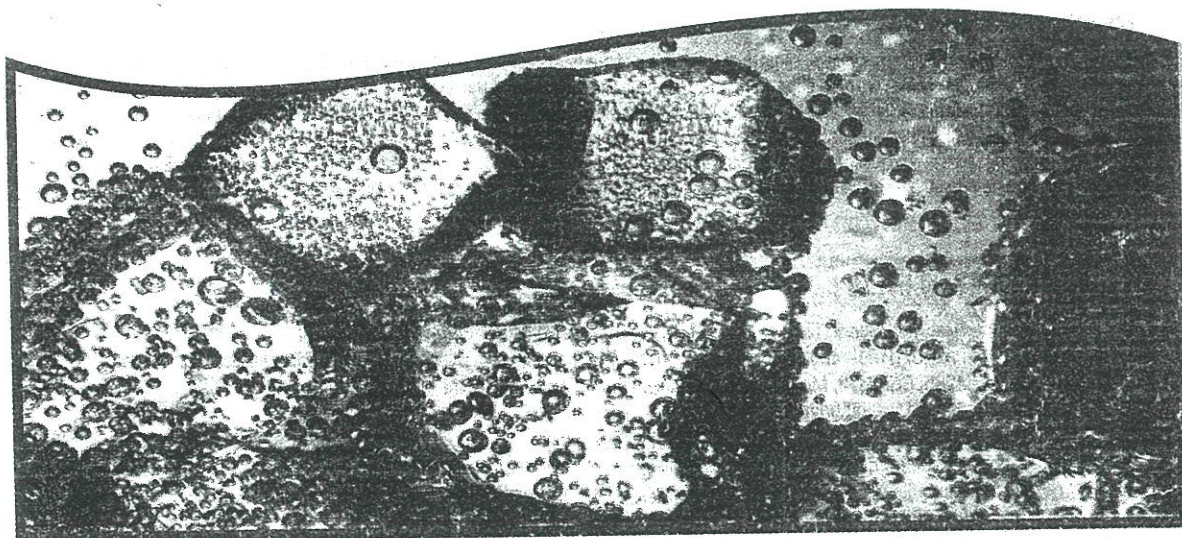
Textile and Apparel industry is one of the most essential consumer goods industries. However, the textile industry is also accused of being one of the most polluting industries. Not only production but consumption of textiles and apparel also produce waste (Kushwaha, 2016) In the apparel industries, disposal of clothing is of great interest because the amount of textile waste produced annually is on the rise (Claudio, 2007). In apparel consumption, the term disposal refers to whether a garment is simply thrown away, resold, reused, or recycled (Shim, 1995). Due to fast fashion trends, the majority of consumers perceive the lifetime of clothing to be shorter than ever before (Morley et al., 2006) that led to a large amount of clothing being disposed of or destroyed.

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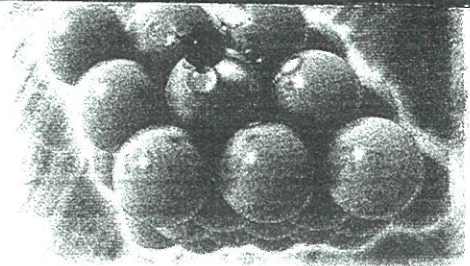
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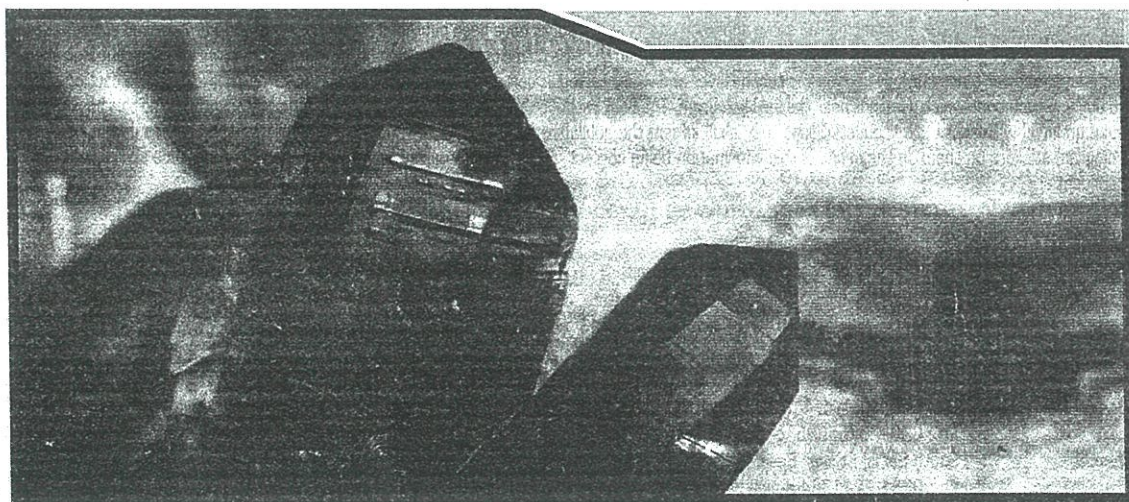


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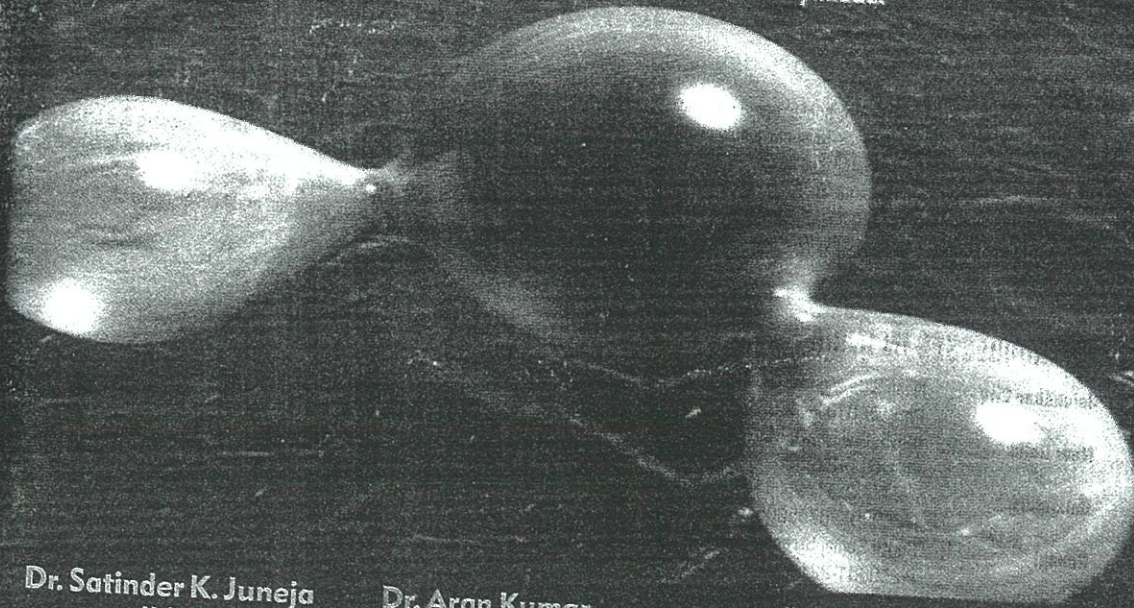
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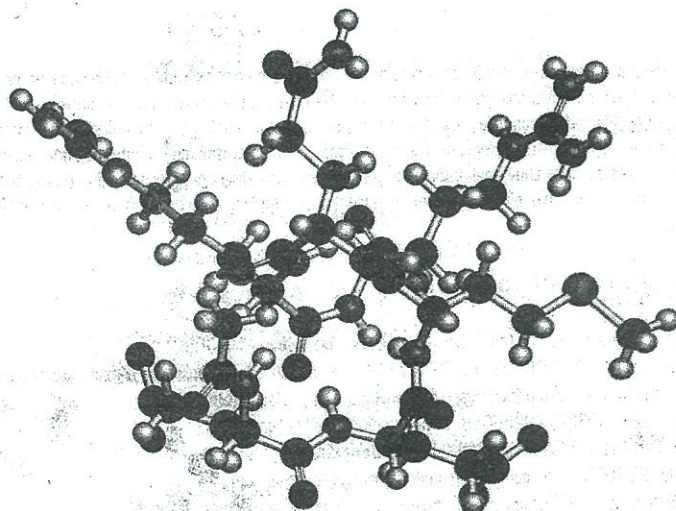
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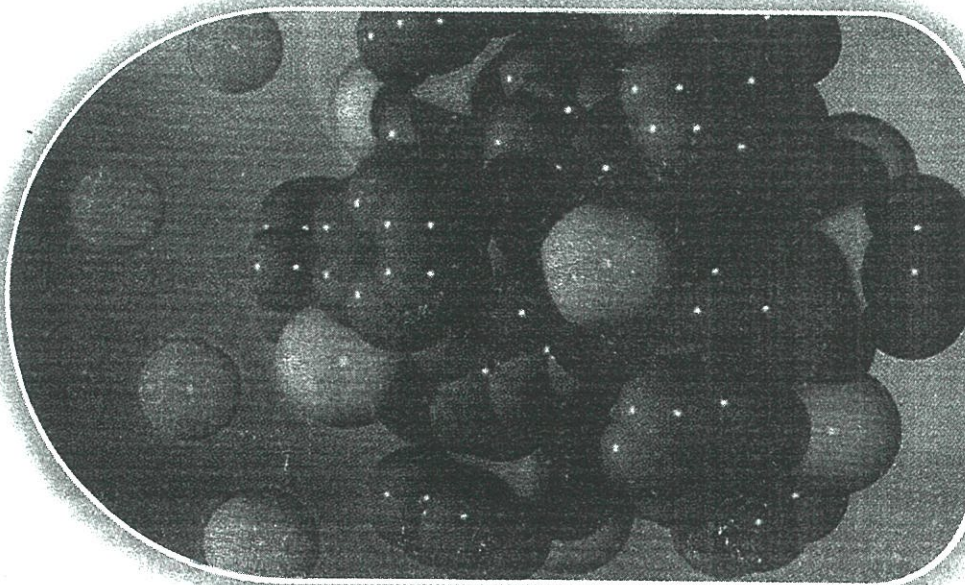
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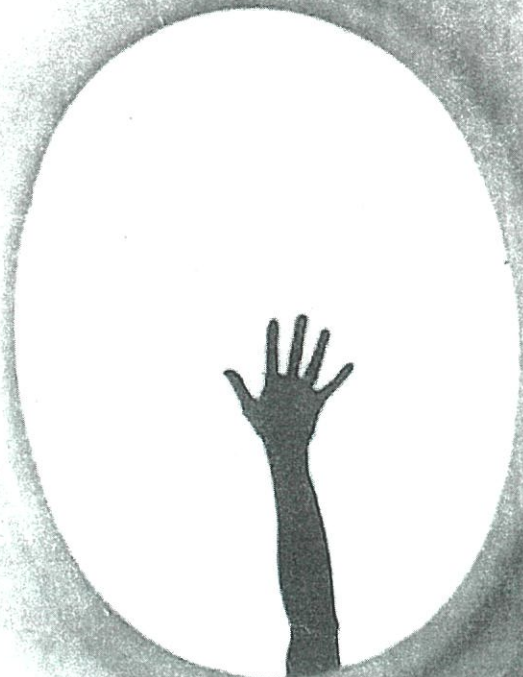
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Esha Gohil

MIRRORS

An Anthology of Poems

EISHA GOHIL



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MIRRORS

An Anthology of Poems

Eisha Gohil



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PREFACE

Life takes different turns and at times, moving with the flow becomes difficult. Art, as a companion, proves to be very helpful in relaxing a stressful mind. "Mirrors" is an anthology of my poems which will help us to believe in ourselves and find a way to move forward. I believe that life is a journey and, in our life, we keep on taking different roads, reaching different destinations and meeting different people. With every breath we take, we keep floating in the river of emotions. In the course of writing, I realized that the poems I wrote, the feelings I expressed, the bonds which I discovered, were the impressions embossed by the people who met me in my life.

"Mirrors" puts light on the journey of our existence. We are all made of same emotions. What makes us different, are our values and beliefs. Individual differences just lie in expressing those emotions, according to the past experiences and mapping them to the present context. We all are travelers of life and though we have different roads to take, different paths to tread, our destination remains the same. When we look at a fellow being, actually we are looking at our own reflection. In this ever changing world, we keep interacting with each other without realizing that what is real is just a reflection,

We are living in the world of mirrors, unique in our own way but sharing the same essence and oneness. *(I am a mirror for you, you are a mirror for me).*

Eagerly looking forward to your feedback and criticisms to make my future work better. You can either visit me at Amazon Author Central or email to the publisher or me.

Wish you all a meaningful reading experience.

Eisha Gohil, Poetess
eishagohil86@gmail.com
25th September 2020

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I offer my gratitude to the God Almighty, for bestowing his grace on all my writings and for making journey of my life a smooth one. I am thankful to Him for giving me this beautiful life and for making me capable enough to appreciate his creations. (For every road I take, you remember me, I remember you).

I express special thanks to my parents, family, friends and well-wishers. Without their selfless love, blessings and endless support, my efforts would be fruitless.

I am grateful to the publishers for giving me this opportunity and showing the confidence in me.

Last but not the least, I offer my sincere thanks to all the readers of this book. I hope you enjoy my attempt of choosing and assembling words and changing them into verses which depict a journey towards fulfilment, a journey from losing hope and to gaining it once again.

Eisha Gohil, Poetess

eishagohil86@gmail.com

25th September 2020

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ABOUT THE AUTHOR

Ms. Eisha Gohil is a budding poetess whose work has been published in many periodicals and journals. She was born in the holy city, Hardwar (Uttarakhand) and brought up in Jammu. She has a master's degree in Psychology from the University of Jammu. Presently, she is working as an Assistant Professor and teaches psychology to undergraduate students.

Besides participating in sports and other co-curricular activities, right from childhood, she was interested in painting and literature. Her entry in a competition organized by a supplement of Down to Earth was judged as one of the best. This encouraged her to follow her passion of making abstract patterns and composing verses.

Ms. Gohil's first published work was an anthology of poems titled "The Other Side", which was published by Blue Rose Publishers in the year 2017. Some of her abstract patterns were exhibited during YAYAVAR-The Literary festival held in the year 2019. During that event, she recited two of her poems in front of the host of critics.

Recently, her two poems got published in a book titled 'ISHQ CON'-a bleeding heart, published by fourclover publication house, which was a multilingual anthology of quotes, poems, micro-tales and stories contributed by 26 different writers pan India. Also, her two other poems "Turning into an atheist" and "Pearls of Pain" were published in 'Sheeraza' which is a quarterly literary journal published by Jammu and Kashmir Academy of Arts, Culture and Languages.

MIRRORS

Life takes different turns and at times, moving with the flow becomes difficult. Art, as a companion, proves to be very helpful in relaxing a stressful mind. "Mirrors" is an anthology of my poems which will help us to believe in ourselves and find a way to move forward. I believe that life is a journey and, in our life, we keep on taking different roads, reaching different destinations and meeting different people. With every breath we take, we keep floating in the river of emotions. In the course of writing, I realized that the poems I wrote, the feelings I expressed, the bonds which I discovered, were the impressions embossed by the people who met me in my life.

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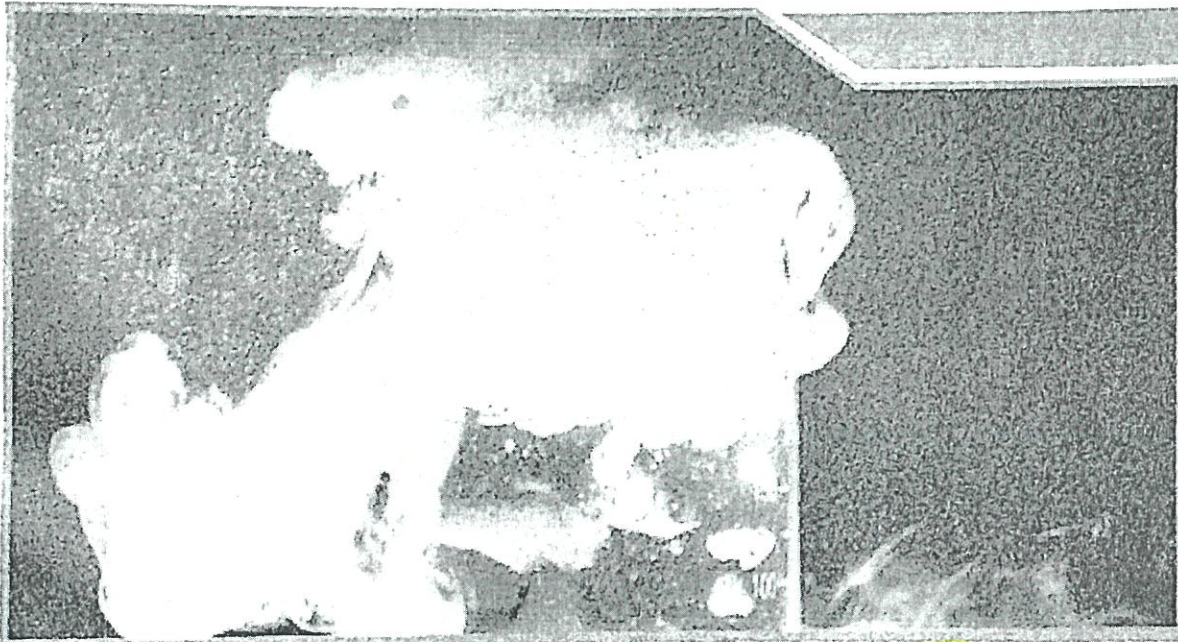


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Every effort has been made to make the book error free but inspite of this, some errors might have crept in. Any mistake or error or discrepancy noted by readers may please be brought to our notice which shall be taken care of in the next edition of the book.

We are also thankful to our fellow teachers for their healthy and critical suggestions during the preparation of this book. We are also thankful to Sh. S.P. Jain (B.E.) and Sh. Vinesh Jain (B.Com.), the publishers of this book for their keen interest and whole hearted co-operation for the promotion of the book.

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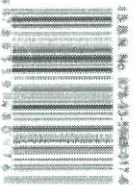
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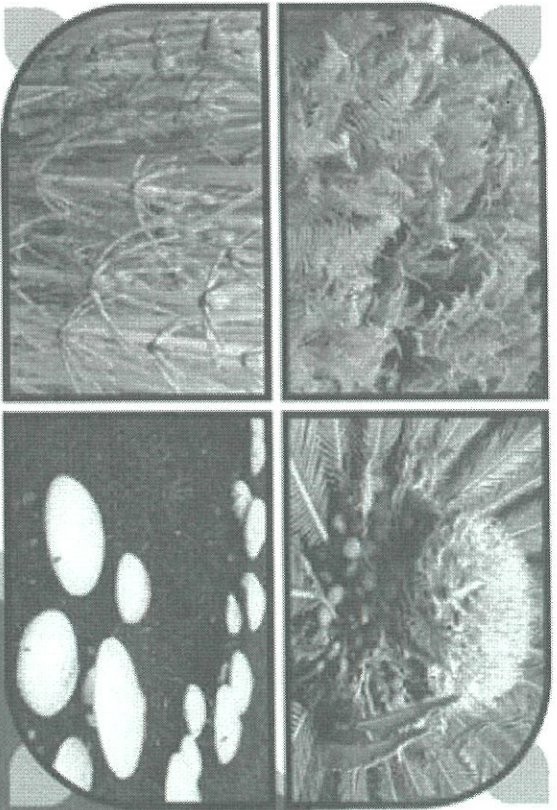
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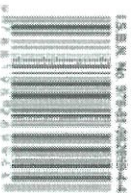
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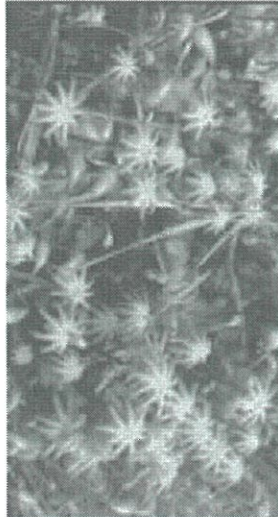
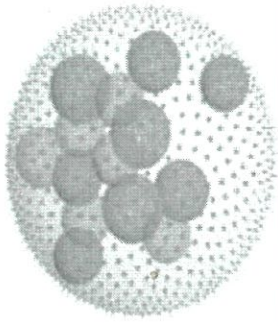
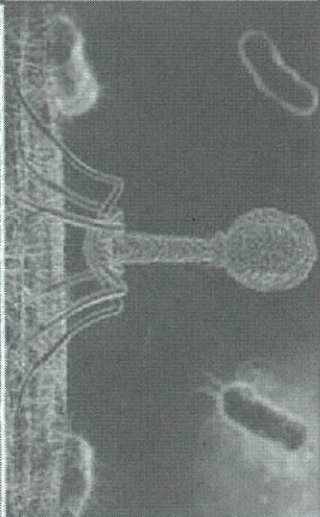
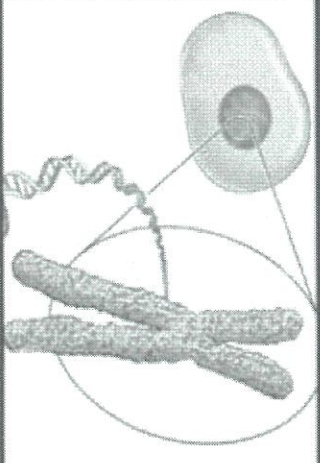


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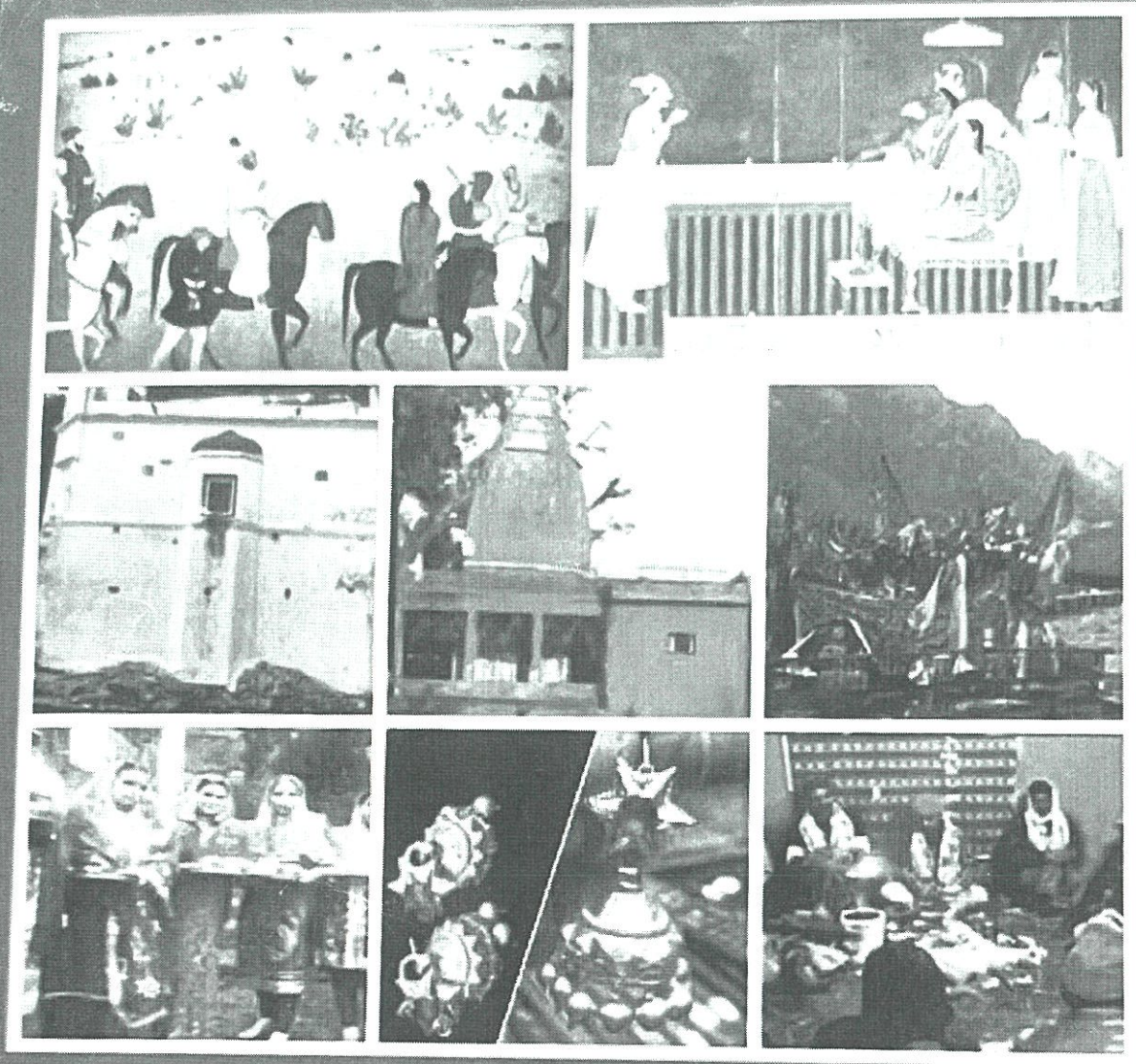
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DEMYSTIFYING JAMMU

History, Heritage and Culture



Edited by
Sindhu Kapoor - Shalini Rana

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Species Composition of the Avifaunal Heritage of Forests of Jammu (J&K)

Dr. Anupama Pandotra

Abstract

The study of bird communities has been a significant area of research in wildlife. The study of avian fauna is concerned with identifying the patterns that characterize natural assemblages of species and understanding what has caused these patterns. These patterns vary both in space and time. A bird community pattern of any region has a close correlation with the vegetation structure of that area. The species composition in birds embodies all the knowledge about how individual members of the community relate to and interact with one another to produce the patterns of resource allocation and spatial and temporal abundance among constituent species. Birds also live in association and form large flocks; thus, the concept of community structure came into existence in birds. The forests belt of Jammu harbours a wide diversity of avifaunal assemblage. The mixed forest and coniferous forests of Jammu furnished food sources suitable for different kinds of bird feeding guilds. Forests provide a wide

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Phytohaemagglutinins

Jasmeet Kour, Monika Hans, Hitesh Chopra, Renu Sharma,
Breetha Kamaiyan, and Bharti Mittu

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11.1 INTRODUCTION

Phytohaemagglutinins (PHA) are the lectins found in red kidney beans, *Phaseolus vulgaris*, chemically belonging to carbohydrate-binding proteins (Banwell et al., 1983, 1985; Shi et al., 2007; Zhang et al., 2008). They are mainly present in seeds, and are toxic; therefore they are generally cooked at higher temperature for human consumption (*Eating Raw, Undercooked Dry Beans Can Be Unpleasant | Archives | Hpj.Com*, n.d.). Lectins can be defined as the proteins having more than two binding sites, which can form crosslinking and forms agglutinate with cells bearing the target carbohydrates (Mishra et al., 2019; Nathan Sharon, 2007; Nathan Sharon & Lis, 1997). Initially they were identified as compounds that agglutinate blood cells, so they were named accordingly.

Pharmacologically they induce cells to enter the mitotic cell division phase, which may be by acting as a cross-linker to cell surface receptors that are directly or indirectly involved in cell activation (Berchtold & Villalobo, 2014; Kennedy & Nager, 2006; Movafagh et al., 2011). Upon exposure of lymphocytes from mammals to PHA, the mitosis starts for T lymphocytes and can be applied in the form of T cell mitogen in human immunology. When PHA is injected to animal tissues, they are designated as harmful. The series of steps involving the cell activation, destruction, and infiltration

Nanotechnology Interventions in Food Packaging and Shelf Life



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13 Potential Risks, Health Safety Features, and Public Acceptance of Nanoparticles in Packaging

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13.1 INTRODUCTION

Nanotechnology is a technique of using particles at a scale of one billionth of a meter, and materials of less than 100 nm are known as nanomaterials. Thus, nanotechnology states that components/materials, assemblies, and manufacturing arrangements having size ranging from 1–100 nm are nanoparticles (Moraru et al., 2003).

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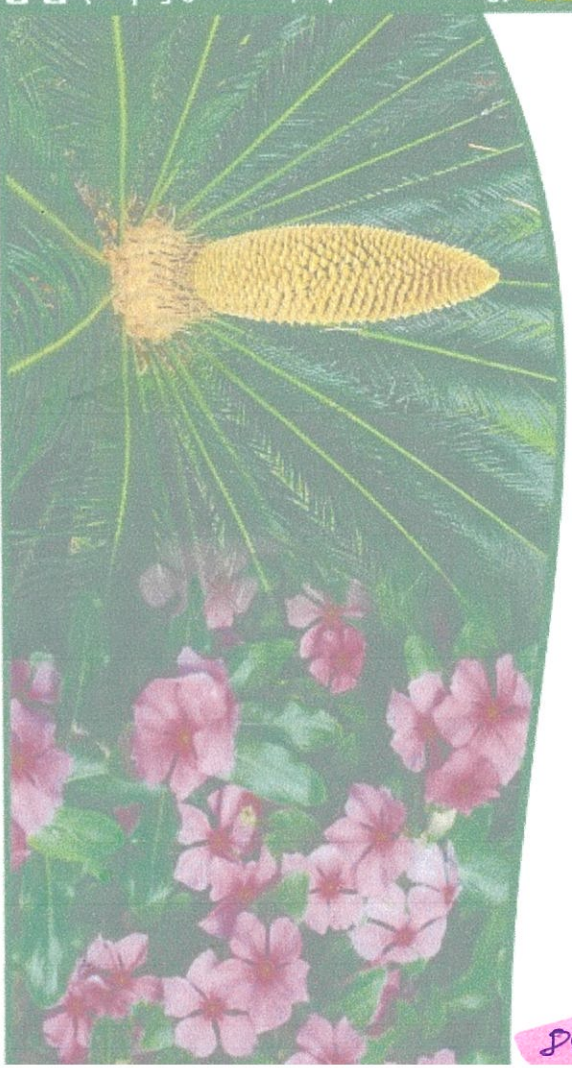
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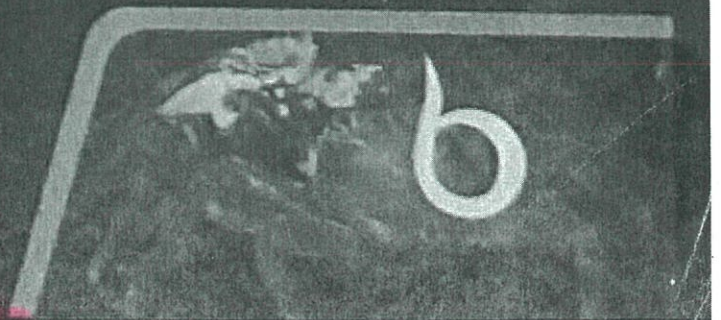


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**Ecobiology of
Fresh Water Crabs
from Jammu Waters
(J&K) North India**

Meenakshi Bandral



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Monika Hans, Manzoor Ahmad Shah, and Rosy Bansal

Abstract

Peach (*Prunus persica*) belongs to Rosaceae family and believed to have originated in China 8000 years back, although it was thought that peach is native to Persia. Now it is grown in many temperature zones of the world between latitudes 30° and 45° North and South. The peach is round juicy fruit, which is yellow or furry red in colour with a fuzzy peel and has a large hard seed in centre. The shape of the fruit varies from beaked round to flat. Peaches are classified into two types—freestone and clingstones—depending upon the flesh sticking to the stones or not. The fruit can be eaten raw and processed into different products. It is highly nutritious with a lot of phytochemicals, which are beneficial for health. Several studies have reported that these health beneficial characteristics are attributed to different bioactive components. The important bioactive compounds present in peach include phenolics, carotenoids and ascorbic acid. These compounds are responsible for antioxidant activity and thus helpful in preventing several diseases. The phenolic compounds that have been isolated and identified in peach fruits are categorized into anthocyanins, flavanols, phenolic acids and flavonols.

Keywords

Peach · Phytochemicals · Antioxidant activity · Phenolic acids · Anthocyanins

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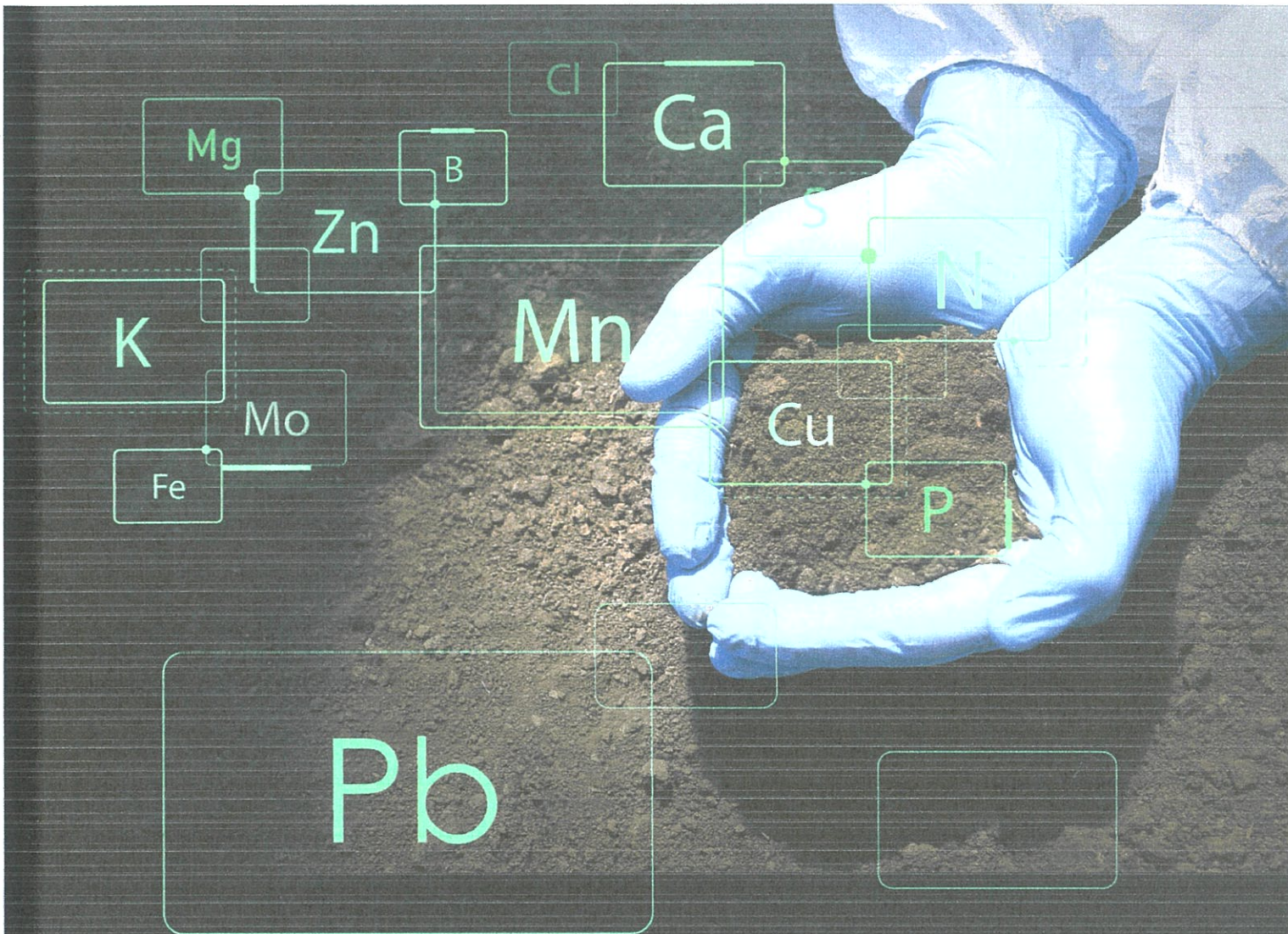
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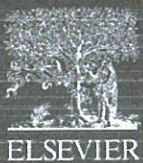
M. Hans et al.

23.1 Introduction

Botanical Name: *Prunus persica* (common name: Aurka)



Appraisal of Metal(loids) in the Ecosystem



Edited by
Vinod Kumar, Anket Sharma
Raj Setia

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Overview of phytoremediation techniques for the assessment of metal(loid)s

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1.1 Introduction

Soil is the backbone of our agricultural system and has greatly contributed in green revolution and food safety (Lichtfouse and Eglinton, 1995; Sivarajasekar and Baskerr, 2014a, b, c). Healthy soil produces healthy crops that in turn nourish people. Maintenance of healthy soil requires a lot of effort from agriculturalists (Bots and Benites, 2005). Agriculture plays an important role in our country's Economy. In our country India, it contributes about 16% of total GDP and 10% of total exports (Goyal et al., 2016). However, during recent few years, pollution is posing a major threat to this growing agricultural development. It is caused due to rapid urbanization and industrialization; leading to contamination of agricultural lands with increasingly contaminated by organic, inorganic, and metallic pollutants (Pandey et al., 2019).

Heavy metal contaminated soil has become an environmental concern worldwide (Hasan et al., 2019). They are added from both natural as well as manmade sources. Natural sources include forest fire, volcanic eruption, wind erosion, and fossil fuels. Anthropogenic sources of heavy metals are thermal power plants, smelters, mines, refiners, foundries (Garty, 2001; Nagajyoti et al., 2010; Tangahu et al., 2011; Jaishankar et al., 2014a,b). These metals are not affected by any chemical method or microbial degradation and get accumulated for longer period of time, thus posing various risks to human health and environment (Bolan et al., 2014). Also, crop production is equally affected by heavy metal pollution (Bhat et al., 2019). Some of the toxic heavy metals include Aluminum (Al), Copper (Cu), Cadmium

(Hossner et al., 1998). Aquatic macrophytes have 1,00,000 times greater capacity for accumulating heavy metals than the quantity of the associated water. Aquatic plants such as *Centella asiatica* and *Eichhornia crassipes* have the potential to accumulate different amount of copper from the contaminated areas (Mokhtar et al., 2011). These plant species are preferably grown in wetlands due to their fast growth rate and phytoaccumulation properties (Rai, 2008a, b). Nearly 97.3% and 99.6% of Cu had been found to be removed by *Eichhornia crassipes* and *Centella asiatica*, respectively (Mokhtar et al., 2011).

1.3.2 Phytostabilization

It is a process where certain plants are used to restrict the contaminants on the surface of contaminated sites. The mobility of contaminants is restricted by roots and root hairs either by accumulation into root surface or within the rhizosphere (Berti and Cunningham, 2000; Munshower et al., 2003; Mendez and Maier, 2008). It involves the immobilization of the contaminants, restricts their entry into the food chain, and thus lessens their chance of availability to other life forms. Phytostabilization restricts the movement of contaminants within the rhizosphere of the plants and thus the aerial parts of plants are protected from the entry of any contaminants (Berti and Cunningham, 2000; Alkorta et al., 2010). It helps to re-establish growth of certain tolerant plant species at contaminated sites with high metal concentrations where the possibility of natural vegetative growth is not feasible (Regvar et al., 2006). In order to limit the relocation of various metal contaminants by rain, wind, and leaching into the groundwater, various metal-tolerant plant species are grown on the contaminated sites which act as phytostabilizers. In addition to phytostabilizers, there is diversity of microbiota associated with these plant species which assists their metal tolerance efficiency and growth. They also lessen the metal absorption and their transportation to aerial parts of plants by restricting their movement in the root surface area of the plant (Muthusaravanam et al., 2018). The plant-associated microbiota uses different mechanisms to prevent the metal adsorption in plants (Rouch et al., 1995; Cabot et al., 2019). These microbes restrict the heavy metal uptake by the following mechanisms:

- i. The permeability barrier present outside the cell prevents metal entry into the cell.
- ii. By supporting to extracellular polymers.
- iii. By detoxifying the heavy metals to chemically less active forms.

The soil microbes play a significant role in the amplification of phytostabilization. Some beneficial microbes such as Rhizobium and Endophytes help in phytoremediation process by restricting the movement and rate of accumulation of heavy metal (Ma et al., 2011).

1.3.5 Rhizodegradation

It is also called as phytostimulation. This process involves the degradation of toxic organic pollutants by the activity of microbes within the rhizosphere (Mukhopadhyay and Maiti, 2010). Rhizosphere is defined as the area of soil (about 1 mm) that immediately surrounds the root and is inhabited by the rich diversity of microbes that are influenced by root secretions (Pilon-Smits, 2005). Within the rhizosphere, the activity of soil microbes is influenced in the following ways:

- i. Root secretions contain different amino acids and sugars that provide important nutrients to indigenous microbes.
- ii. Roots assure the oxygen supply in rhizosphere for the aerobic respiration of microorganisms.
- iii. Roots biomass increases the amount of organic carbon in the soil as a source of food to the soil microbes.
- iv. Mycorrhizal fungi associated with roots degrade some compounds. Degradation of such compounds cannot be achieved by bacteria.
- v. Plants also furnish site for increasing microbial biomass and root microbial community (Yadav et al., 2010).

Numerous plant species have been used for the rhizodegradation strategies. Among them, legumes and grasses are known to have higher efficiency (Vazquez-Luna et al., 2015). Rhizosphere-associated microbes are also known to enhance the degradation of contaminants by a symbiotic relation with plants. Plants secrete various exudates such as flavonoids, carbohydrates, and amino acids that are known to promote the microbial activity by 10–100 times (Weller and Thomashow, 2007). In addition to these exudates, plants discharge certain enzymes in the soil that can degrade soil pollutants (Liu, 2013).

1.4 Selection of plant species for phytoremediation

Remediation of soil using plants has major future potential. This green approach of using plants for the treatment of various pollutants can be used for resettlement of contaminated sites that can further be used for agriculture. However, only those plants that have high tolerance for contaminants can be used for this purpose. Phytoremediation efficiency of plant species depends on the following factors:

- a. They have the adaptability to the contaminated areas.
- b. They have the ability to uptake and tolerate the contaminants in different plant parts.

It is grown in wide ranges of salinity, acidity, and presence of heavy metals. It is used in the process of phytostabilization for sequestering Pb in roots (Xia, 2004). Formation of complexes between phytochelatins such as EDTA and Pb in Vetiver has been worked out by Andra et al. (2009). The complexes so formed make Vetiver a Lead tolerant species. Lead can also enhance the oil content of Vetiver (Rotkittikhum et al., 2010).

Lemongrass (*Cymbopogon flexuosous* or *C. citrates*)

Family: Poaceae.

Lemon grass uses Cadmium as inducer of Proline (Handique and Handique, 2009) and young leaves are major accumulators of proline. Lemongrass also help in photostabilization of toxic Cu tailings (Das and Maiti, 2009). It can also adsorb Pb (II) ions from aqueous solution (Sobh et al., 2014). Treatment of wastewater containing Pb(II) ions can be done by this low-cost and eco-friendly method. Factors such as translocation and bioconcentration proved that lemongrass acts as a phytostablizer of Cu, Fe, and Mn in roots and phytoaccumulator of Al, As, Cd, Cr, Pb, Ni, and Zn (Gautam et al., 2017).

Citronella (*Cymbopogon winterianus* Jowitt.)

Family: Poaceae.

Citronella shows the highest accumulation of Cd in roots, followed by stem, leaf sheath, and leaves (Borunah et al., 2000). It can act as a potential phytostabilizer of heavy metals in contaminated area.

Palmarosa (*C. martini*)

Family: Poaceae.

It shows phytostabilization potential in heavy metal rich sludge amended soil. Uptake of heavy metals is found in the following order Cr > Ni > Pb > Cd in both roots and shoots (Pandey et al., 2019).

Geranium (*Pelargonium* sp.)

Family: Geraniaceae.

Geranium can uptake high amount of lead in its biomass (Krishna Raj et al., 2001). Krishna Raj et al. registered a patent in which geranium was found as an effective hyper accumulator in multi-metal contaminated soil. The scented geranium can accumulate a greater amount of Cd and Ni because of different detoxification mechanisms (Dan et al., 2000) like keeping up a proficient photosystem II action, confining harm to photosynthetic mechanical assembly by metal particles, etc. However, it is vulnerable to toxicity of Cu followed by Cd, Ni, and Pb for herb, oil yield, and aggregation of metals in plant parts (Chand et al., 2016).

Mint (*Mentha* sp.)

Family: lamiaceae.

Menthe sps. Phytostablize the heavy metals when grown in contaminated areas and accumulated the respective toxic metal in roots with least transportation to the aerial plant parts (Pandey et al.,

2. Phytovolatilization transfers soil and groundwater pollutants into the air (Sakakibara et al., 2010).
3. It results in contaminated plant and plant products, which are not edible (Mejare and Bullock, 2001).
4. There is incomplete removal of toxic substances from the bioremediated areas (Garisu et al., 2002).
5. There is a risk of food chain contamination (Arthur et al., 2000).
6. It is time-consuming and lengthy process, which takes several growing seasons to restore the contaminated area (Stomp et al., 1994).

1.8 Future prospects and conclusions

Development comes with the man-made hazards and degradation of natural resources. One of these natural resources is soil, which is degrading every day. Restoration of healthy soil is key factor for the survival of life on earth. However, the present soil protections are not sufficient to achieve the sustainable soil management. Remediation of environment from various toxic metals can be achieved by many ways including phytoremediation. Moreover, the phytoremediation is cost-effective and eco-friendly. Plant species surviving in the contaminated soil have endurance to the prevailing stress due to presence of heavy metals. Such plants can be used to fulfill the objectives of pollution attenuation and biomass productivity. The rehabilitation of the polluted sites can be achieved by increasing the number of metallophytes at the abandoned mining sites and contaminated soils. They act to remediate soils in future without using artificial treatments. The use of perennial and annual metallophytes can provide a sustainable amount of organic matter and nutrients recycling. The only requirement, in this case, is proper information about the plants growing on metal contaminated soils.

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Use of Silica Supported Acid Catalyst in Organic Synthesis

Arora Revika^{a*}

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ABSTRACT

The use of solid supported reagents is increasing, due to their tremendous potential to offer green chemical technologies. Now-a-days, silica supported acid catalysts have gained much importance due to their high activity. Moreover, silica-supported reagents are easy to handle, less toxic, can be easily separated and reused, due to which they may play important role both in academia and industries. Silicas generally require no pre-swelling, which makes their use far simpler. As oxidative bromination of alkenes is very important in synthesizing biologically and synthetically important dibromocompounds, a simple, efficient and cost effective method has been used for the bromination of alkenes by using $\text{SiO}_2\text{-H}_2\text{SO}_4$ as solid heterogeneous catalyst.

The objective of the study presented in this paper is to provide an environment friendly procedure for oxidative bromination of alkenes. Here, solid heterogeneous catalyst is used for synthesis of dibromo compounds.

Keywords: Solid supported reagents; oxidative bromination; alkenes; dibromocompounds; heterogeneous conditions.

1. INTRODUCTION

Bromination is a useful reaction in organic synthesis as these compounds are very important particularly in the preparation of different β -blocker, such as adrenoceptor agonists SR-58611A, denopamine, terbamilde, formoterol, salmeterol etc. and in the manufacture of dyes, flame retardants, pharmaceuticals and agrochemicals [1,2,3]. Brominated organic substrates are known to possess potent antitumour, antifungal, antibacterial, antineoplastic and antiviral activities [4]. Dibromoalkanes have also been used as precursors of pesticides, gasoline additives and synthetic building blocks [5].

These have been used to synthesise alkynes, which are useful functional groups in organic reactions [6-11].

Bromination with molecular bromine is one of the most widely and extensively studied reactions. Molecular Bromine is very toxic and has corroding nature. One bromine atom is obtained in product whereas the other bromine atom forms HBr which is corroding in nature and has to be neutralized [12,13,14]. Thus, bromination with molecular bromine may be qualified as environmentally unfriendly reaction [15]. Environment friendly bromination protocols have been developed in place of use of bromine [16].

Various reagents have been reported for the bromination of alkenes such as $\text{V(V)-H}_2\text{O}_2$, LiBr and CuBr, silica-pyridinium hydrobromide perbromide, tetrabutylammonium tribromide (TBATB), zinc bromide and leadtetracetate, benzyl trimethylammonium tribromide (BTMA Br_3), bromine and tetraethyl ammonium bromide, sodium bromide in the presence of sodium perborate [17-25].

However, some of these methods suffer from various drawbacks like insolubility of the metal bromides and the oxidising agents in non-aqueous solvents, long reaction times, polymerization of the alkene with the reagents and limited application to alkenes that are not affected by acids and aqueous media.

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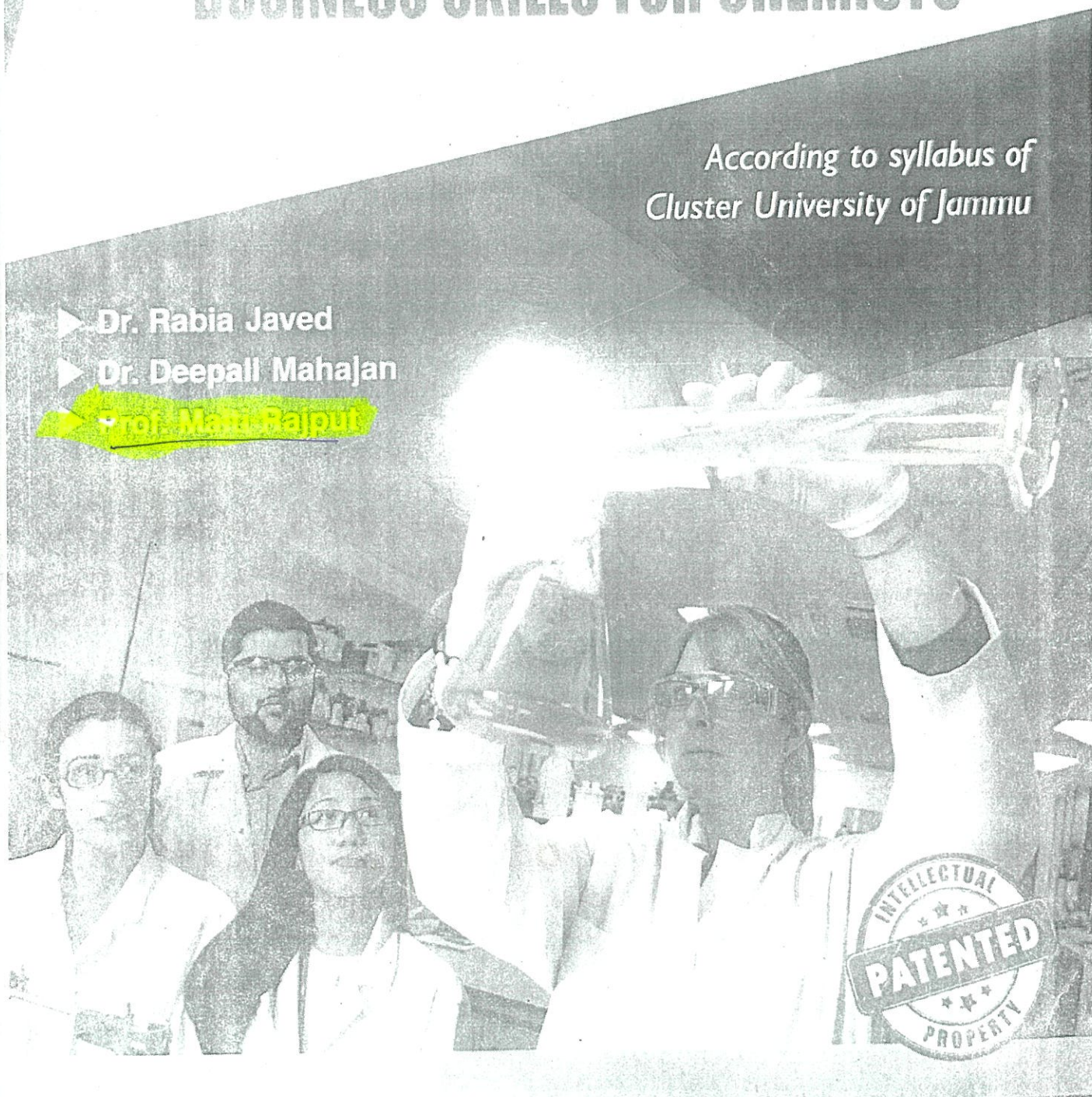
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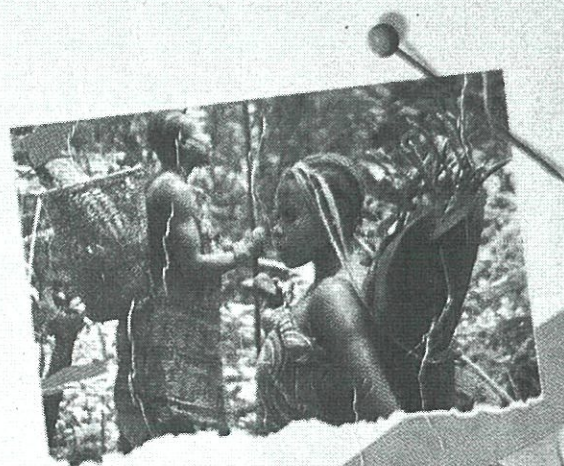
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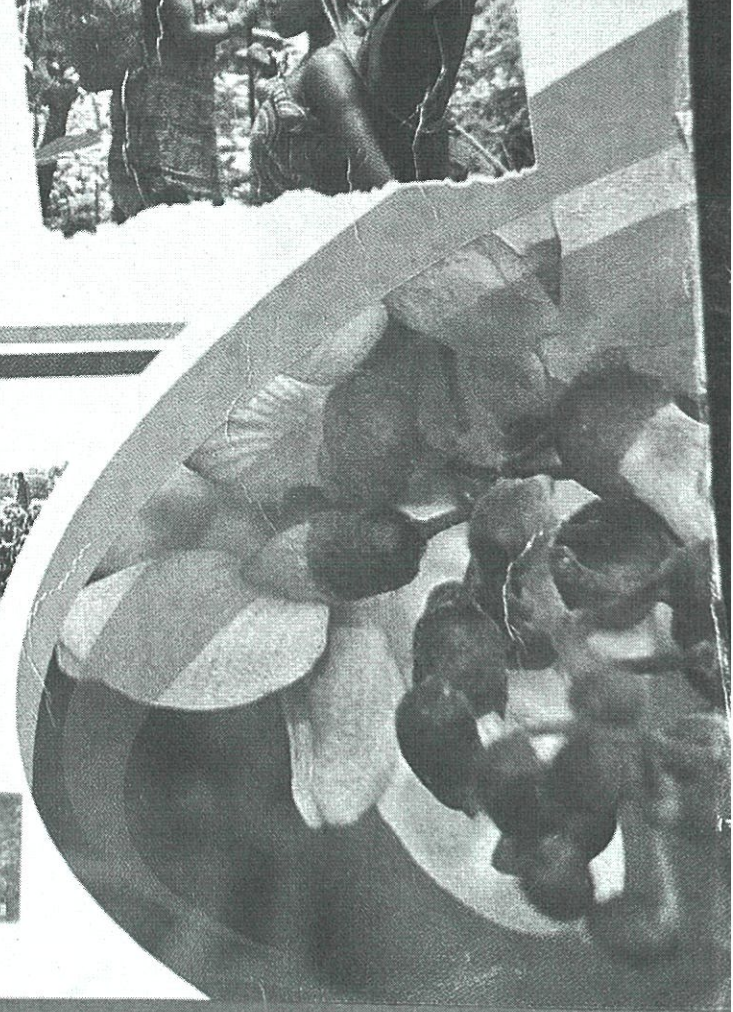
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ETHNOBOTANY

Introduction and concept of Ethnobotany. The word Ethnobotany has been derived from two Greek words, 'Ethno' meaning 'people or race' and 'Botany' meaning 'study of plants'; so ethnobotany means the study of plants used by various ethnic groups for different purposes. Ethnobotany is a branch of Ethnobiology which is a broader discipline. Earlier the term 'aboriginal botany' coined by Stephan Powers, 1875 was used for such studies. The term 'Ethnobotany' was coined by John W Harshberger in 1895 during his lecture at University of Pennsylvania. In 1940 Richard Evans Schultes carried out extensive ethnobotanical work in the Amazon and he is referred to as 'the father of ethnobotany'. In India, Ethnobotanical research was initiated by Dr. S.K. Jain (1980) and he is known as 'the father of Indian ethnobotany'.

Some important definitions of Ethnobotany are:

- The study which deals with the utilization of plants by primitive and aboriginal people. (Harshberger, 1895)
- The study of interaction between primitive humans and plants. (Jones, 1941)
- The relationship which exists between people of primitive societies and their plant environment is called ethnobotany. (Schultes, 1962)
- All the studies which describe the interactions between local people and natural environment, regarding plants. (Martin, 1995)
- Study of total natural and traditional interrelationships between man and plants. (Jain, 2001).

History of Development of Ethnobotany as a discipline. Human beings have been using plants since times immemorial for various purposes but ethnobotany as a discipline has evolved only recently. The history of ethnobotany can be traced back to the Paleolithic age when human beings started passing on of plant lores from one generation to another. After this period written records of plant uses have been found around Neolithic age. The usage of plants and plant parts by early human societies led to development of folk taxonomy (naming and classification of plants) accordingly. The earliest written records of ethnobotany refers mainly to the medicinal plants and some agricultural plants in ancient China, Egypt, India and Mesopotamia. The documented applications of plants have been found in Babylon circa 1770 BC and in ancient Egypt circa 1550 BC. In ancient India uses of plants as medicine are found in various scriptures dating back to the Vedic period (1500-500 BC).

In ancient China the lists of medicinal plants date back to around 481-221 BC. The Han Dynasty (202 BC-220 AD) includes the notable work of pharmacologist Zhang Zhongjing. A full synthesis of Greek pharmacology was compiled in De Materia Medica having details of over 600 medicinal plants around 60 AD by Pedanius Discoroides who was a Greek physician with the Roman army. Many other texts emphasizing use of plants were written from 9th to 13th centuries; the landmark

INDIAN GOVERNMENT AND POLITICS

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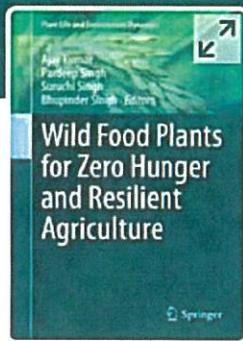
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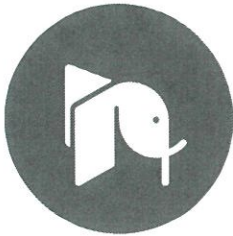
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The multifaceted role of Abscisic acid (ABA) as a phytohormone of great repute cannot be overstated. ABA right after its synthesis within plastids embark on a quest to find specific receptors. On binding these receptors a complex signaling cascade is triggered that ultimately modulates gene expression and other cellular processes, responsible for normal growth and development processes of plants. Under abiotic and biotic stresses ABA levels change tremendously, triggering a cascade of physiological responses that help the plant adapt to its environment. A deeper understanding of ABA's mechanisms like understanding its metabolic pathways or its regulation at genetic and epigenetic levels hold the promise of enhancing crop productivity and resilience in the face of the daunting challenges posed by a changing climate. Use of gene editing techniques like CRISPER-Cas technology, regulating the ABA mediated stress responsive genes, using RNAi and modifying the intragenic and promoter regions of the genes involved in ABA biosynthesis are a few methods which can enhance the ABA production or ABA mediated response to tolerate the stress conditions. In essence, ABA is a paramount player in plant stress responses, and unlocking its mysteries holds the potential to revolutionize agriculture and safeguard food security.

Keywords

abscisic acid

phytohormone

abiotic stress

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The continuously growing world population is expected to reach about six billion by 2050. This situation may pose a significant challenge to meet the increasing food demands by our rapidly struggling agriculture industry (). Factors such as water scarcity, soil degradation, and a variety of biotic and abiotic stresses further worsen the situation, affecting agricultural productivity.

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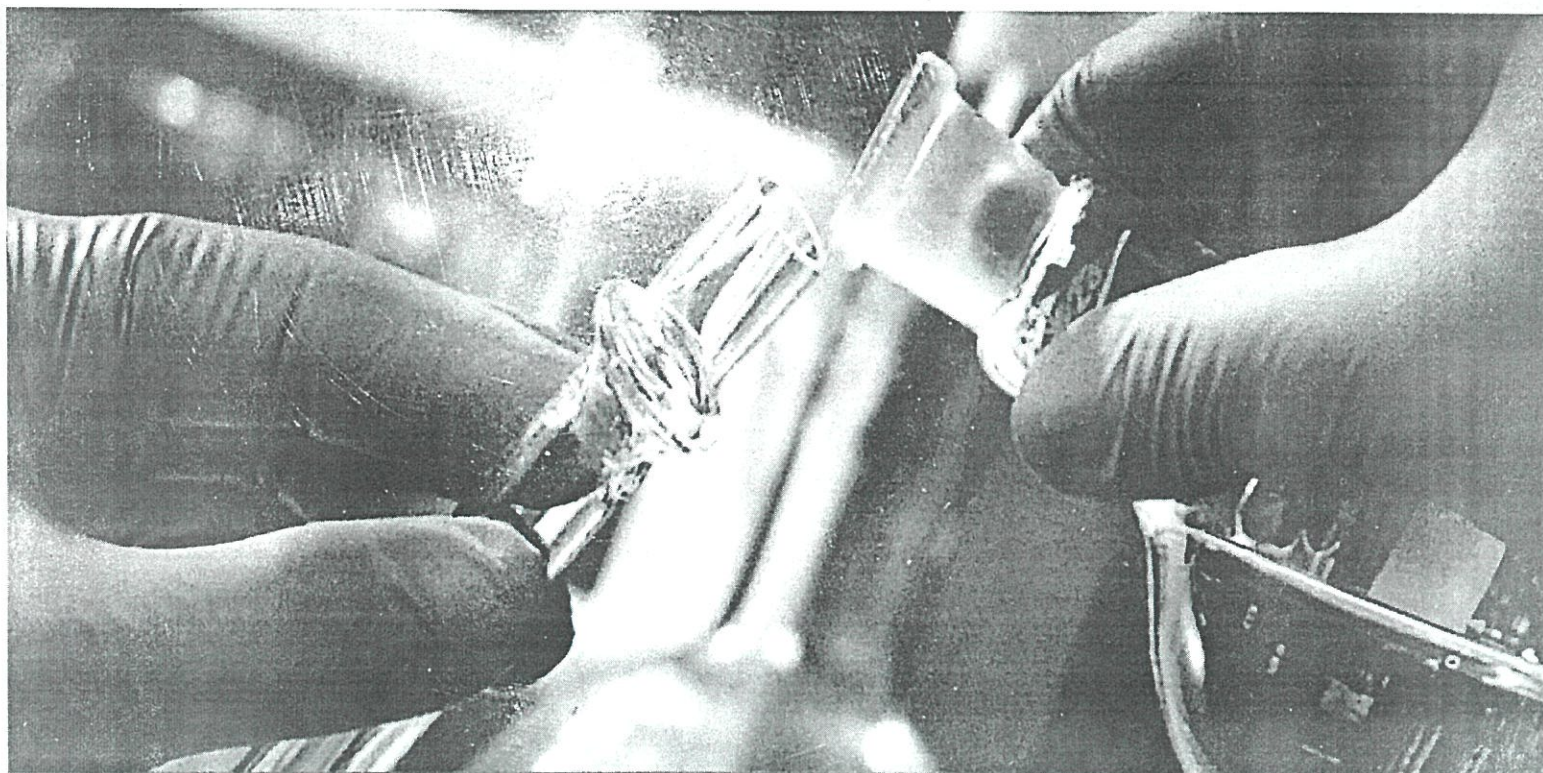
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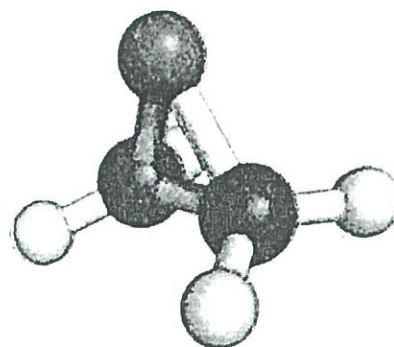
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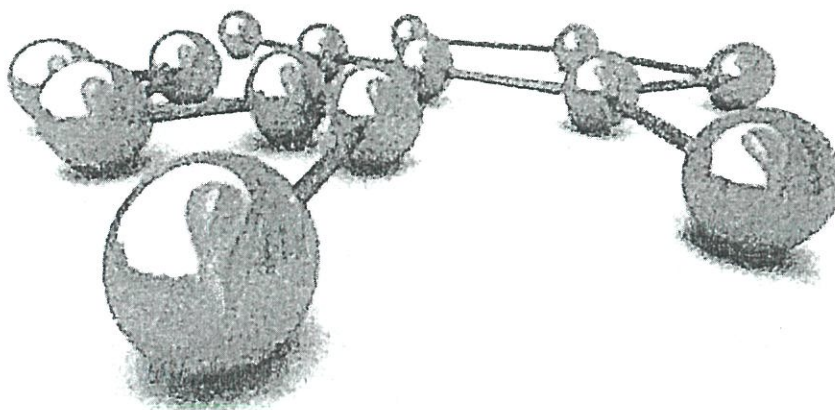
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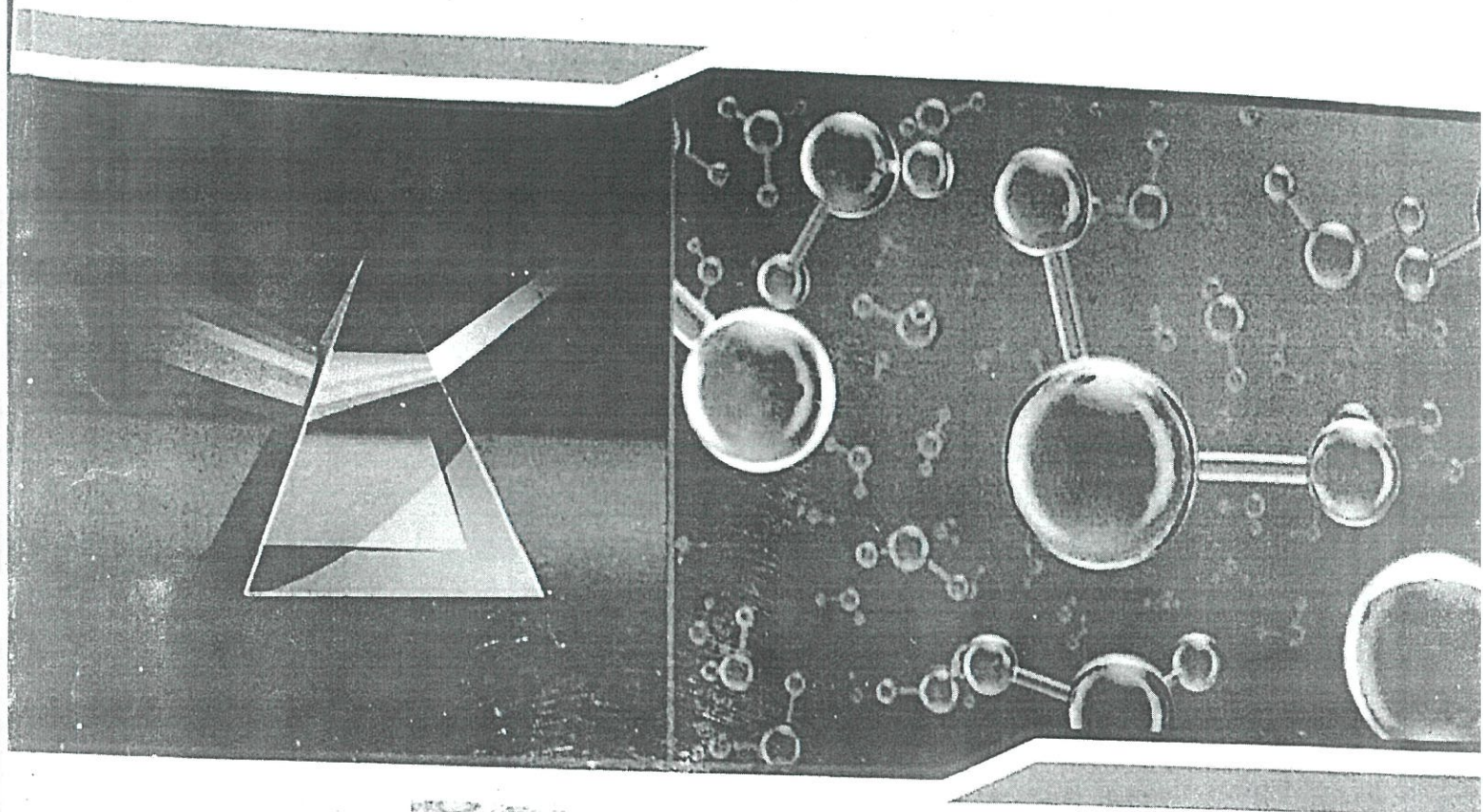
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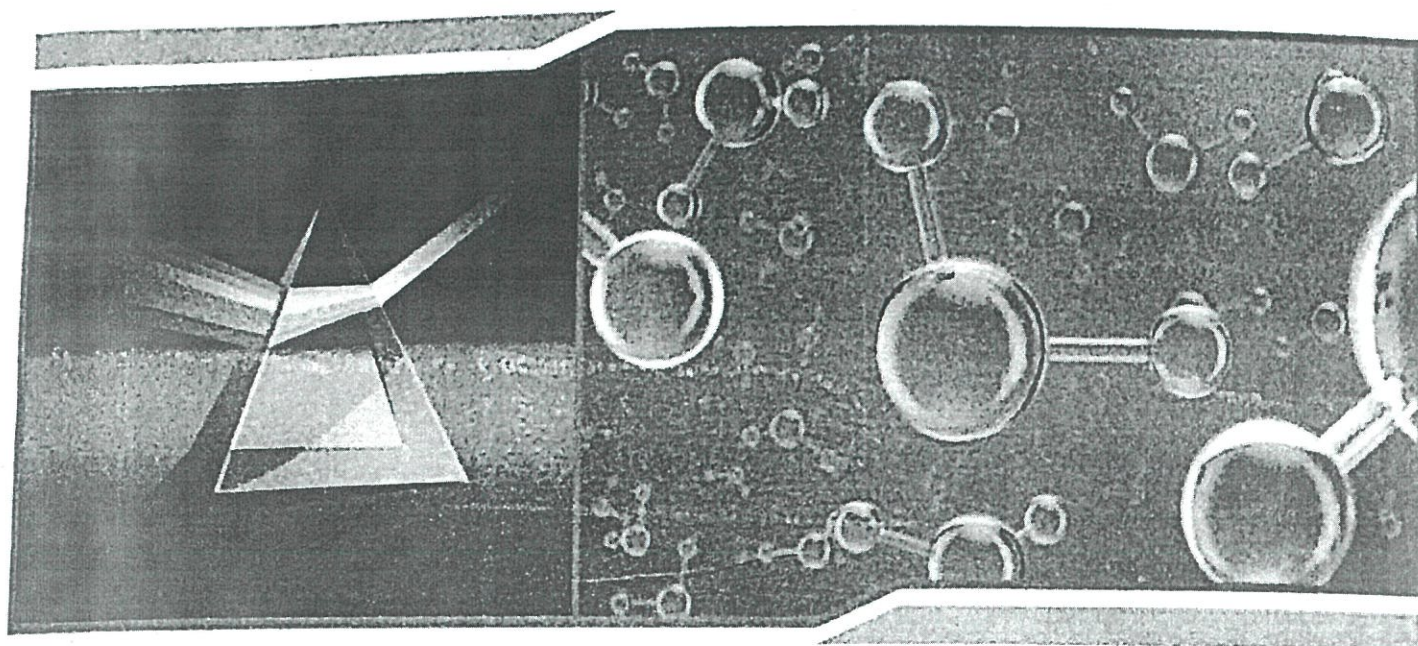
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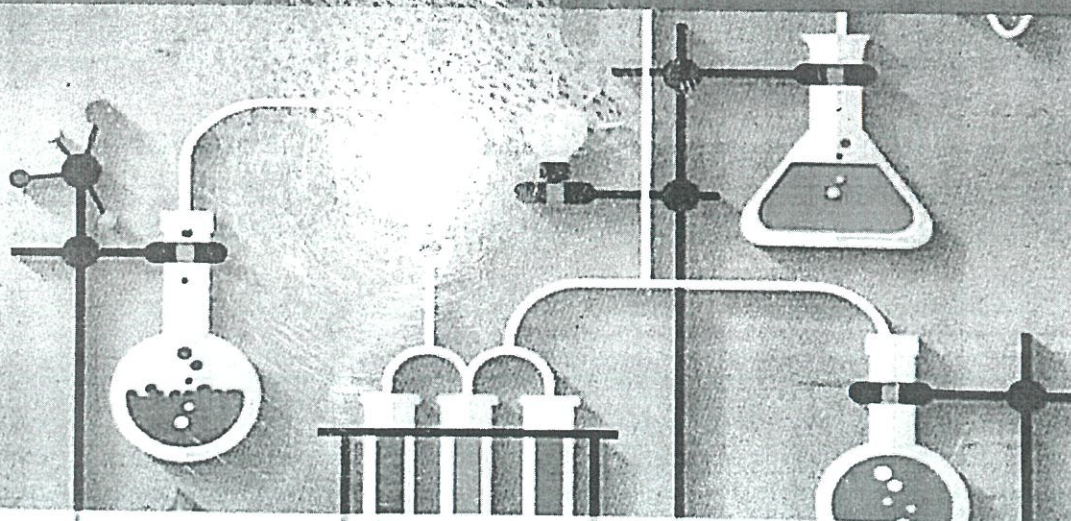
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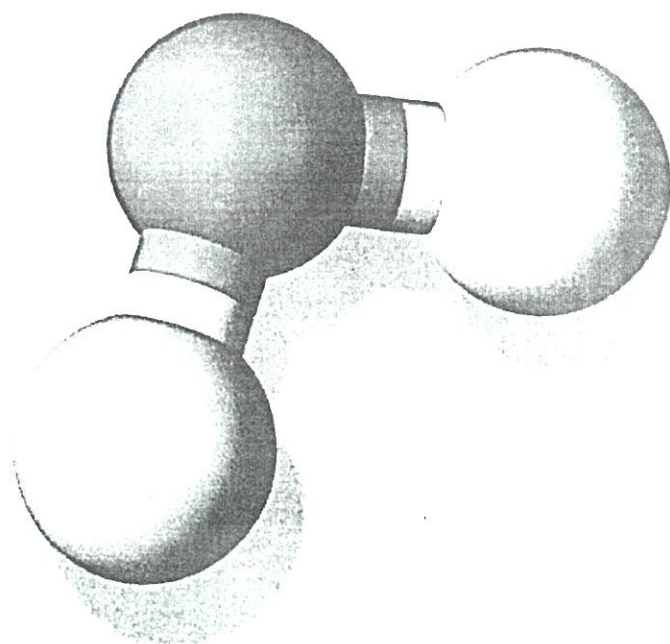


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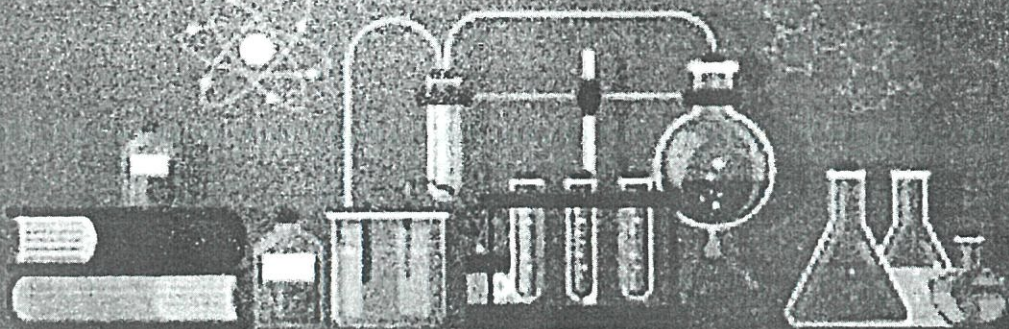
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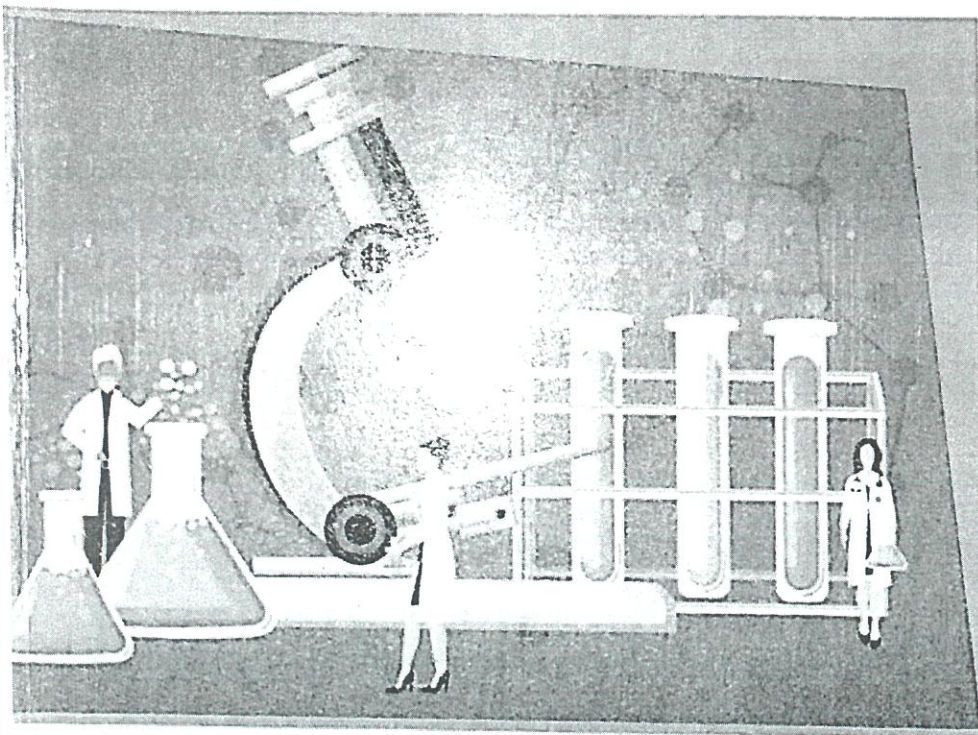
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