

EDUDOC SERVICES: CURRENT CONTENT



CURRENT CONTENTS

January to March– 2021



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NATIONAL INSTITUTE OF EDUCATION

National Council of Educational Research & Training

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Introduction

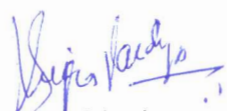
“Current Contents” prepared by Library and Documentation Division aims to identify the articles published in the learned journals received by the library in the month of Jan-March 2021.

Current Contents are arranged alphabetically under the broad subject headings. It gives the details about the name of the Journal, volume, issue month and year of publication. It will be our endeavour to bring out this as a reference tool, which will make our readers aware about the current contents available in different learned journals of their subject of interest.

Current Contents will be useful to our faculty members in selecting/recommending relevant articles for their research.

Keeping in mind the integration of ICT and Digitisation, attempt has been made to provide the Web-link of the current issues, which will facilitate the readers to access the articles, except the ‘*’ marked journal titles

We eagerly await to received your views and comments.


(Prof. Shipra Vaidya)
Head, LDD,
NCERT, New Delhi

Sr. No.	Name of Journals	Vol.	Issue	Month	Year	Pages
❖	Biology					
1	Biochemistry and Molecular Biology Education	48	5 6	Sep-Oct Nov-Dec	2020	13-20
❖	Curriculum					
2	Curriculum Inquiry	50	2	Mar	2020	45
❖	Economics					
3	Economic and Political weekly	56	8 9 10 11 12 13	20 Feb 27 Feb 6 Mar 13 Mar 20 Mar 27 Mar	2021	47-52
4	Economics of Education Review	79		Dec	2020	46
5	The Indian Economic and Social History Review	57	4	Oct-Dec	2020	77
6	Quarterly Journal of Economics	135	1	Feb	2020	194
❖	Education					
7	Educational Policy	35	1	Jan	2021	58
8	International Journal of Educational Development	77 78 80		Sep Oct Jan	2020 2020 2021	93-97
9	International Journal of Inclusive Education	24	13-14	Nov-Dec	2020	101
10	Journal of Educational Measurement	57	4	Winter	2020	113
❖	Educational Psychology					
11	British Journal of Educational Psychology	90	4	Dec	2020	21
12	Educational Psychologist	55	4	Oct-Dec	2020	59
13	Educational Psychology in Practice	35	1	Mar	2019	60
14	Journal of Educational Psychology	112	3 4	Apr May	2020	114-117
❖	Educational Research					
15	शैक्षणिक संदर्भ	13	73(130) 74(131)	Sep-Oct Nov-Dec	2020	253-254
16	American Educational Research Journal	57	6	Dec	2020	1
17	Assessment in Education: Principles, policy & Practice	27	1 6	Feb Dec	2020	8-9
18	Australian Journal of Education	64	3	Nov	2020	10
19	Educational Action Research: an International Journal	28	5	Dec	2020	53
21	Educational Evaluation and Policy Analysis	42	4	Dec	2020	55
22	Educational Measurement: Issues and Practice	39	4	Winter	2020	56-57

23	Educational Research	62	4	Dec	2020	61
24	Indian Educational Review	56	1	Jan	2018	78
25	International Journal of Educational Research	101 104		May Dec	2020	98-100
26	Journal of Educational Research	113	4-6	Jul-Dec	2020	118
27	Review of Educational Research	90	6	Dec	2020	202
28	Scandinavian Journal of Educational Research	64	7	Dec	2020	203
29	British Journal of Educational Technology	51	6	Nov	2020	22-24
30	Computers and Education	160 161		Jan Feb	2021	35-38
31	Journal of Computer Assisted Learning	36	5 6	Oct Dec	2020	106-107
32	Technology; Pedagogy and Education	29	5	Nov	2020	265
❖	Environmental Education					
33	Environmental Conservation	47	3 4	Sep Dec	2020	70-71
34	Journal of Environmental Education	51	4-6	Jul-Dec	2020	122-123
35	Resurgence & Ecologist		324 325	Jan-Feb Mar-Apr	2021	198-201
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36	The Geographical Journal	186	4	Dec	2020	74
37	The Geography Teacher	17	4	Oct-Dec	2020	75
38	Journal of Geography	119	6	Nov-Dec	2020	124
39	National Geographic Magazine	8	6	Jan	2021	154-155
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40	University News	58 59	10 51 52 1 3 4 5 6 7 8 9	9 Mar 21 Dec 28 Dec 4 Jan 18 Jan 25 Jan 1 Feb 8 Feb 15 Feb 22 Feb 1 Mar	2020 2021	267-282
❖	Library Science					
41	IASLIC Bulletin	65	2	Jun	2020	76
42	Library Herald : Journal of the Delhi Library Association	58	4	Dec	2020	143-144
43	SRELS Journal of Information Management	57	5	Oct	2020	257
❖	Linguistics					
44	ELT Journal	74	1 3 4	Jan Jul Oct	2019 2020 2020	64-69

45	Indian Literature: Sahitya Akademi's Bi-Monthly Journal	64	5(319) 6(320)	Sep-Oct Nov-Dec	2020	85-90
46	Language Learning	70 70	1 1 Supple. 4	Mar Mar Dec	2020	137-142
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48	Loksanskritam (Sanskrit)	37	1	Feb	2021	147-148
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61	Journal of Counseling Psychology	67	3	Apr	2020	108-110
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86	Studies in History	36	2	Aug	2020	258
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99	Teaching and Teacher Education: An International Journal of Research and studies	94 95 97 98		Aug Oct Jan Feb	2020 2021	260-264
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American Educational Research Journal

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*All articles were accepted under the coeditorship of Mark Berends, Francesca López,
Julianne C. Turner, and Suzanne Wilson.



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On the cover: I Went, Not Looking Back, 2013, by Leslie Nolan. Acrylic on canvas, 36 inches by 36 inches. Courtesy of the artist and Calloway Fine Art & Consulting, <http://leslienolan.com> and <https://callowayart.com>. See p. 372 for more about Nolan and her art.

Special Issue: Psychology's Role in Addressing the Dual Crises of Chronic Pain and Opioid-Related Harms

Special Issue Editors: Tonya M. Palermo, Robert D. Kerns, and Elizabeth A. Klonoff

- 741 Psychology's Role in Addressing the Dual Crises of Chronic Pain and Opioid-Related Harms: Introduction to the Special Issue

Tonya M. Palermo and Robert D. Kerns

The high prevalence of pain and inadequate pain management is a significant public health concern. The high rates of harms associated with prescription and illicit use of opioids, including overdose and death, are also recognized as a significant public health crisis. This Introduction to the special issue summarizes these significant public health problems and provides a brief summary of innovative psychological research that aims to address chronic pain and harms from opioids.

Risk Factors and Assessment

- 748 Patterns of Opioid Use in Adolescents Receiving Prescriptions: The Role of Psychological and Pain Factors

Anna C. Wilson, Benjamin J. Morasco, Amy L. Holley, and Sarah W. Feldstein Ewing

Adolescents are commonly prescribed opioid medications to treat pain in medical settings, despite the heightened risk of substance use during this developmental period. This article suggests that psychological factors as well as prescription characteristics may be associated with greater opioid use among these adolescents. Additionally, sex differences in psychological and pain-related risk in adolescents with acute pain may inform future interventions to reduce opioid use.

- 761 Real-Time Associations Between Young Adults' Momentary Pain and Prescription Opioid Misuse Intentions in Daily Life

Lauren M. Papp, Chrystyna D. Kouros, and John J. Curtin

This study identified young adult participants' pain experiences as a real-time predictor of intentions to misuse prescription opioids in daily life. Moderating findings indicated differences for males and females and at different levels of background alcohol use. The results provide novel information about the pain-opioid misuse connection during an age period that sets the foundation for later adult health.

- 772 The Relative Contribution of Pain and Psychological Factors to Opioid Misuse: A 6-Month Observational Study

Marc O. Martel, Robert R. Edwards, and Robert N. Jamison

Despite the potential benefits of opioid therapy, the use of opioids may lead to problems such as opioid misuse and addiction. This article reveals that patients with high levels of catastrophizing might be particularly susceptible to overusing opioids. Findings also reveal that opioid misuse behaviors fluctuate over time, and that certain types of opioid misuse behaviors occur more frequently than others.

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784 Patient Race and Opioid Misuse History Influence Provider Risk Perceptions for Future Opioid-Related Problems

Adam T. Hirsh, Tracy M. Anastas, Megan M. Miller, Patrick D. Quinn, and Kurt Kroenke

Guided by prior research and theory, this study examined how patient race and opioid misuse history impact provider risk assessments for future opioid-related problems in patients with chronic pain. The findings suggest that efforts to address the dual public health crises of chronic pain and opioid misuse may have unintended negative consequences for certain patient groups.

796 Emotion Regulation as a Transdiagnostic Factor Underlying Co-Occurring Chronic Pain and Problematic Opioid Use

Rachel V. Aaron, Patrick H. Finan, Stephen T. Wegener, Francis J. Keefe, and Mark A. Lumley

Emotion regulation, the process of changing one's emotional experience, is impaired in various ways among people with chronic pain and in people with both chronic pain and problematic opioid use. These emotion regulation difficulties can be targeted in treatment to improve pain- and opioid-related outcomes. However, more research is needed to clarify the precise role of emotion regulation and its treatment in these populations.

Integrated Treatment Approaches

811 Comorbid Chronic Pain and Opioid Misuse in Youth: Knowns, Unknowns, and Implications for Behavioral Treatment

Melissa Pielech, Claire E. Lunde, Sara J. Becker, Kevin E. Vowles, and Christine B. Sieberg

Little is known about the optimal behavioral treatments for youth with comorbid chronic pain and opioid misuse, despite the high likelihood of short- and long-term adverse consequences associated with both conditions. To address this gap, the current review article draws from the evidence base and best practices for the psychosocial treatment of pediatric pain, opioid misuse, and adolescent substance use to propose a comprehensive agenda to prevent and treat chronic pain and opioid misuse in youth.

825 Pain Rehabilitation's Dual Power: Treatment for Chronic Pain and Prevention of Opioid-Related Risks

Taylor B. Crouch, Sharlene Wedin, Rebecca L. Kilpatrick, Lillian Christon, Wendy Balliet, Jeffrey Borckardt, and Kelly Barth

This study provides a data-driven exploration of interdisciplinary pain rehabilitation as a viable intervention to address chronic pain and related suffering while also reducing opioid-related risks. The authors present multidimensional outcomes of an intensive pain rehabilitation program, including objective functional performance and opioid misuse risk, and highlight the key role of health psychologists on pain rehabilitation teams.

840 Mindfulness-Oriented Recovery Enhancement Reduces Opioid Dose in Primary Care by Strengthening Autonomic Regulation During Meditation

Eric L. Garland, Justin Hudak, Adam W. Hanley, and Yoshio Nakamura

Mindfulness-based interventions, which are theorized to boost self-regulation strength, may be useful for reducing opioid use among people with chronic pain. The authors conducted a controlled trial of Mindfulness-Oriented Recovery Enhancement (MORE) in a primary care setting and found that MORE reduced opioid dose by nearly one third. Physiological findings suggest that self-regulating autonomic function with mindfulness meditation may help to reduce opioid use.

853 Contributions of Psychology to Research, Treatment, and Care of Pregnant Women With Opioid Use Disorder

Heidi Preis, Elizabeth M. Inman, and Marci Lobel

Pregnant women with opioid use disorder have distinctive psychosocial, behavioral, and medical needs that require evidence-based, integrated care to alleviate impacts on their health and that of their developing child. The authors identify pertinent psychological theories, methods, and tools to improve prevention, care, and research with this population. The field of psychology is uniquely well-suited to address the needs of pregnant women addicted to opioids.

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Helping to End Addiction Long-Term (HEAL) Initiative

866 Guest Editorial: Psychologists Aim to HEAL the Opioid and Pain Crises

Laura D. Wandner, Will M. Aklin, and Michael C. Freed

The opioid and pain crises affect every domain of family and community life. In 2018, U.S. Congress applied \$500 million to develop scientific solutions to these crises. The result was the Helping to End Addiction Long-Term Initiative (NIH HEAL). This guest editorial highlights the unprecedented cross-agency actions and roles of psychologists in this initiative to address these national crises.

Obituaries

869 Bertram H. Raven (1926–2020)

William P. Erchul

870 Rhoda K. Unger (1939–2019)

Rose Capdevila

871 Bertram Paul Karon (1930–2019)

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871 Michael A. Wallach (1933–2020)

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On the cover: Vermeer Through Headphones, 2007, by Maggie Siner. Oil in linen, 20 inches by 24 inches. Courtesy of the artist, <https://maggiesiner.com/>. See p. 1029 for more about Siner and her art.

COVID-19 Pandemic

- 875 **Flattening the Emotional Distress Curve: A Behavioral Health Pandemic Response Strategy for COVID-19**
Nadine J. Kaslow, Elsa A. Friis-Healy, Jordan E. Cattie, Sarah C. Cook, Andrea L. Crowell, Katherine A. Cullum, Carlos del Rio, Erica D. Marshall-Lee, Allison M. LoPilato, Lauren VanderBroek-Stice, Martha C. Ward, DeJuan T. White, and Eugene W. Farber
To flatten the viral spread and emotional distress curves, behavioral health expertise is essential. This article articulates a novel pandemic behavioral health response strategy and associated roles behavioral health specialists can play to optimize pandemic outcomes. The Caring Communities initiative serves as an exemplar of behavioral health leadership, prevention, education, service, research, and advocacy action steps during each response phase.
- 887 **COVID-19 and Ageism: How Positive and Negative Responses Impact Older Adults and Society**
Caitlin Monahan, Jamie Macdonald, Ashley Lytle, MaryBeth Apriceno, and Sheri R. Levy
The COVID-19 pandemic has brought both positive and negative responses toward older adults. This article explores expected short- and long-term consequences, such as the pandemic's impact on beliefs about and treatment of older adults, intergenerational relations, and individuals' mental and physical health. The authors discuss policy changes to health care (e.g., triaging, elder abuse), employment concerns (e.g., layoffs, retirement), and education about aging and ageism.
- 897 **The Trajectory of Loneliness in Response to COVID-19**
Martina Luchetti, Ji Hyun Lee, Damaris Aschwanden, Amanda Sesker, Jason E. Strickhouser, Antonio Terracciano, and Angelina R. Sutin
Social distancing and "stay-at-home" orders have been essential to contain the spread of COVID-19 in the United States. However, there have been significant concerns that such measures would lead to increase in loneliness among Americans. Using a nationwide survey, the authors assess levels of loneliness before the coronavirus outbreak and changes in loneliness in response to the initial social distancing recommendations in March 2020 and stay-at-home policies enacted across most States in April 2020.
- 909 **Leveraging the Power of Mutual Aid, Coalitions, Leadership, and Advocacy During COVID-19**
Daniela G. Domínguez, Dellanira García, David A. Martínez, and Belinda Hernandez-Arriaga
This article describes COVID-19 as an unprecedented catalyst for social transformation that underscores the need for multilevel and cross-sectoral solutions to improve health equity for all. This paper has the potential to inform health professionals, including psychologists, about support and advocacy strategies during the COVID-19 pandemic and after it is contained.

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919 Health Service Psychology Education and Training in the Time of COVID-19: Challenges and Opportunities

Debra J. Bell, Mariella M. Self, Claytie Davis III, Francine Conway, Jason J. Washburn, and Franci Crepeau-Hobson

The COVID-19 pandemic has presented health providers with major challenges to continue training and service delivery in the face of widespread health risk and community shutdown. Creative responses to these challenges have highlighted opportunities for improvements in how health service psychologists are trained and in the heightened role of health service psychology trainees as health care providers.

933 Expanding Psychology Training Pathways for Public Policy Preparedness Across the Professional Lifespan

Judith M. Glassgold and Joshua R. Wolff

The application of psychological knowledge to the COVID-19 pandemic is essential to control the spread of the disease and mitigate its negative mental health effects. The authors describe psychology training throughout the professional lifespan to increase psychologists' skills in policy and advocacy. These skills provide psychologists tools to positively affect public policies to address this and future public health concerns.

Articles

945 Enlisting the Power of Youth for Climate Change

Albert Bandura and Lynne Cherry

In this article the authors highlight the climate-conserving actions of youth ages 9-16, exhibited in a documentary film series, that exemplify Bandura's 70 years of seminal research on social-cognitive theory, self-efficacy, and social modeling. The civic engagement and democratic participation of these youth is rooted in the core belief that "one has the power to influence events by one's actions and to shape the course of one's future."

952 The Impact of Early Racial Discrimination on Illegal Behavior, Arrest, and Incarceration Among African Americans

Frederick X. Gibbons, Mary E. Fleischli, Meg Gerrard, Ronald L. Simons, Chih-Yuan Weng, and Laurel P. Gibson,

Relations between police officers and Black Americans have dominated the news for some time. This study examined the impact of early perceived racial discrimination—in general *and* from the police (i.e., "hassling")—on Black adolescents' and young adults' illegal behavior, eventual arrest(s), and incarceration from age 10 to 24. Early discrimination predicted all three outcomes; in the absence of police hassling, however, racial pride predicted less delinquency and criminal involvement.

969 Could a Rising Robot Workforce Make Humans Less Prejudiced?

Joshua Conrad Jackson, Noah Castelo, and Kurt Gray

The rise of automation will change the way we work, but could it also change the way we interact with each other? The authors propose that robots represent a superordinate threat that leads people to see solidarity with other human groups. Six studies test whether the salience of working robots increases or decreases prejudice. This research has implications for intergroup relations in an automated world.

983 High-Achieving Schools Connote Risks for Adolescents: Problems Documented, Processes Implicated, and Directions for Interventions

Sunita S. Luthar, Nina L. Kumar, and Nicole Zillmer

This article addresses mental health challenges among students at relatively high-performing schools: those with good standardized test scores and multiple extracurricular offerings. Following a summary of findings documenting elevated levels of symptoms, the article describes the complex, multilevel factors that come together in creating, and sustaining, high pressures to achieve. Also reviewed are interventions that could help reduce stress levels and promote positive well-being.

996 Generating Psychotherapy Breakthroughs: Transtheoretical Strategies From Population Health Psychology

James O. Prochaska, John C. Norcross, and Southey F. Saul

Psychotherapy has proven demonstrably effective but has not dramatically improved its impacts as in other health care professions. The authors outline seven strategies from the transtheoretical model and population health that can generate breakthroughs in mental health outcomes. These entail increasing the percentage of people entering and completing psychotherapy (reach, recruit, retain), favoring synergy over specificity, creating multiple synergistic changes (coaction), and tailoring technology to extend treatment.

1011 The Right to Silence and the Permission to Talk: Motivational Interviewing and High-Value Detainees

Frances Surmon-Böhr, Laurence Alison, Paul Christiansen, and Emily Alison

The questioning of high-value detainees (HVDs; i.e. terrorist suspects) is critical to investigating and combatting terrorism. In this article, the authors argue the principles of motivational interviewing (an evidence-based therapeutic intervention) can be successfully applied to law enforcement interviews. The study contains analysis of the largest sample of law enforcement interviews with HVDs in the world.

Obituaries

1022 Ronald Melzack (1929–2019)

Joel Katz

1024 Judith Rich Harris (1938–2019)

Steven Pinker

1026 Lawrence S. Wrightsman (1931–2019)

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1027 John F. Santos (1924–2020)

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1028 Bonnie Burstow (1945–2020)

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Assessment in Education: Principles, Policy & Practice

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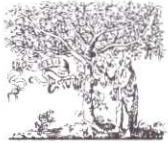
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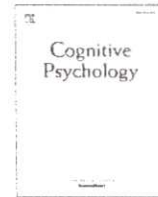


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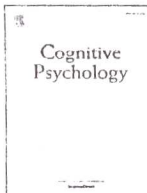
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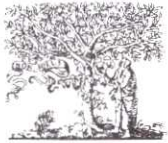
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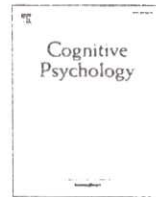


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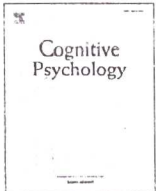


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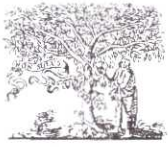
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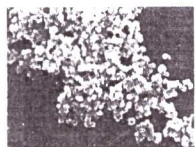
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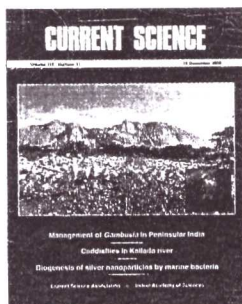
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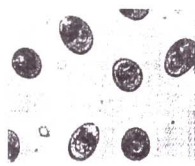
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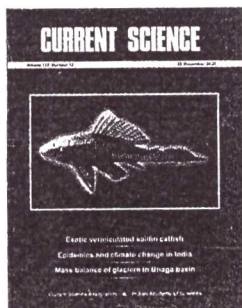
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Two Papers on Judicial Bias in India

10 Two papers studying bias in judicial decision-making in India using large data sets shed light, in different ways, on the working of India's legal system. — *Alok Prasanna Kumar*

Understanding the Matrix of Caste, Class and Gender

12 There is an evident link between the degree of vulnerability and susceptibility of people falling prey to the ills of the lockdown and the overlapping effects of class, caste and gender they belong to. — *Vatya Raina, Ananya*

Countering the Left by Moving Rightwards

16 The palpable rightward shift of the Congress in Kerala, specifically with regard to Sabarimala, is consistent with the conservative political posturing that the party has for long articulated in the state. — *Sarath Sasikumar, Balu Sunilraj*

Beleaguered Victim to Robust Warrior

21 Taking over the battered, backward state in the aftermath of the 1999 supercyclone, Naveen Patnaik has transformed Odisha by erecting and ensuring a people-centric governance model. — *Pralay Kanungo, Sitaram Kumbhar*

Agricultural Reforms in India: Need for a Unique Model

25 While linking agriculture to private corporate sector can be part of the agricultural reforms strategy, the thrust has to be on the cooperative movement for storage, processing and marketing of agricultural products. — *Nitya Nanda*

School Education in NEP 2020: The Underlying Framework

29 Released 34 years after the previous policy on education, the National Education Policy, 2020 is framed in a context that is unrecognisable from that of the past policies. — *Jyoti Raina*

Reinventing the Commons

37 The article makes a case for the reinvention in the social sciences of the commons, which, in its diversity, seeks wisdom through a dialogue of knowledges, moving beyond traditional "publics," and "time." — *Shiv Visvanathan*

Formalisation Experience of E-waste Recyclers of Moradabad

44 A study of the Indian E-waste Management Rules and the recycling industry of Moradabad, Uttar Pradesh reveals that the push towards formalisation has not benefited either the industry or its workers. — *Ankita Rastogi*

Digital Empowerment and Indian Handlooms

52 This study explores the digital access and education initiatives in the handloom clusters of India and attempts to arrive at policy interventions for the sustainable digital empowerment of handloom workers. — *Bishakha Majumdar, Sriparna Basu & Shilpi Jain*

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63 *Jeny Rapheal* on the need for teachers with intellectual humility; *Sreenidhi Krishnan* on the phenomenon of soap-opera viewing and the popularity of the genre; *Ali Kirmani* on the caste and family nepotism Sushant Singh Rajput and Rohith Vemula faced in their lives and deaths; and Last Lines by *Ponnappa*.

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The Erosion of Women's Agency in North East India

52 The emergence of an exclusive strategy to marginalise women's perspectives within the larger context of sustainability, policy formulation, political assertion, and ecological regeneration is examined. — *Samhita Barooah*

Farm Size and Productivity Debate in Indian Agriculture

57 From a policy perspective, larger farm size with a higher level of irrigation intensity and input use can explain the higher productivity level and variation in farm size and productivity relationship across states. — *Raya Das*

Wage Code and Rules

66 This paper examines some of the key reform measures undertaken in the wage code and the implementation mechanism, as provided in the draft wage rules, identifies shortcomings therein, and provides suggestions for improvement. — *Anoop Satpathy, Xavier Estupiñan & Bikash K Malic*

Taxing Petroleum Products

74 The central government has increased the taxes on petroleum products under its control, thereby constraining the fiscal space for the state governments. — *D K Srivastava, Muralikrishna Bharadwaj, Tarrung Kapur & Ragini Trehan*

Budget 2021-22

Eight articles discuss growth and fiscal dynamics and assess allocations to agriculture, manufacturing, and social sectors made in the Union Budget 2021-22.

Fiscal Policy and Growth in a Post-COVID-19 World

10 What is the nature of India's economic recovery from COVID-19, and how does the budget seek to balance fiscal support while reducing the deficit? — *Sajjid Chinoy, Toshi Jain*

A Budget for Pandemic Times: Implementation Questions

16 While the budget for 2021-22 has tried to prioritise growth, there is considerable risk from burgeoning deficits and the possible impact in price stability from large liquidity infusion to facilitate government borrowing at low cost. — *M Govinda Rao*

Union Budget 2021: The Macroeconomic Framework

20 When the monetary policy stance has limitations in triggering growth through liquidity infusion and the status quo policy rates, "fiscal dominance" is crucial for sustained growth recovery. — *Lekha Chakraborty*

A Budget amidst a Deepening Crisis: A Missed Opportunity

25 Despite the urgent need to invest in the social sector, the failure of the budget for 2021-22 to allocate resources will be detrimental to the progress made in the last two decades. — *Himanshu*

Green, but Not So Green: Agriculture and Sustainability

31 The pandemic, the climate crisis, and crisis in agriculture call for sustainable solutions, which are acknowledged by NITI Aayog, but did not find a thrust in the budget. — *Srijit Mishra*

Budget 2021-22 and the Manufacturing Sector

35 The growth rate of manufacturing value added has been declining continuously since 2016-17 and become negative in 2019-20, while the 2021-22 budget has largely adopted the supply side corrective measures in the form of increased capital expenditure on infrastructure. — *M Parameswaran*

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Regimes of Dispossession

- 7 Mass privatisation and monetisation of public assets will push the country into yet another crisis.

Politics of Caste-based Schemes

- 8 Governmentalising schemes in favour of a privileged caste defeats the principle of justice.

Trust and the Responsibility of Scientists to the Public

- 10 The history of science is evidence to show that scientific knowledge is as much part of cultural narratives, and building trust in science needs to recognise this. — *Sundar Sarukkai*

The Force Multipliers of Disasters in Uttarakhand

- 13 Major human interventions in Uttarakhand like hydropower projects and highways implemented without an informed or democratic decision-making process act as force multipliers during such disasters. — *Himanshu Thakkar*

National Education Policy 2020: Realigning the Bhadrakok

- 17 The National Education Policy, 2020 seeks to build skills for traditional vocations and for the global market, but with a vision that deepens the inequalities of caste, class and gender. — *Yemuna Sunny*

Anti-defection Law: Towards a Paradigm Shift?

- 21 The ubiquitous relationship between the anti-defection jurisprudence and the tenets of inner-party democracy needs to be understood, especially against the backdrop of recent political events. — *Shameek Sen*

Modern Monetary Theory, Deglobalisation and the Dollar

- 31 The article explores the interconnections between the rise of modern monetary theory, deglobalisation and the international monetary system. — *Alok Sheel*

The Making of Ambedkarite Public Culture

- 39 Since the Dalits' ideas about self and consciousness were largely shaped by their everyday experiences, B R Ambedkar thoughtfully evolved the Dalits' public culture towards conscientising mental and physical space. — *Kishor Gaikwad*

Dynamics of Caste and Landlessness

- 46 The effects of land acquisition processes and poor urban planning on Dalits and the marginalised landless population are analysed. — *Ajay Kumar Gautam, Bhujang Sambhaji Waghmare*

Protection for Medical Professionals: Has India Done Enough?

- 54 The causes of the antagonism between patients and doctors leading to violence against medical professionals are highlighted, and the efficiency of the legislations enacted for the protection of medicare professionals in India is examined. — *Sakshat Bansal, Gayatri Puthran*

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- 63 *Kalpajyoti Bhuyan* on *Paatal Lok*'s ruthless deconstruction of contemporary India; *Aditi Deo* on the 20th-century woman musician in khayal; *Asrarul Haque Jeelani* on the stigmatisation of disease and our culture of profanity; and Last Lines by *Ponnappa*.

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Politics of Regulating Digital Media

- 7 While ensuring the accountability of big tech, the IT rules must not stifle free speech.

The Pitfalls of Quota for Locals

- 8 The employment quota for locals is politically repugnant and also vexing for the economy.

The Battle of GameStop

- 10 What the battle of GameStop has brought into light is that democracy in financial markets is just a myth: whoever controls the valves controls the flow.
— *Ahmet Öncü, T Sabri Öncü*

A Crucible of Tamil Nadu's Sociopolitical Ethos

- 14 Based on shifts in Tamil Nadu's economy and polity, the prospects for emergence of political alternatives to the two dominant Dravidian parties are examined in the context of the upcoming assembly elections.
— *M Vijayabaskar, Vignesh Karthik K R*

Livelihood Vulnerabilities of Tribals during COVID-19

- 19 There is an urgent need to focus on food security and strong social protection mechanisms to help tribal communities to minimise the impact of the pandemic. — *Minaketan Behera, Preksha Dassani*

Managing Groundwater—Energy Nexus in India

- 22 Arguments in support of the "SPARC" model as a solution for India's multiple problems in agriculture are misleading. — *Meera Sahasranaman, M Dinesh Kumar, Mahendra Singh Verma, Chris J Perry, Nitin Bassi & M V K Sivamohan*

The Infosys Prize

- 31 Using the Infosys Prize as a proxy indicator, this article raises some crucial questions about epistemic and structural biases that limit the scope of laureates to a set of elite institutions and knowledge systems. — *Peter Ronald deSouza*

Farm Laws: Conflating Deregulation with Modernisation

- 37 The possibilities for extension of the minimum support prices to ensure a decentralised procurement system in a diverse range of crops are discussed.
— *M S Sriram*

Growth Transitions in India: Myth and Reality

- 43 This paper addresses the proper delineation of the phases of growth in India using state-of-the-art statistical methodology and provides a theoretical explanation for that history. — *Pulapre Balakrishnan, Mausumi Das & M Parameswaran*

Creating a 'Time and Space' for the Uniform Civil Code

- 50 Insofar as Muslims continue to manifest personal laws as a part of their right to live as a religious minority, an abrupt transition from personal laws to the Uniform Civil Code, politically, remains inexpedient. — *Zubair Ahmad Bader*

Dalit Women and Colonial Christianity

- 57 Bible women played a pivotal role in the history of Dalits, gender, and missions by shaping the life and community of Dalits and spreading Christianity in Rayalaseema. — *Chakali Chandra Sekhar*

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Pendency during the Pandemic

- 10 The Supreme Court finds itself facing increased pendency and demands to restart in-person hearings after measures to fight COVID-19 forced courts in India to suspend in-person hearings. — *Alok Prasanna Kumar*

Posthumanist Confinement: Big Tech's 'Societies of Control'

- 12 The idea of tech companies as an important power in the creation of "societies of control" is explored, building on which contemporary posthumanism is looked at as human existence represented and replicated as non-human entities. — *Avanti Lele*

Cooperative or Coercive Federalism: Union Budget 2021–22

- 14 Certain provisions of the Union Budget 2021–22 that have diluted the spirit of cooperative federalism in the country are looked at. — *Arvind Awasthi, Siddharth Shukla*

Social Security Code, 2020 and Rules: A Critique

- 17 The focus of the article is the Social Security Code, 2020 and the rules framed thereunder, which raise a number of issues regarding the working of the new legislation. — *Santosh Mehrotra, Kingshuk Sarkar*

(Non)Humanising the Home in the Anthropocene

- 21 The concept of home is revisited in the context of the pandemic to ask how the pandemic modifies and has an impact on the various inflections of home. — *Susan Haris*

Dangerous Cooking Using Unsafe Fuels: A Case Study of Punjab

- 24 Despite the efforts of the Indian government to make available clean fuels, the use of cow dung cakes continues unabated; people should be made aware of the adverse effects of this practice on health and the environment. — *Mandeep Kaur, Kuldip Kaur*

Disadvantages and Segregation through School Choice

- 33 The manner in which privatisation in elementary education in India changes student composition, which then creates segregation across school types, is analysed. — *Biswajit Kar, Sachidanand Sinha*

Cotton Mills in Tamil Nadu, 1914–51

- 40 The integration of women workers into cotton mills in Tamil Nadu is surveyed in this paper to trace the construction of notions of gender, community, and class among millworkers. — *M V Shobhana Warrior*

Fuel Price Behaviour under Different Regimes in India since 2002

- 49 The variation of prices of petrol and diesel since June 2002 in the metro cities in India and the impacts of the international crude oil price and exchange rates on such prices in these cities are examined. — *Utpal Kumar De, Manoranjan Pal & Soumyendra Kishore*

Ambedkar, Gandhians and the Indian Village

- 59 The paper attempts to understand the two competing models of postcolonial modernity on the issue of the village, that is, one representing a Gandhian perspective and the other a liberal Western perspective led by B R Ambedkar. — *Paramjit S Judge*

Understanding West Bengal Economy: Nothing Aporetic

- 66 A response to Prasenjit Bose's "State of the West Bengal Economy: Beyond Aporetic Official Claims" (26 January 2019) — *Bureau of Applied Economics & Statistics*

Postscript

- 71 *Madhumati Dutta* on an unexpected encounter with a bullfight in a Spanish village; *Hari Padmanabhan* on advancements created by engaging in scientific research that are a reflection of human nature; *Taniya Roy* on the invocation of "Corona Devi" during COVID-19; and Last Lines by *Ponnappa*.

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Democratic Government by One Person

7 The recent bill passed in Parliament deems the elected government of Delhi irrelevant.

Roll Out a Universal Public Distribution System

8 Linking beneficiary ratio to the last census numbers excludes around 10 crore eligible claimants.

Left Democratic Front Victory in Kerala's Local Body Elections

10 A close reading of the results of the local body elections of 2020 in Kerala shows that people are more inclined to the forces that are sensitive to their real problems and needs in everyday life. — *Dimpi V Divakaran*

Bad Bank, Bad Loans and the Indian Banking Mess

13 The reasons for the large non-performing assets of the Indian banks, particularly public sector banks, and the various steps taken by the government and the Reserve Bank of India to tackle the issue of bad debts are looked at. — *Nupur Pavan Bang, Vivek Kaul*

Pandemic as Population Check?

17 As India undergoes massive societal transformations due to the pandemic, the dangers of support for coercive population control policies in the garb of economic recovery are examined. — *Aprajita Sarcar, Mohan Rao*

Performance of Women and Child Development Sector in India

22 A sector-level evaluation of schemes for women and child development in India shows that a synergy between various ministries working for child and women protection is needed for their wholesome development and empowerment. — *Raja Krishna Murthy Morla*

Dwijendra Narayan Jha (1940–2021)

28 Busting communal myths and approaching history with a scientific rigour were the hallmarks of D N Jha's life and work. — *Suchandra Ghosh*

Caste and COVID-19: Notes on Sanitation in a Pandemic

35 The article looks at on-ground shifts in patterns of how the state and general public are treating sanitation workers during the COVID-19 pandemic. — *Kanthy Swaroop, Joel Lee*

Construction of Calamities in the Uttarakhand Himalaya

43 Hydropower projects in Uttarakhand have increased the vulnerability of the mountain villagers towards disasters, while giving these an unsettling everydayness and a spiralling effect. — *Shruti Jain*

Agrarian Crisis and Agricultural Labourer Suicides in Punjab

49 Punjab's agrarian crisis has pushed the agricultural labourers towards low earnings and debt traps, which have led them towards death by suicide. The financial compensation, debt waiver, provision of healthcare and education of victim families are the main policy measures for addressing the act of suicide by agricultural labourers. — *Sukhpal Singh, Manjeet Kaur & H S Kingra*

Language in Low-cost Private Schools

57 In low-cost private schools in India, English as a medium of instruction attracts children of poorly educated parents with a low-income background. A primary survey in Delhi and the National Capital Region finds that mediating primary-level education through an unfamiliar language poses language barriers and adversely affects the learning outcome. — *Tanuka Endow*

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Editorial

Welcome to November EIS!

The theme of this issue is 'Online Learning'. When COVID-19 emerged in the news early in 2020, we could never have anticipated the impact it would have on schools and colleges, and on our young people and the education community in general. From ASE's perspective, it quickly became clear that we would need to move our activities online. Thanks to the energy and commitment of the staff team, our committees and volunteers, we've been delighted with how well these events have been received. While we have, of course, missed meeting up in person with friends and colleagues, our webinars, online TeachMeets, TechMeets, conferences and workshops have allowed us to continue to provide high quality CPD and networking opportunities across the science education community. They've also enabled us to support a broader audience than ever before, reducing barriers such as time, cost and caring commitments. Of course, professional online learning is only part of the story, as teachers have had to adapt their lessons to being delivered remotely and/or in a COVID-secure way in the classroom. This has presented a number of challenges, especially around practical science, but among the difficulties there have also been many stories of success.

As we come towards the end of the strangest of years, we take the opportunity to look at what we've all learned over the past months and to share ideas and best practice from across the community. It makes for an inspirational read! You'll find articles on blended learning, and user perspectives and updates on different online learning applications for teachers in the classroom, including our forthcoming Explorify workshops for ASE primary school members and physics for non-specialists workshops with Physics Partners. You'll find a fascinating professional conversation on evidence-based versus research-informed practice from Christine Harrison and Alastair Gittner, as well as the second in our new series of perspectives from NQTs, providing reflections on their first half term in school and valuable advice for peers.

Also on the theme of online learning, our first ever online Annual Conference is fast approaching and promises to provide a fantastic four days of science education expertise, support and inspiration. Take a look at page 7, and also on our website, to find out more. Tickets are selling fast!

Elsewhere in this issue you will find details of how to register for our online AGM as well as our 'temperature check' survey – closing on 1st December 2020 (see page 5).

I look forward to seeing many of you online in January. In the meantime, it remains for me to wish you a very happy festive season and a safe 2021.



Jane Harrold
Editor

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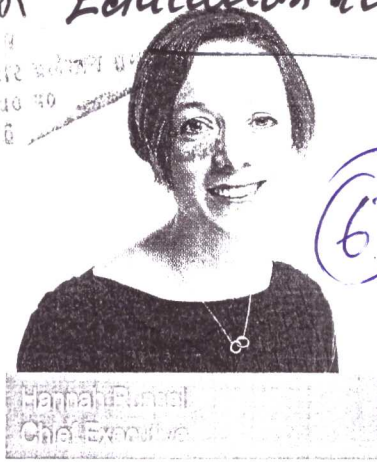
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Welcome to February *EiS*!

As I write this editorial, it is over 310 days since the UK first went into lockdown last March. It has been an incredibly hard (nearly) 11 months and this spring term has certainly been one of the most challenging for our community. I continue to be amazed and inspired by the stories of excellent science education against the odds and proud of the key role that our community has played in supporting the career paths of the scientists, medics, engineers and technicians to whom we owe so much. But I'm also deeply saddened by the impact that the pandemic has had on the science education of so many young people, particularly those from disadvantaged backgrounds. This has certainly been at the forefront of my mind as we have submitted our response to the Ofqual consultation on this year's GCSEs, AS- and A-levels.



Hannah Russell
Chair Executive

Against this unprecedented backdrop, the ASE staff team, committees and volunteers have continued to work tirelessly to provide support across our community, and with a phenomenal 1,634 delegate days of CPD provided over four days, this year's Annual Conference, held online for the first time, provided a wonderful and welcome period of support and inspiration.

In this issue, we take a look at some of the many highlights of what proved to be a wonderful event, attracting fantastic feedback from delegates. In our Feature covering pages 10-18, you can read about some of the key elements of the Conference, written by some of those who attended.

If you missed the Annual Conference, don't worry, we have a great programme of other conferences and events lined up over the next few months and, with everything currently being online, distance is no barrier, so please do take the opportunity to join events outside your region, including our Scotland Conference on 13th March and workshops and TeachMeets across the UK. And watch this space for details of our Summer Conference, coming soon...!

Elsewhere in the issue, early career teachers Brendan, Tom & Ben give their thoughts on lockdown, school science clubs and how the online Annual Conference – and ASE membership more broadly – has helped to support them, while ex-ASE Chair Bob Kibble brings us up to speed on his life beyond teaching. You can also find two thought-provoking Opinion pieces on the impact of Covid-19; Justin Dillon and Lucy Avraamidou ask whether our curricula, pedagogy and assessment systems are fit for purpose to support scientific literacy and argue that the curriculum should be reoriented towards a science/environment/health perspective, while Rashida Din looks at the digital divide that has become all too clear over the past few months and asks what lessons we need to learn after lockdown.

I hope you enjoy the issue.

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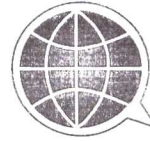
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IMPRESSIONS, EXPRESSIONS

A significant phase in the fight against COVID-19 in the country has been reached by October 17, when the Prime Minister exhorted the concerned officials to be fully prepared to ensure speedy access to COVID 19 vaccine for every citizen. He instructed further that "every step in the logistics, delivery and administration of the vaccine should be put in place vigorously, and it must include advanced planning of cold storage chains, distribution networks, monitoring mechanisms, and advance assessment and preparation of ancillary equipment such as vials and syringes" (*The Hindu*, 18th October 2020). The Prime Minister's reference gives us a glimmer of hope, while it implies that the vaccine is certainly round the corner, and our welfare state is up to the task of protecting its citizens from the pandemic.

After ten months of the COVID-19 pandemic, we now have some heartening news. An experts' panel, constituted by the Department of Science and Technology, has concluded that "India passed its COVID-19 peak in mid September, and if current trends continue, there will be minimal cases by February" (*The Hindu*, 19th October, 2020). However, there is a caveat. Another expert committee set up by NITI-Ayog has warned that the oncoming winter and festival season can trigger a second wave of infections, causing a rapid surge of 26 lakhs cases. The World Health Organisation has also come out with a similar warning. It says this is not a time for relaxation. Poonam Kshetrapal Singh, Regional Director, WHO-Southeast Asian Region said: "There should be no complacency in view of the declining numbers in recent weeks. The region still reports large numbers of COVID-19 cases. We need to continue to do our very best to curtail the pandemic" (*The Hindu*, 20th October). Indeed, the Prime Minister has, in his address to the nation on 20th October, cautioned the people to continue to be vigilant against the virus during the festival season ahead, although many restrictions have been eased. "Don't lower your guard until a vaccine is found," he said. He continued that, "A little carelessness can spell grief for the people." He appealed to the people with folded hands to wear masks, sanitise their hands and maintain social distance as he wanted to see the people happy (*The Hindu*, 20th October).

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IMPRESSIONS, EXPRESSIONS

As long as the pandemic is confined to statistics or rumours, no one really thinks about it. However, when it strikes closer home, it becomes a reality. And, if it is one's own family? Mr. U. Pannir Selvan, Assistant Editor, attached recently to the *Indian Literature* Section, died of COVID-19 on 28th November. The two of us have been associated with each other over the past twenty-three years, through thick and thin, as good friends who shared momentous events of our lives. This news leaves me stunned. Sahitya Akademi is a big family, and the loss of one is a loss for all.

Many of my friends, my former colleagues and their family members in Delhi have been affected by COVID-19, and some have died, and some, including eminent poets and cultural figures, remain critical. Mangalash Dabral, celebrated Hindi poet, and an elder brother to me, passed away on 9th December, as I prepare the print copy of the journal for the press. It will definitely take a long time for me to come to terms with such losses, a sort of biding my own time.

Private firms, newspaper establishments, and journals and even the legal fraternity have all been working from home, as well as school and university teachers and students so as to minimise actual contact with others. Government servants have not been so lucky. They were first obliged to attend office on alternate days at fifty per cent of the workforce engaged on a day. However, after the "unlock" sequences began, government employees have been expected to attend offices and workplaces daily, as during normal times. (On 30th November, a Home Ministry circular announced a rollback, falling back to staggered office attendance, among other measures).

I must record here, with great gratitude to the authorities concerned, that I was able to work from home in Kerala from June till date, obviating the necessity for me to attend office physically.

I had mentioned in one of my poems that Delhi is a "raajasik" city - in other words, a city full of the "guna" of "rajas" or restless energy, the innate quality that acts as a prime mover of one's self and activity. What I meant was that it is a highly active city, with its industrious people bristling with enthusiasm to work hard, to the point of being irrepressible. It is difficult to find an idler here. It is therefore understandable that the citizens here turn restless when they are locked down for more than fifty days at a stretch. Those

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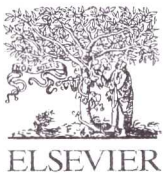
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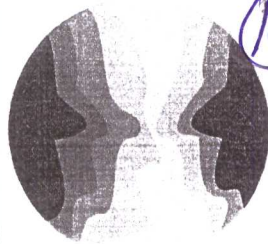
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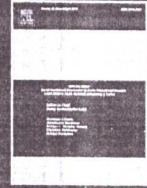
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Articles

- 275 "Isn't Atheism a White Thing?": Centering the Voices of Atheists of Color
Dena M. Abbott, Debra Mollen, Caitlin Mercier, Elyxcus J. Anaya, and Victoria A. Rukus

This study is the 1st to explore the experiences of atheists of color and found their trajectory to atheism to be similar to previously proposed models of identity development. Atheists of color experience antiatheist discrimination, navigate atheism as a violation of cultural expectations, use strategic outness, and benefit from a sense of connection and freedom associated with their atheist identity.

- 288 Distinguishing "I Don't See Color" From "Racism Is a Thing of the Past": Psychological Correlates of Avoiding Race and Denying Racism
Yara Mekawi, Nathan R. Todd, Jacqueline Yi, and Emily J. Blevins

This study advances the idea that racial colorblindness has at least 2 separate dimensions: denying racism (i.e., power evasion) and avoiding race (i.e., color evasion). This highlights the need for researchers and practitioners to consider this distinction in theory, research, and practice to advance scholarship and action related to colorblindness.

- 303 Perfectionism and Burnout in R&D Teams
Kenneth G. Rice and Yuwen Liu

This study suggests that different forms of perfectionism are related to worker burnout but in different ways. Workers who tend to be harshly self-critical and those who have supervisors who themselves tend to be self-critical are more likely to report burnout. However, workers with high strivings or performance expectations are actually less likely to report burnout. These risk and protective factors can be used by companies to help create work environments that reduce the risk of burnout for their employees.

- 315 Can We Agree We Just Had a Rupture? Patient-Therapist Congruence on Ruptures and Its Effects on Outcome in Brief Relational Therapy Versus Cognitive-Behavioral Therapy
Sigal Zilcha-Mano, Catherine F. Eubanks, Sarah Bloch-Elkouby, and J. Christopher Muran

The findings of the present study join those of previous research showing that therapists tend to show a more vigilant stance and report more alliance ruptures than their patients do. The current study is the first to suggest that therapists can be trained to adopt a more vigilant stance, to carefully monitor the alliance, and to show greater sensitivity to minor nuances in the alliance. The findings further suggest that in brief relational therapy, in which alliance rupture resolution is conceptualized as a main mechanism of change, patients' and therapists' agreement and disagreement on whether a rupture in the alliance has occurred has a greater impact on subsequent session outcome than in treatment in which this is not the case (cognitive-behavioral therapy). This finding supports the underlying therapeutic processes conceptualized to bring about therapeutic change in brief relational therapy, in which negotiating such agreement and disagreement is perceived as a main mechanism of change.

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- 326 Influence of Patient and Therapist Agreement and Disagreement About Their Alliance on Symptom Severity Over the Course of Treatment: A Response Surface Analysis
Simone Jennissen, Christoph Nikendei, Johannes C. Ehrenthal, Henning Schauenburg, and Ulrike Dinger
This study suggests that agreement between therapists and patients about the quality of their alliance may be related to lower patient symptoms later in treatment, while disagreement about the alliance quality could be related to more severe symptoms later in treatment. The study further suggests that alliance agreement and disagreement affect later symptoms steadily over the course of long-term psychotherapy. Thus, therapists need to direct their attention toward patients' potentially diverging perspective on the alliance and take appropriate actions to foster better agreement on their working relationship throughout treatment.
- 337 Investigating Coregulation of Emotional Arousal During Exposure-Based CBT Using Vocal Encoding and Actor-Partner Interdependence Models
Gesine Wieder and Travis J. Wiltshire
This study suggests that therapists are able to coregulate their patients' emotional arousal during the development of the exposure rationale in panic disorder with agoraphobia treatment, thus increasing the rationale plausibility for patients.
- 349 Therapist-Client Agreement on Helpful and Wished-For Experiences in Psychotherapy: Associations With Outcome
Harold Chui, Beatriz Palma, John L. Jackson, and Clara E. Hill
Therapist and client agreement and its association with psychotherapy outcome were studied using quantitative and qualitative methods. Therapists and clients agreed that exploration of the therapeutic relationship, therapists' challenges, and therapist validation and support were helpful. Agreement on the tasks of psychotherapy appears to be an important consideration for improving psychotherapy effectiveness.
- 361 Associations Among the Advisory Working Alliance and Research Self-Efficacy Within a Relational-Efficacy Framework
Cory L. Cobb, Byron L. Zamboanga, Dong Xie, Seth J. Schwartz, Charles R. Martinez Jr., and Sydney Skaggs
The present study advances the counseling psychology and doctoral training literature by elucidating the relational processes through which the advisory working alliance may relate to research training outcomes. Findings from this article will help to inform the development of effective training models, as well as to improve research outcomes among clinical and counseling psychology doctoral students.
- 371 Modeling Cohesion Change in Group Counseling: The Role of Client Characteristics, Group Variables, and Leader Behaviors
Jeritt R. Tucker, Nathaniel G. Wade, W. Todd Abraham, Rachel L. Bitman-Heinrichs, Marilyn A. Cornish, and Brian C. Post
The present study improves our understanding of how group members develop a sense of belonging in brief group counseling; examining the relative influence of client, group, and leader characteristics across time. Findings suggest that while client characteristics explain the vast majority of change in cohesion, group leaders who focus on structuring to the exclusion of fostering emotional belonging may inhibit the bonding of groups they lead.
- 386 Characteristics of Highly Resilient Therapists
Jian-Ming Hou and Thomas M. Skovholt
To maintain resilient across years of practice, highly resilient therapists have a strong web of vibrant connectedness. Specifically, as characteristics, highly resilient therapists are (a) drawn to strong interpersonal relationships, (b) actively engage with self, (c) possess a core values and beliefs framework, and (d) desire to learn and grow.

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401 Perceived Discrimination and Academic Distress Among Latinx College Students: A Cross-Lagged Longitudinal Investigation

Hsiu-Lan Cheng, Ryon C. McDermott, Y. Joel Wong, and Keiko M. McCullough

Our cross-lagged findings suggest that perceived discrimination might heighten Latinx college students' distress around academic matters. The longitudinal link from perceived discrimination to academic distress holds important implications for practice with Latinx college students, including that one avenue for reducing Latinx students' academic concerns is to address racism.

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RESEARCH ARTICLE
Environment

Phillip G. Payn
^aFaculty of Education

Slow research

Immediately following the publication of the *Journal of Environment & Development*, Orr's provocative *People* (Orr et al., 2019) challenges the idea of democracy, but in modern conditions.

Orr's Essay collection, *Greta Thunberg's Struggles for the Future*, and associated work are reconstructive.

Response studies anticipate a decentered north and global.

1. Constructive politics in environmental education
2. Suggest ways the (eco)pedagogy and for education curriculum experience social issues ecopedagogy sensitivities action-making and embedded interests are nature and environmental ecology
3. Demonstrate (pedagogical) critical theory-building framework

CONTACT Phillip G. Payn
Australia.
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[Cover Image: Teaching during COVID, for many of us, means looking out at classrooms like this. Empty seats, taped-off desks, plexiglass, students "attending" virtually via a variety of web-based conferencing platforms. As we close out 2020, for many of us with a fair amount of COVID exhaustion, may we continue to strive to provide engaging geography education despite the pedagogical challenges of teaching during a pandemic. Photo credit: Meredith Marsh.]

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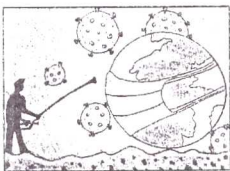
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About the Artist: Hemanth Mishra, a young and dynamic artist, always has the passion and purpose to learn something new all the time. At the age of 10, he was diagnosed with learning disabilities, yet as parents, we always believe that he's a child prodigy. Early in his life, we found his interest in arts and his excitement to explore the world of painting. He didn't define himself as an artist but rather as a person interested only in expressing basic human emotions such as nature lover, cartoon admirer, ecstasy, and so on. The teachers of Sankalp The Open School have always encouraged him to learn and gave opportunities to polish his skill sets. Sankalp is a school in Chennai, India, that provides a "differentiated learning environment to children with learning challenges and cognitive difficulties."



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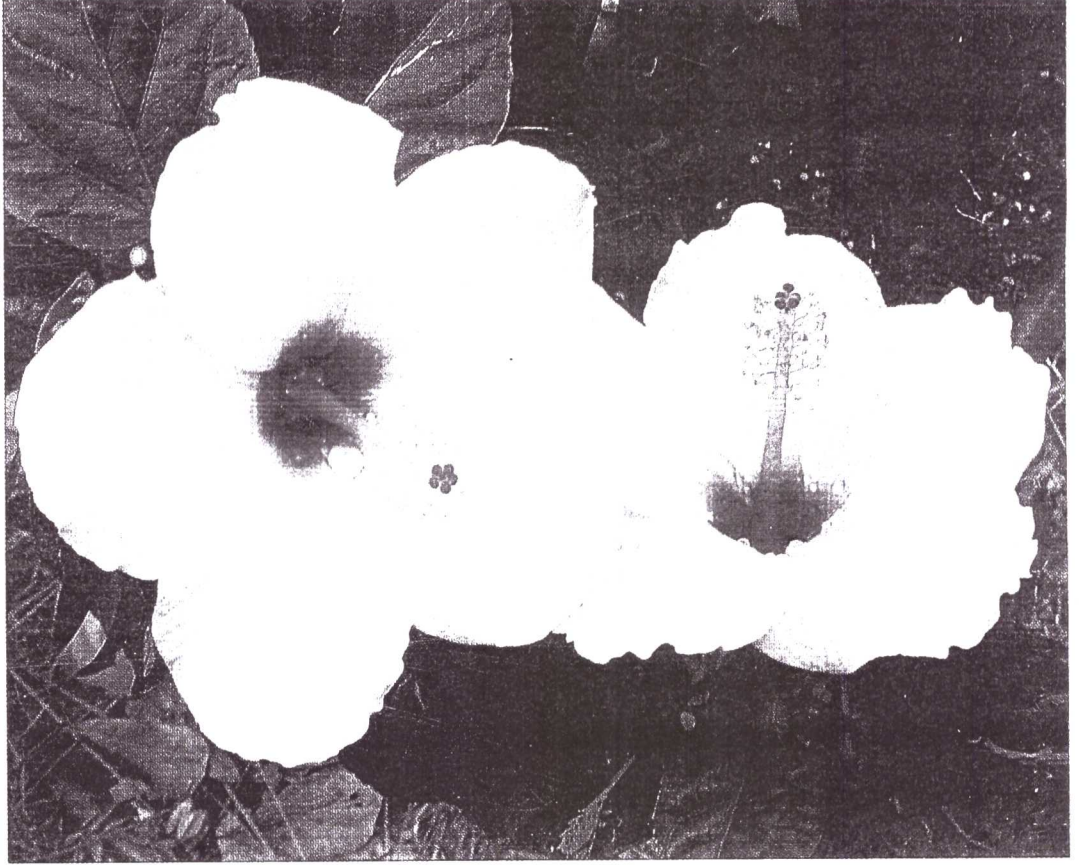
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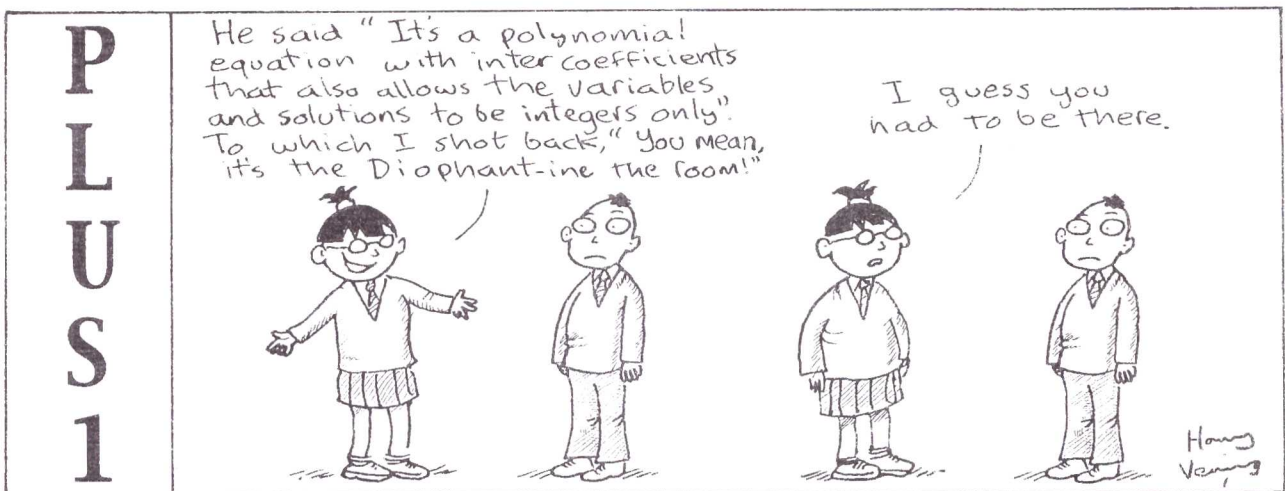
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Plus 1 drawn by Harry Venning.

The cover photograph was taken by Simon Carey. He can be contacted at sdcarey@gmail.com.

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THE YEAR THAT TESTED US

How much can any of us withstand? Deaths by coronavirus, until morgues are packed. Calls for racial equality, answered with backlash. The Earth scoured by locusts, hurricanes, fires. How much? And then how much more?

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THE YEAR THAT ISOLATED US

A funeral with no mourners. A family visiting through a window. A virtual happy hour. Around the world, billions of people simultaneously experienced aloneness, separated from companions and solace.

08.28

A DAYLONG SHOW OF COMMITMENT

Photograph by STEPHEN WILKES

Fifty-seven years to the day after Martin Luther King, Jr., delivered his "I Have a Dream" speech in front of the Lincoln Memorial, another march for civil rights and social justice drew thousands of people

to the National Mall in Washington, D.C. Organizers dubbed it the Commitment March: Get Your Knee

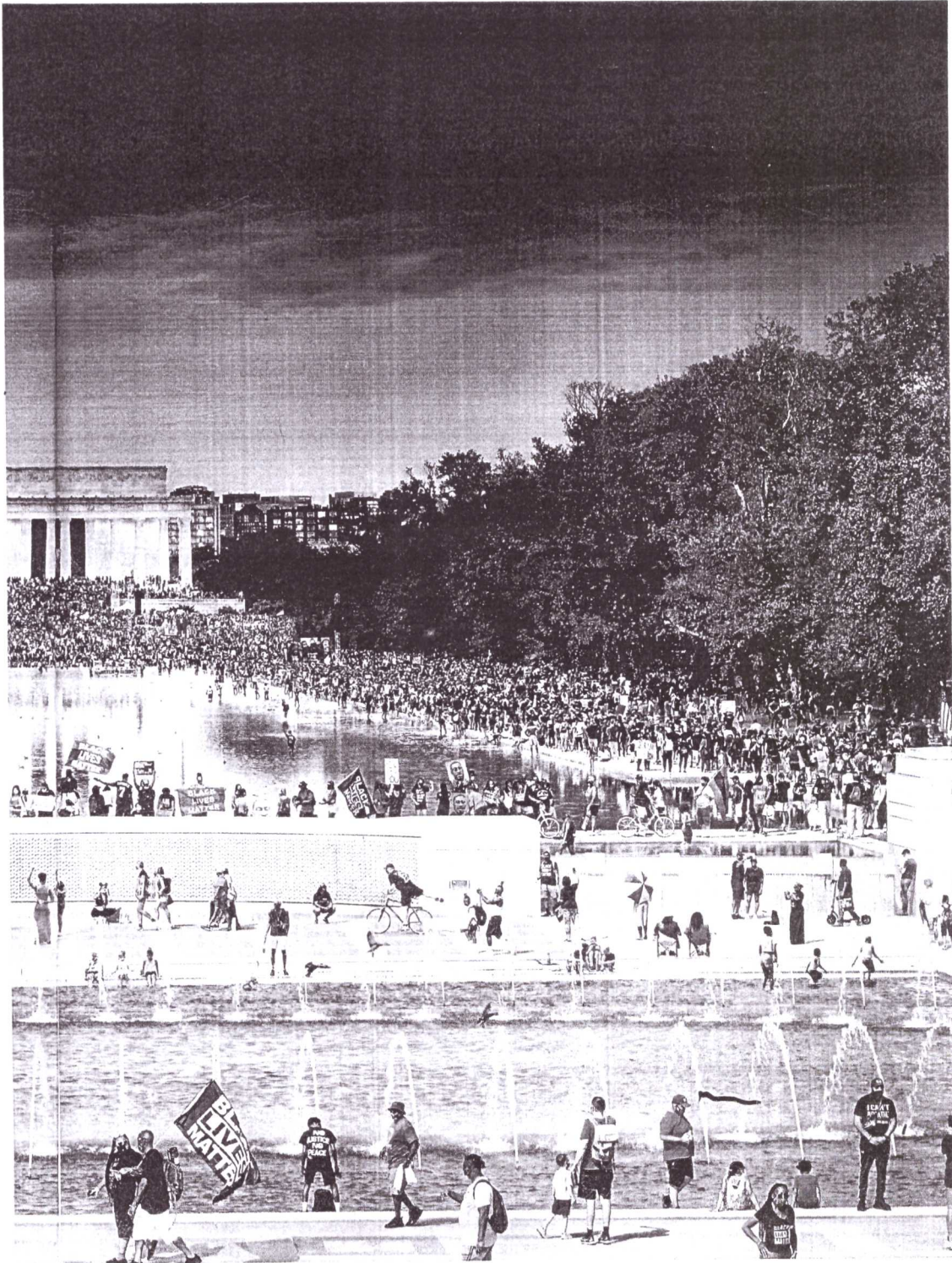
Off Our Necks, a reference to George Floyd's May 25 killing. To capture this scene, Stephen Wilkes photographed from a single fixed camera position on an elevated crane, making images at intervals throughout a 16-hour period. He then edited the best moments and blended them seamlessly into one image.





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The phrase "I can't breathe" took on multiple meanings, from hospital wards treating gasping COVID-19 patients to street protests where deaths in police hands triggered long-stifled cries for justice.

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THE YEAR THAT HOPE ENDURED

Extraordinary developments occur even during terrible times. Scientists make discoveries, conservationists score victories, social movements spark change. And love, in all its forms, finds a way.

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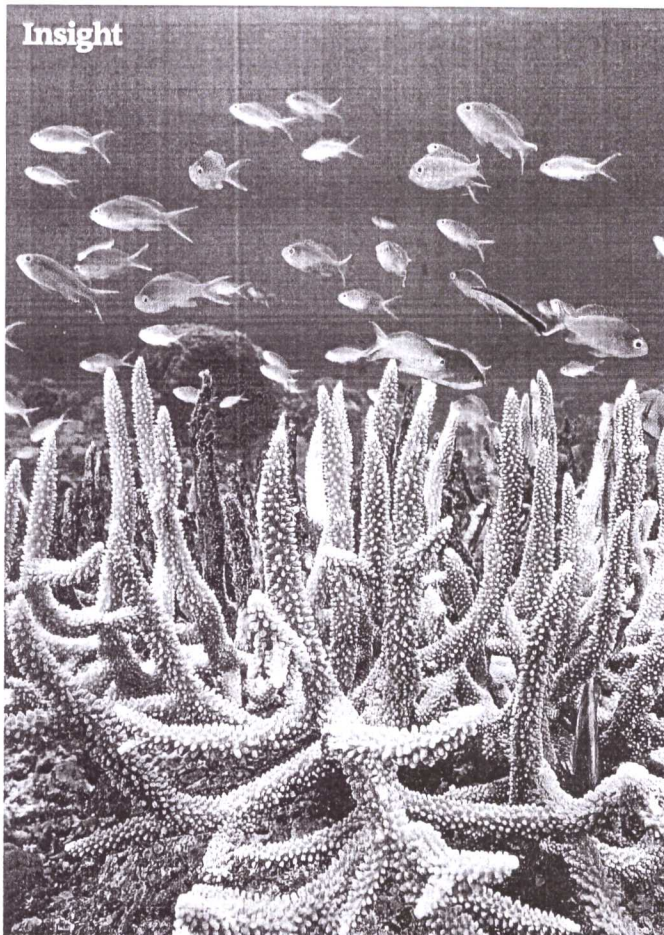
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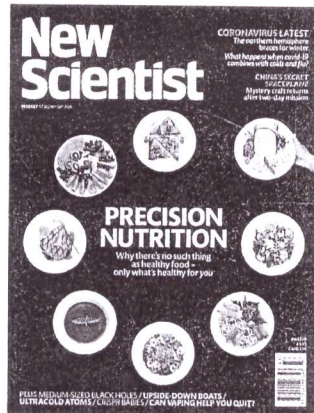
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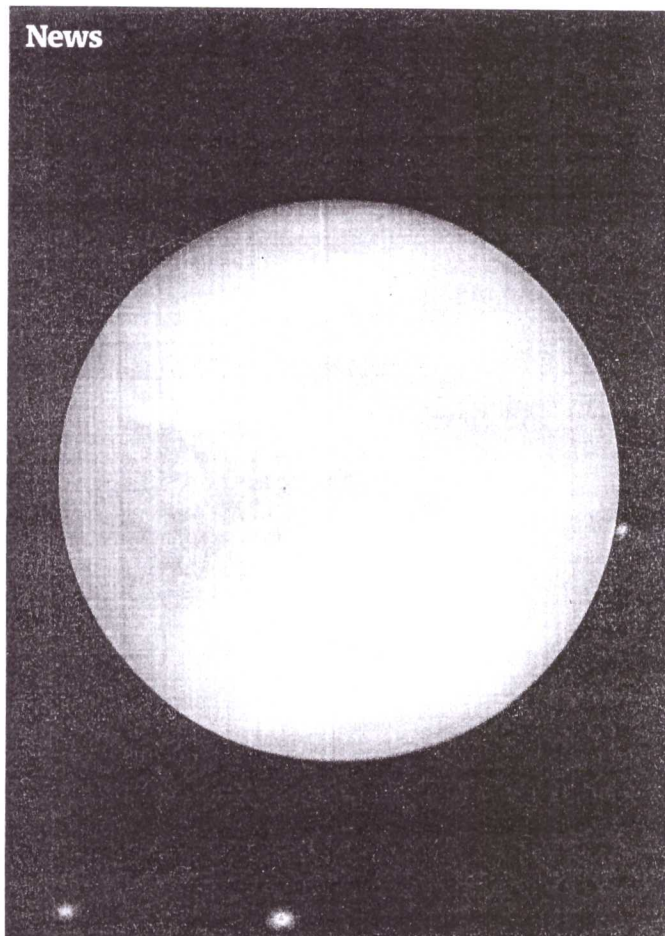
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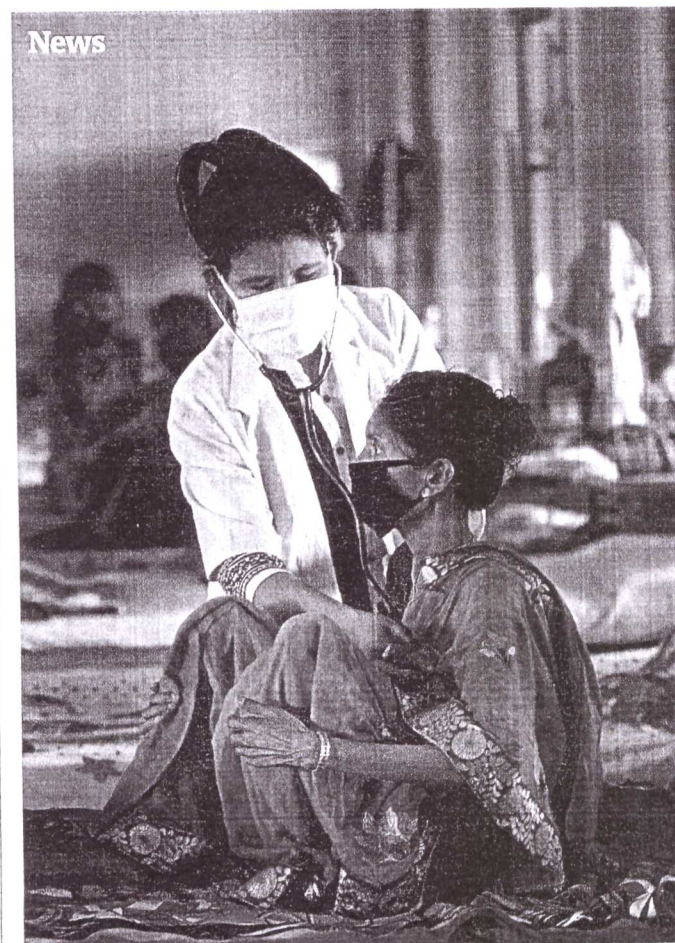
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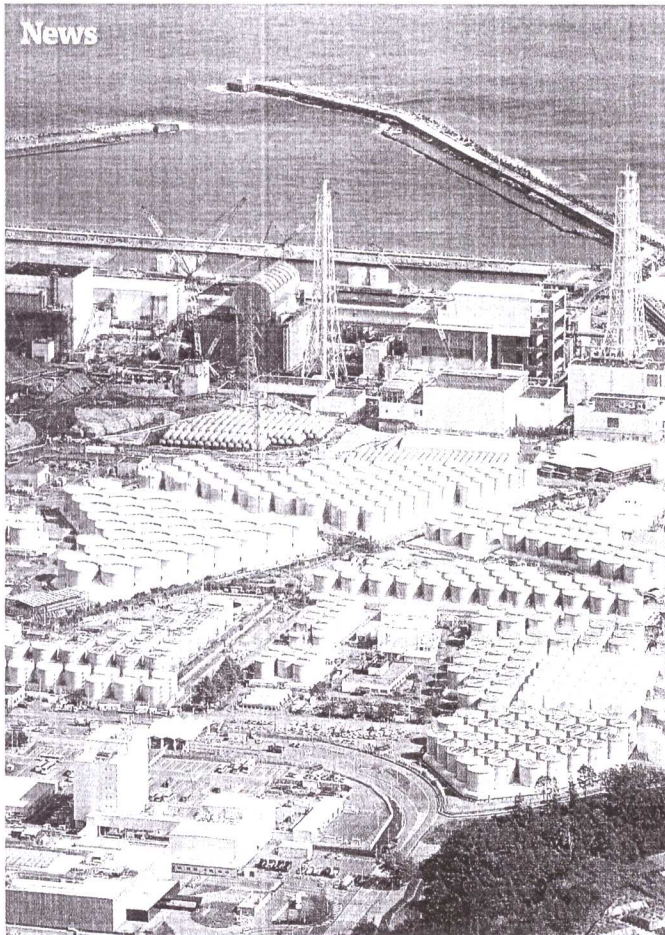
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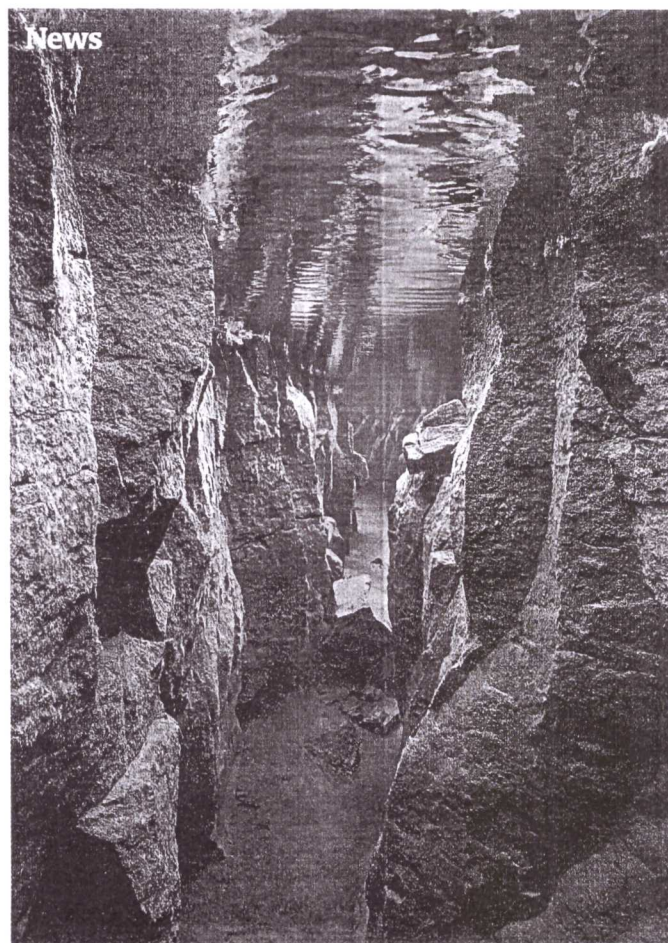
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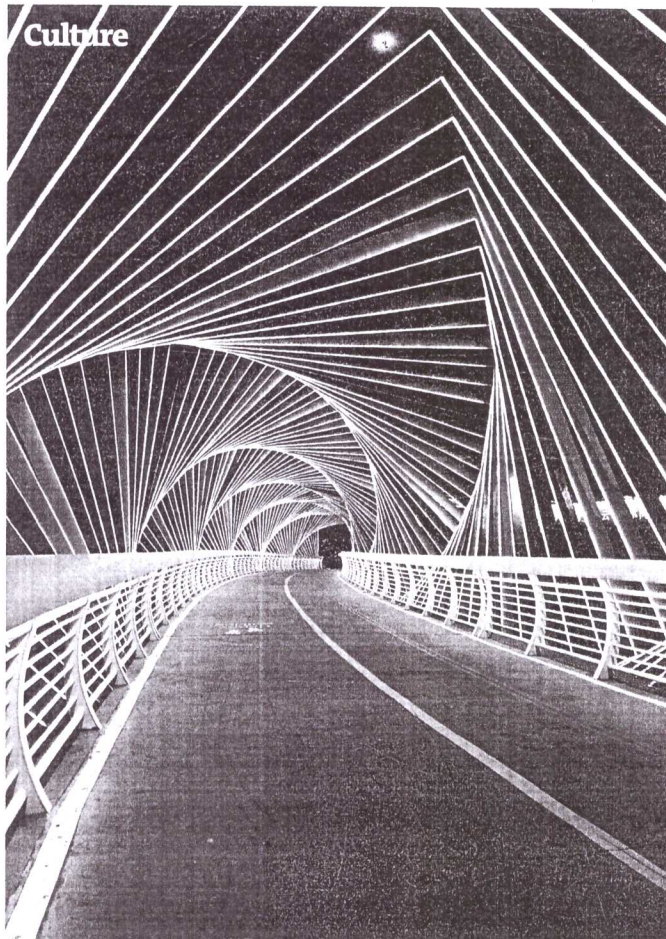
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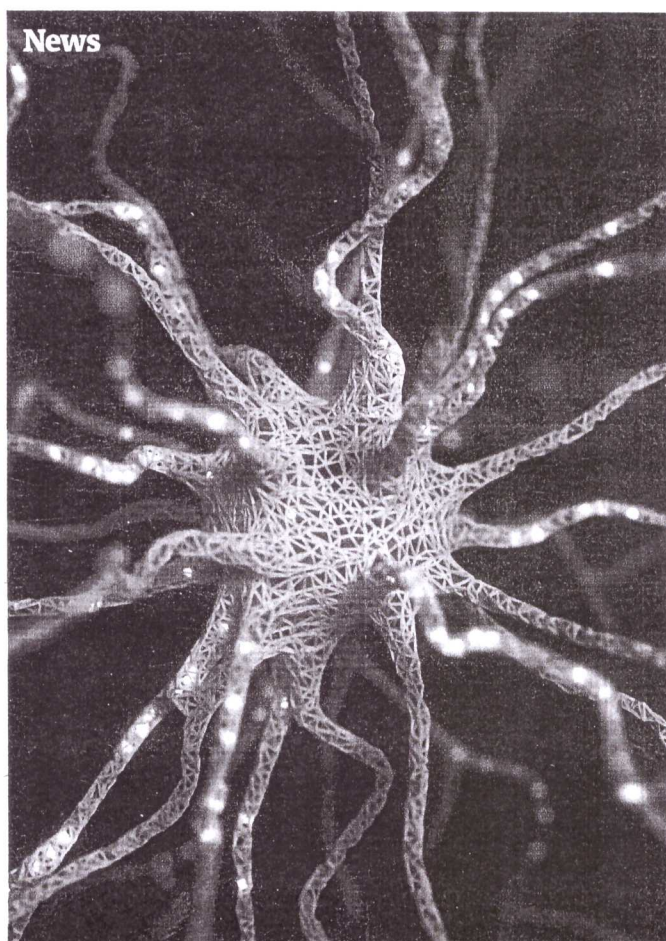
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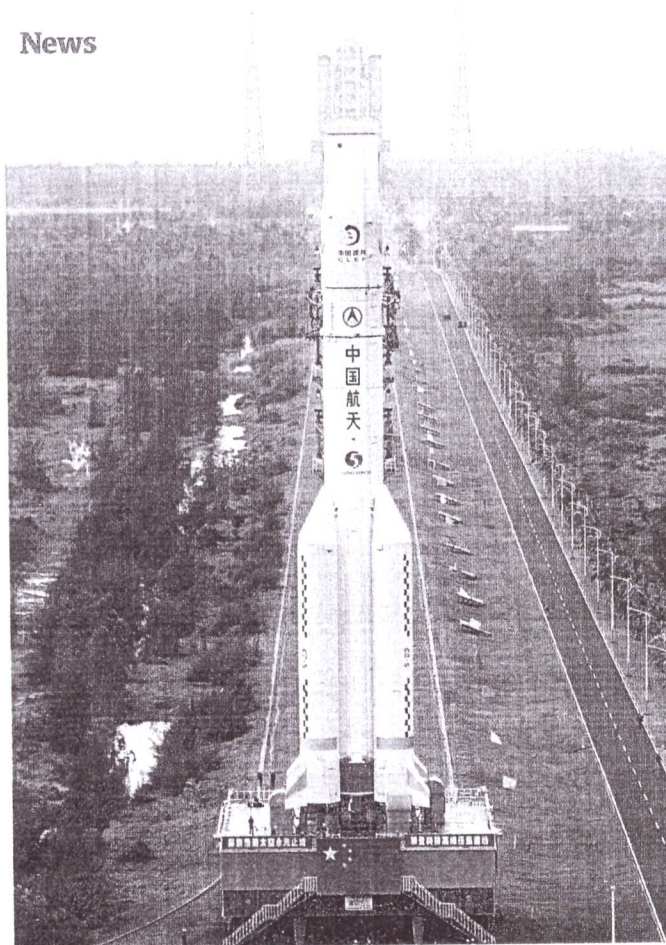
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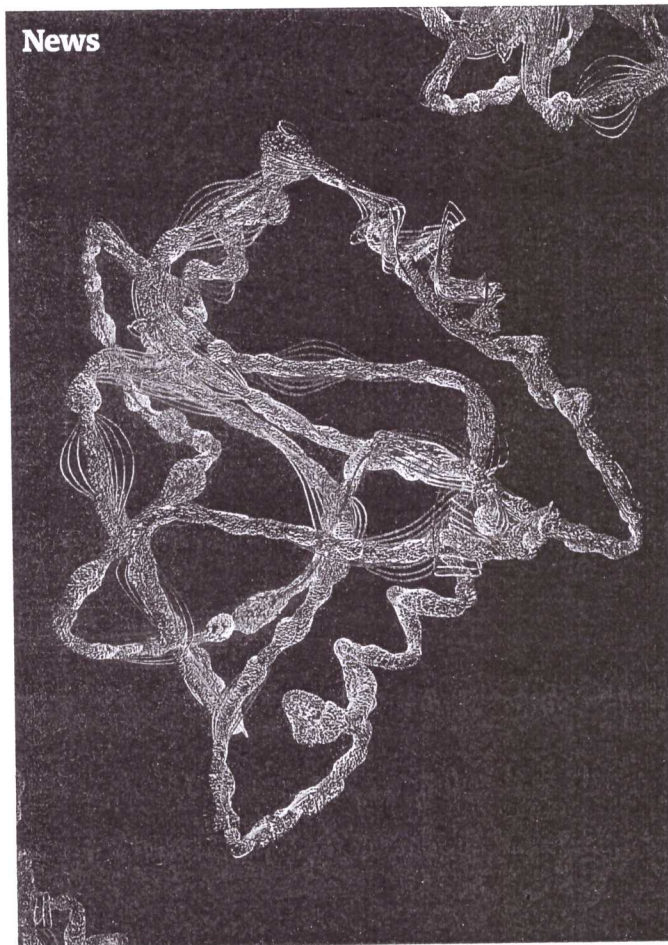
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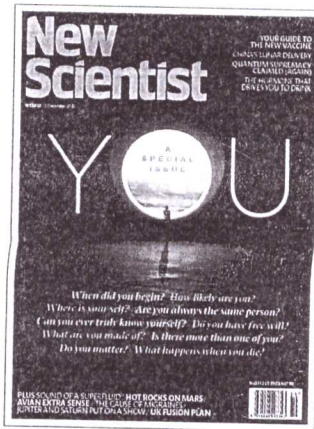
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Christmas & New Year special



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Cover image: Rob Snow



Welcome, dear reader, to your bumper holiday edition of *New Scientist*, packed full of stardust-sprinkled festive treats. We very much hope you enjoy.

On behalf of everyone at *New Scientist*, I would also like to take this opportunity to wish you the best possible holiday season under the strange circumstances in which many of us find ourselves. Thank you for reading *New Scientist* and making what we do possible. I (somewhat nervously) raise a glass of "instant whisky" (see page 73) to you all!

Emily Wilson
New Scientist editor

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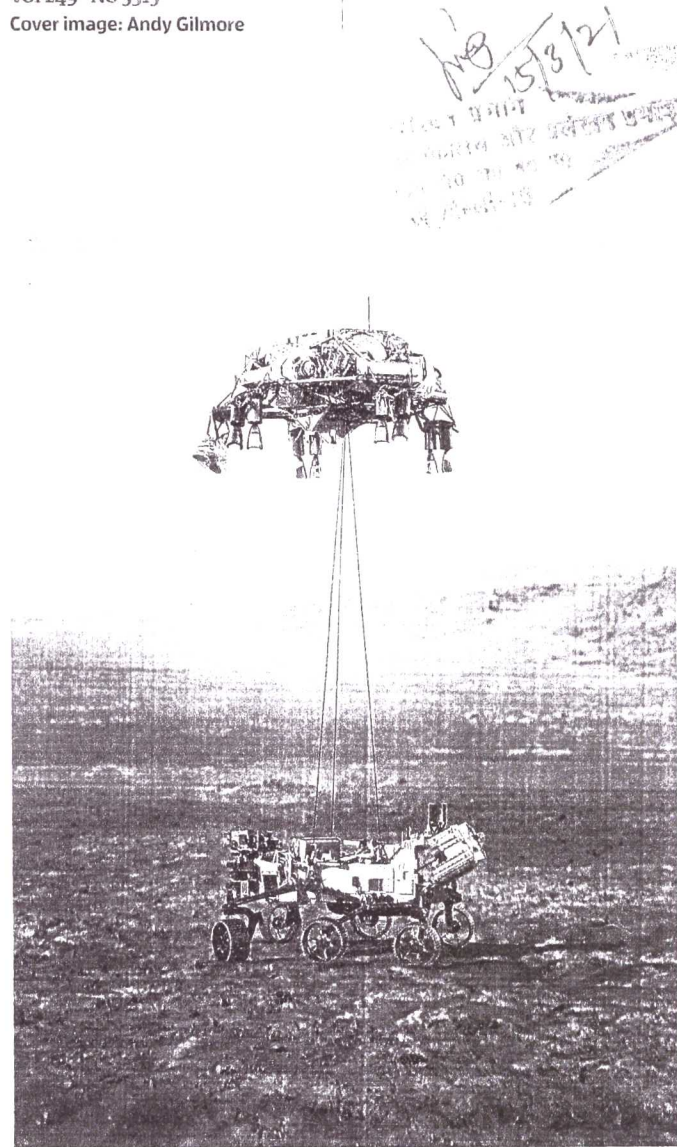
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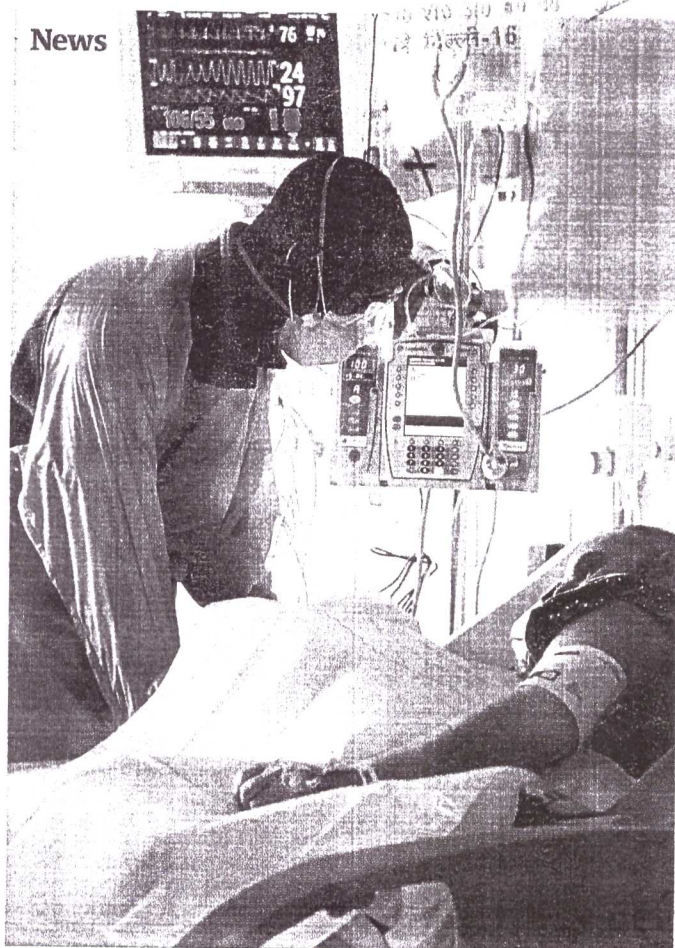
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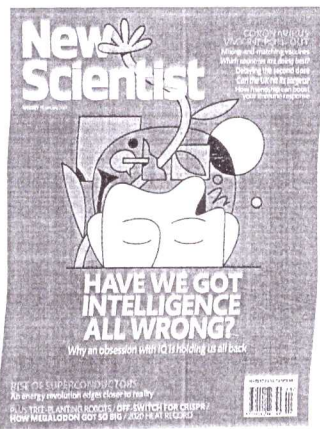
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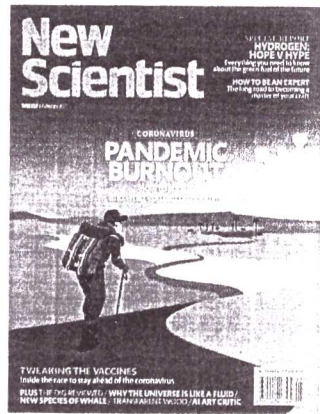
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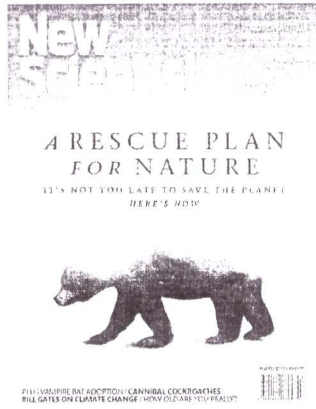
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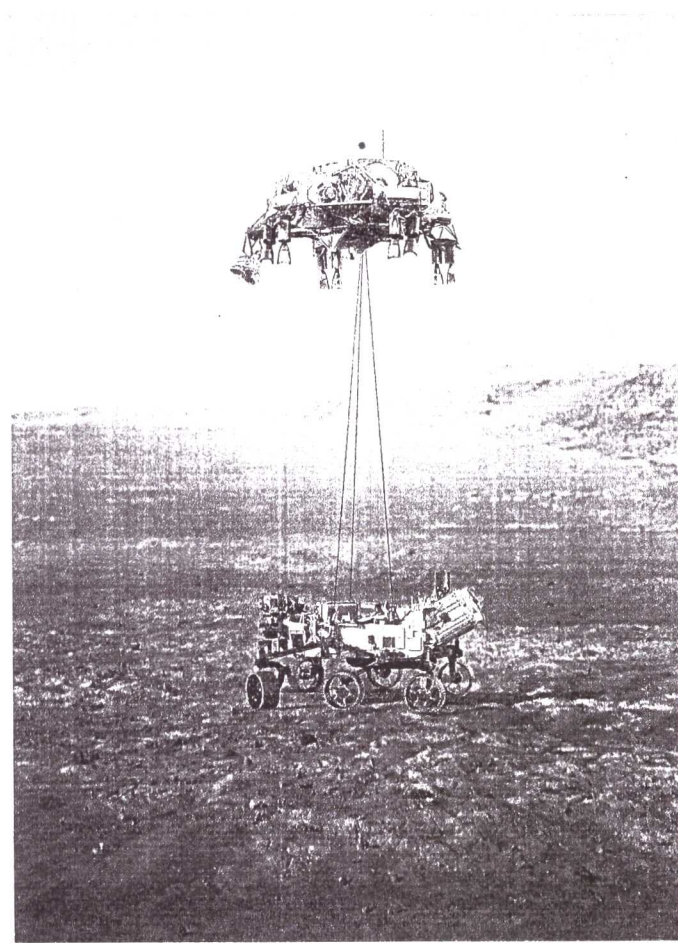
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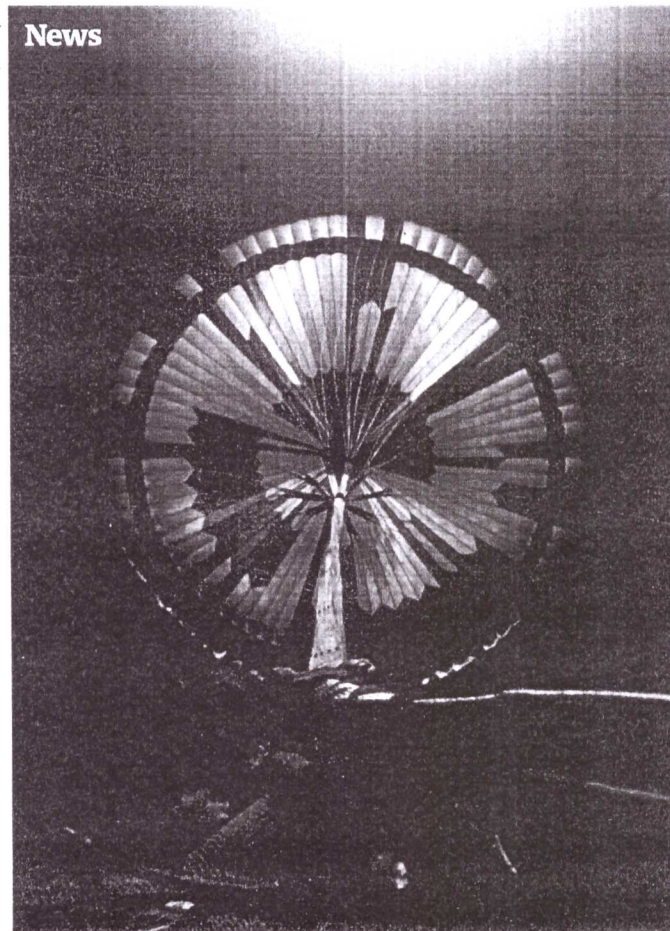
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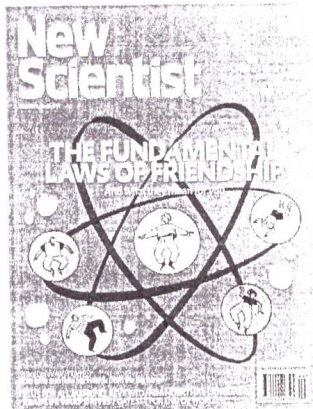
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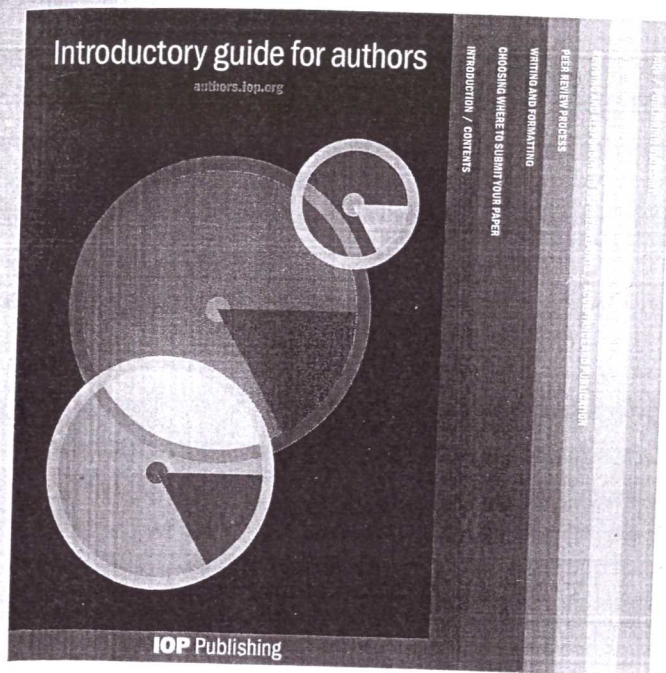
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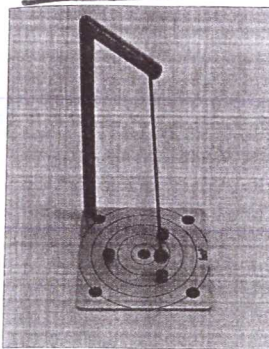
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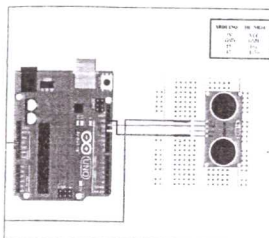


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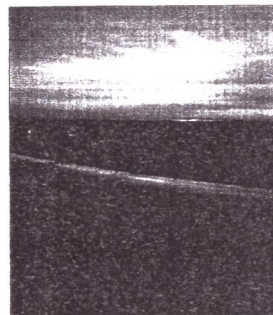
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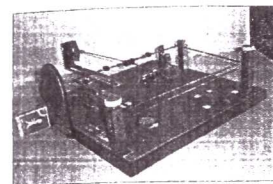


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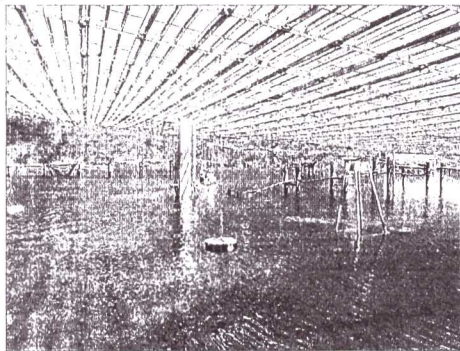
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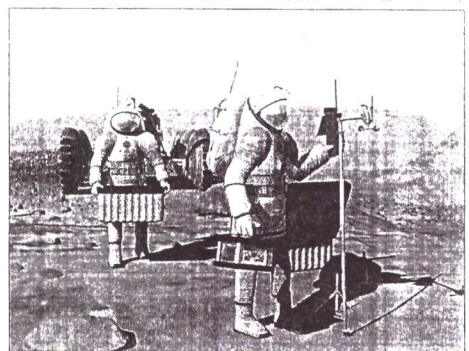
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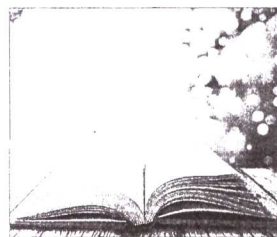
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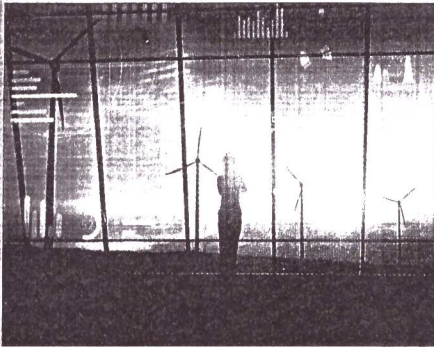
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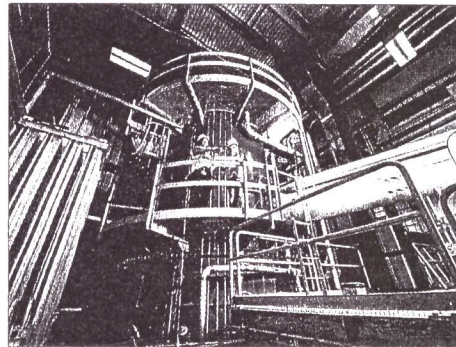
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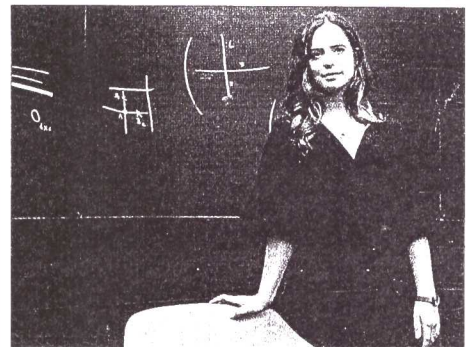
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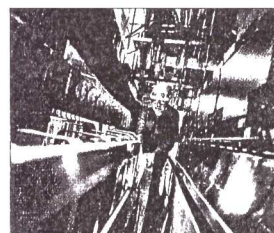
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प्राथमिक शिक्षक राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् की एक त्रैमासिक पत्रिका है। इस पत्रिका का मुख्य उद्देश्य है, शिक्षकों और संबद्ध प्रशासकों तक केंद्रीय सरकार की शिक्षा नीतियों से संबंधित जानकारियाँ पहुँचाना, उन्हें कक्षा में प्रयोग में लाई जा सकने वाली सार्थक और संबद्ध सामग्री प्रदान करना और देश भर के विभिन्न केंद्रों में चल रहे पाठ्यक्रमों और कार्यक्रमों आदि के बारे में समय पर अवगत कराते रहना। शिक्षा जगत में होने वाली गतिविधियों पर विचारों के आदान-प्रदान के लिए भी यह पत्रिका एक मंच प्रदान करती है।

पत्रिका में प्रकाशित लेखों में व्यक्त किए गए विचार लेखकों के अपने होते हैं। अतः यह आवश्यक नहीं है कि प्रत्येक चिंतन में परिषद् की नीतियों को ही प्रस्तुत किया गया हो। इसलिए परिषद् का कोई उत्तरदायित्व नहीं है।

© 2019. पत्रिका में प्रकाशित लेखों का रा.शै.अ.प्र.प. द्वारा सर्वाधिकार सुरक्षित है। परिषद् की पूर्व अनुमति के बिना, लेखों का पुनर्मुद्रण किसी भी रूप में मान्य नहीं होगा।

सलाहकार समिति	रा.शै.अ.प्र.प. के प्रकाशन प्रभाग के कार्यालय
निदेशक, एन.सी.ई.आर.टी. : हृषिकेश सेनापति	एन.सी.ई.आर.टी. कैम्पस
अध्यक्ष, डी.ई.ई. : सुनीति सनवाल	श्री अरविंद मार्ग
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अकादमिक संपादक : पद्मा यादव एवं उषा शर्मा	होस्केरे हल्ली एक्सटेंशन
मुख्य संपादक : श्वेता उप्पल	बनाशंकरी III स्टेज
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मुख्य व्यापार प्रबंधक : विवाष कुमार दास	नवजीवन ट्रस्ट भवन
मुख्य उत्पादन अधिकारी : अरुण चितकारा	डाकघर नवजीवन
संपादन सहायक : ऋषिपाल सिंह	अहमदाबाद 380 014 फोन : 079-27541446
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अमित श्रीवास्तव	पनिहटी
चित्र	कोलकाता 700 114 फोन : 033-25530454
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	मालीगाँव
	गुवाहाटी 781 021 फोन : 0361-2674869
मूल्य एक प्रति ₹ 65.00	वार्षिक ₹ 260.00

अध्यक्ष, प्रकाशन प्रभाग द्वारा राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्, श्री अरविंद मार्ग, नयी दिल्ली 110 016, के लिए प्रकाशित तथा चन्द्रप्रभु ऑफ़सेट प्रिंटिंग वर्क्स प्रा. लि., सी-40, सेक्टर-8, नोएडा 201 301 द्वारा मुद्रित।

प्रकाशन प्रभाग
निर्देशक और सहायक निदेशक
रा.शै.अ.प्र.प.
नयी दिल्ली-16

विद्यया 5 पुरस्कार

एन सी ई आर टी
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विद्यया से अमरत्व
प्राप्त होता है।

परस्पर आविष्टित हम राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् (एन.सी.ई.आर.टी.) के कार्य के तीनों पक्षों के एकीकरण के प्रतीक है—

- (i) अनुसंधान और विकास,
(ii) प्रशिक्षण, तथा (iii) विस्तार।

यह डिजाइन कर्नाटक राज्य के रायचूर जिले में मस्के के निकट हुई खुदाइयों में प्राप्त ईसा पूर्व

तीसरी शताब्दी के अशोकयुगीन भग्नावशेष के आधार पर बनाया गया है। उपर्युक्त आदर्श वाक्य ईशावास्य उपनिषद् से लिया गया है जिसका अर्थ है— विद्यया से अमरत्व प्राप्त होता है।

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संवाद

जेंडर संबंधी भेदभाव और इससे जुड़ी रूढ़िवादी मानसिकता एक जटिल चुनौती है। जेंडर समानता के क्षेत्र में शिक्षा महत्वपूर्ण भूमिका निभाती है। इसे समाप्त करने के लिए यह जरूरी है कि बचपन से ही बच्चों को संवेदनशील बनाएँ। पढ़ना-पढ़ाना, सीखना-सिखाना कक्षा का महत्वपूर्ण हिस्सा है। पढ़ना और समझना दोनों आवश्यक हैं। दूसरे शब्दों में पढ़ना ही समझना है। कई शिक्षकों का मानना है कि कक्षा में बच्चों द्वारा बोलकर पढ़ना, पढ़ना सिखाने के लिए बहुत ही उपयोगी तरीका है। इस तरीके से बच्चे देखकर, बोलकर और सुनकर पढ़ना सीखते हैं और उन्हें पढ़ना सीखने के सार्थक अवसर मिलते हैं।

गिजुभाई बधेका एक महान शिक्षाविद् थे। गिजुभाई बधेका ने 20वीं शताब्दी के आरंभिक दशकों में शिक्षा के क्षेत्र में गुजरात में अनूठे प्रयोग किए। आज शिक्षा बाल-केंद्रित होने की ओर अग्रसर है। इस दिशा में गिजुभाई बधेका ने सालों पहले प्रयोग किए थे जो उनकी पुस्तक *दिवास्वप्न* में देखने को मिलते हैं। उनका बाल-साहित्य भी व्यापक था। बच्चों के प्रति उनकी समझ बेहद ही सराहनीय है। गिजुभाई बधेका मंगरिया मांटेसरी के कार्य से बहुत प्रभावित थे। बाल विकास और शिक्षा में उनकी काफी रुचि थी। उन्होंने 1920 में भावनगर में बाल मंदिर पूर्व-प्राथमिक विद्यालयों की स्थापना की।

जन्म से आठ वर्ष तक की आयु की शिक्षा व देखभाल को प्रारंभिक बाल देखभाल एवं शिक्षा या पूर्व-प्राथमिक शिक्षा कहा जाता है। आज इस तथ्य को सभी स्वीकार करते हैं कि बच्चों के सर्वांगीण विकास के लिए विशेष रूप से अपवंचित वर्ग के बच्चों के विकास के लिए प्रारंभिक बाल देखभाल एवं शिक्षा एक महत्वपूर्ण साधन है। राष्ट्रीय शिक्षा नीति 1986 ने प्रारंभिक बाल देखभाल एवं शिक्षा को व्यक्तित्व के सर्वांगीण विकास तथा प्राथमिक कक्षाओं में बच्चों के नामांकन और अवधारणा क्षमता में वृद्धि करने वाले महत्वपूर्ण साधन के रूप में स्वीकार किया है।

प्रारंभिक बाल देखभाल एवं शिक्षा का उद्देश्य संपूर्ण बाल विकास करना है। इसके लिए आवश्यक है कि बाल शिक्षा में सामाजिक एवं संवेगात्मक विकास, शारीरिक विकास, मानसिक विकास, भाषा विकास इत्यादि के लिए अनुभव सम्मिलित हों। नाटक, कठपुतली के खेल, कहानियाँ, कविताएँ आदि न केवल भाषायी विकास करती हैं, बल्कि बच्चों को पढ़ने के लिए तैयार भी करती हैं। आज

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पत्रिका के बारे में

प्राथमिक शिक्षक राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् की एक त्रैमासिक पत्रिका है। इस पत्रिका का मुख्य उद्देश्य है, शिक्षकों और संबद्ध प्रशासकों तक केंद्रीय सरकार की शिक्षा नीतियों से संबंधित जानकारी पहुँचाना, उन्हें कक्षा में प्रयोग में लाई जा सकने वाली सार्थक और संबद्ध सामग्री प्रदान करना और देश भर के विभिन्न केंद्रों में चल रहे पाठ्यक्रमों और कार्यक्रमों आदि के बारे में समय पर अवगत कराते रहना। शिक्षा जगत में होने वाली गतिविधियों पर विचारों के आदान-प्रदान के लिए भी यह पत्रिका एक मंच प्रदान करती है।

पत्रिका में प्रकाशित लेखों में व्यक्त किए गए विचार लेखकों के अपने होते हैं। अतः यह आवश्यक नहीं है कि प्रत्येक चिंतन में परिषद् की नीतियों को ही प्रस्तुत किया गया हो। इसलिए परिषद् का कोई उत्तरदायित्व नहीं है।

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सलाहकार समिति	रा.शै.अ.प्र.प. के प्रकाशन प्रभाग के कार्यालय
निदेशक, एन.सी.ई.आर.टी. : हृषिकेश सेनापति	एन.सी.ई.आर.टी. कैम्पस
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मुख्य उत्पादन अधिकारी : अरुण चितकारा	डाकघर नवजीवन
मुख्य व्यापार प्रबंधक : बिबाष कुमार दास	अहमदाबाद 380 014
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	पनिहटी
आवरण	कोलकाता 700 114
अमित श्रीवास्तव	फोन : 033-25530454
	सी. डब्ल्यू. सी. कॉम्प्लेक्स
चित्र	माल्तीगाँव
आवरण - अनिका यादव, कक्षा-3सी, समरबिले स्कूल, ग्रेटर नोएडा	गुवाहाटी 781 021
	फोन : 0361-2674869

मूल्य एक प्रति ₹ 65.00

वार्षिक ₹ 260.00

अध्यक्ष, प्रकाशन प्रभाग द्वारा राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्, श्री अरविंद मार्ग, नयी दिल्ली 110 016 के लिए प्रकाशित तथा चन्द्रप्रभु ऑफ़सेट प्रिंटिंग वर्क्स प्रा. लि., सी-40, सैक्टर-8, नोएडा 201 301 द्वारा मुद्रित।

विद्यया 5 मूलमन्त्र

एन सी ई आर टी
NCERT

विद्या से अमरत्व
प्राप्त होता है।

परस्पर आवेष्टित हंस राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् (एन.सी.ई.आर.टी.) के कार्य के तीनों पक्षों के एकीकरण के प्रतीक हैं-

- (i) अनुसंधान और विकास,
(ii) प्रशिक्षण, तथा (iii) विस्तार।

यह डिजाइन कर्नाटक राज्य के रायचूर जिले में मस्के के निकट हुई खुदाइयों से प्राप्त ईसा पूर्व

तीसरी शताब्दी के अशोकयुगीन भग्नावशेष के आधार पर बनाया गया है। उपर्युक्त आदर्श वाक्य ईशावास्य उपनिषद् से लिया गया है जिसका अर्थ है- विद्या से अमरत्व प्राप्त होता है।

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एडू रोड अ० प० १०
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संवाद

शिक्षा व्यक्ति की अंतर्निहित क्षमता तथा उसके व्यक्तित्व को विकसित करने की प्रक्रिया है। शिक्षा के क्षेत्र में आज अनूठे प्रयोग हो रहे हैं। इन प्रयोगों का उद्देश्य बच्चों में सीखने की ललक पैदा करना है ताकि वे जिम्मेदार नागरिक बन सकें व देश को प्रगति की ओर ले जाने में अपना योगदान दे सकें। इस उद्देश्य की प्राप्ति में अध्यापकों की महत्वपूर्ण भूमिका होती है। शिक्षक स्वयं सशक्त हो सकें इसके लिए आवश्यक है कि वे अपने ज्ञानवर्धन हेतु प्रयासरत रहें। सरकार बच्चों की शिक्षा में गुणवत्तापूर्ण सुधार तथा शिक्षकों के क्षमतावर्धन हेतु प्रयासरत है परंतु यह प्रयास तभी सार्थक हो सकता है जब सरकार के साथ-साथ शिक्षक, अभिभावक और बच्चे शिक्षा की गुणवत्ता में सुधार के लिए स्वयं से भी पहल करें।

अभी हाल में बच्चों को गुणवत्तापूर्ण शिक्षा देने और उनके व्यक्तित्व विकास के लिए देश के सरकारी विद्यालयों में सेवारत शिक्षकों को राष्ट्रीय शैक्षिक योजना एवं प्रशासन संस्थान (नीपा), जो मानव संसाधन विकास मंत्रालय की इकाई है, द्वारा निष्ठा कार्यक्रम के तहत प्रशिक्षण दिया जा रहा है। जिसका उद्देश्य शिक्षा व्यवस्था को मजबूत बनाना, वर्तमान वातावरण के अनुरूप शिक्षकों को प्रशिक्षित करना और शिक्षक एवं संस्था प्रधानों के लिए राष्ट्रीय एकीकृत प्रशिक्षण कार्यक्रम आयोजित करना है ताकि इसका लाभ देश के सभी बच्चों को मिल सके तथा उनके सीखने के प्रतिफलों में सुधार हो सके। आने वाले समय में इससे जुड़े लेख व अनुभव भी इस पत्रिका के माध्यम से हम साझा करने की कोशिश करेंगे।

इस पत्रिका में कुल 12 लेख हैं। पत्रिका की शुरुआत 'प्राथमिक स्तर पर गुणवत्ता शिक्षा हेतु सतत एवं व्यापक मूल्यांकन की सार्थकता' नामक लेख से की गई है। इस लेख में बताया गया है कि सतत एवं व्यापक मूल्यांकन (सी.सी.ई.) के माध्यम से न केवल बच्चों की सीखने की क्षमताएँ बढ़ती हैं अपितु उनका सर्वांगीण विकास भी होता है।

दूसरा लेख 'मातृभाषा ही प्राथमिक शिक्षा का माध्यम क्यों?' बतलाता है कि बच्चों को सिखाने के लिए उनकी मातृभाषा ही उपयुक्त रहती है क्योंकि इससे बच्चों को सीखने और समझने में सरलता होती है। अनजान या नई भाषा में समझना बच्चों के लिए कठिन हो जाता है। मातृभाषा के साथ

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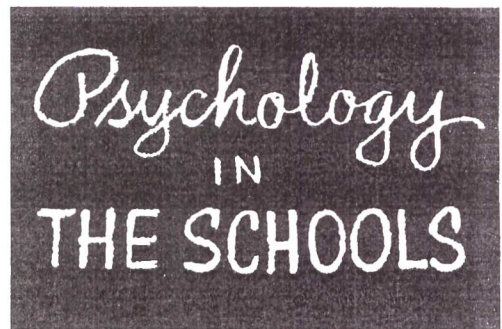
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RESEARCH ARTI

Introductio experience Phenomen

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1 | INTRODUCTI

We are pleased to report the *school and life experiences* of students with disabilities and their challenges to their academic achievement. Students who are displaced, often marginalized (Miller & Bourgeois, 2015; Miller & Bourgeois, 2015; Miller & Bourgeois, 2015), are growing yet often misunder

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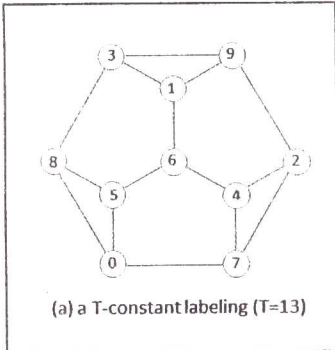
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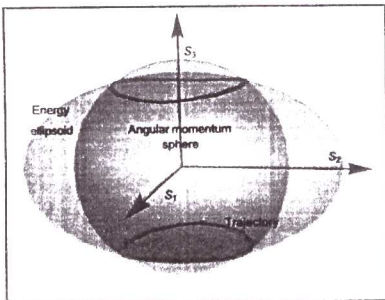
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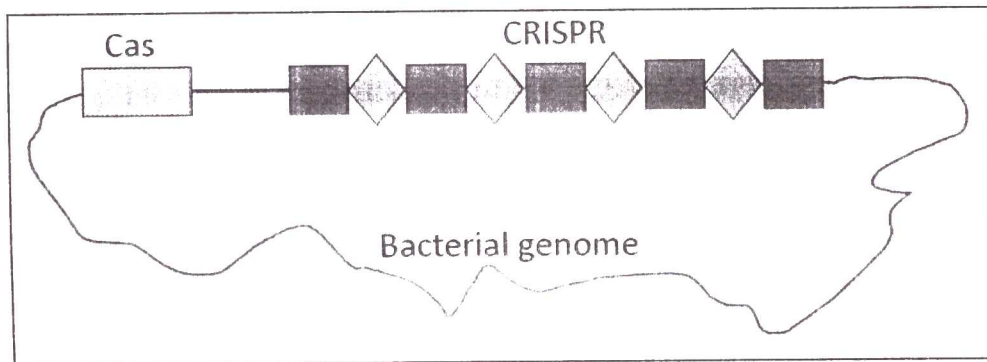
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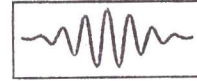


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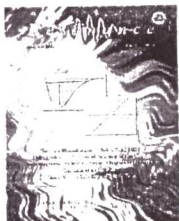
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Graphic illustration of nonlinear optics,
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Nicolaas Bloembergen
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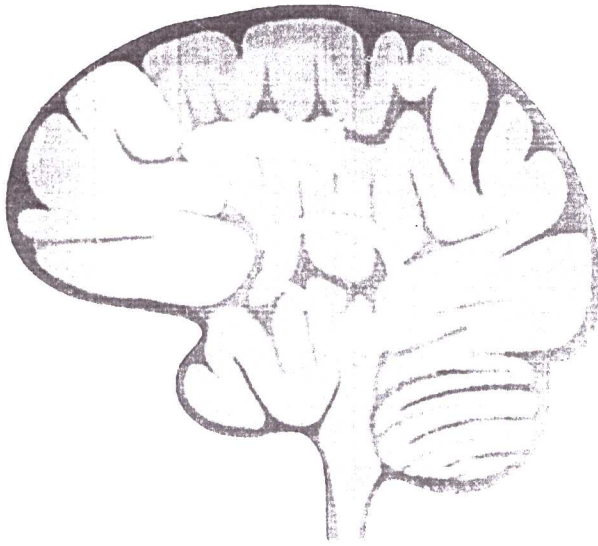
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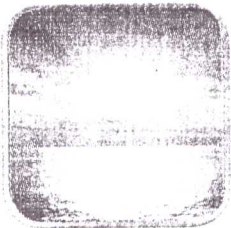


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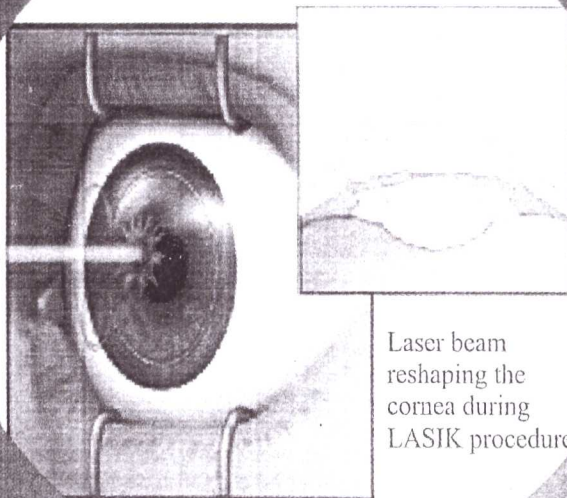
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For all practical procedures described in *SSR*, we have attempted to ensure that:

- the requirements of UK health & safety law are observed;
- all recognised hazards have been identified;
- appropriate precautions are suggested;
- where possible procedures are in accordance with commonly adopted model risk assessments;
- if a special risk assessment is likely to be necessary, this is highlighted.

However, errors and omissions can be made, and employers may have adopted different standards. Therefore, before any practical activity, teachers and technicians should always check their employer's risk assessment. Any local rules issued by their employer must be obeyed, whatever is recommended in *SSR*.

Unless the context dictates otherwise it is assumed that:

- practical work is conducted in a properly equipped laboratory;
- any mains-operated and other equipment is properly maintained;
- any fume cupboard operates at least to the standard of CLEAPSS Guide G9;
- care is taken with normal laboratory operations such as heating substances or handling heavy objects;
- good laboratory practice is observed when chemicals or living organisms are handled;
- eye protection is worn whenever there is any recognised risk to the eyes;
- fieldwork takes account of any guidelines issued by the employer;
- pupils are taught safe techniques for such activities as heating chemicals or smelling them, and for handling microorganisms.

Readers requiring further guidance are referred to:

Safeguards in the School Laboratory, 12th edn, ASE, 2020.

Be Safe! Health and Safety in School Science and Technology for Teachers of 3- to 12-year-olds, 4th edn, ASE, 2011.

Topics in Safety, ASE, latest version on the ASE website: www.ase.org.uk/resources/topics-in-safety (login required).

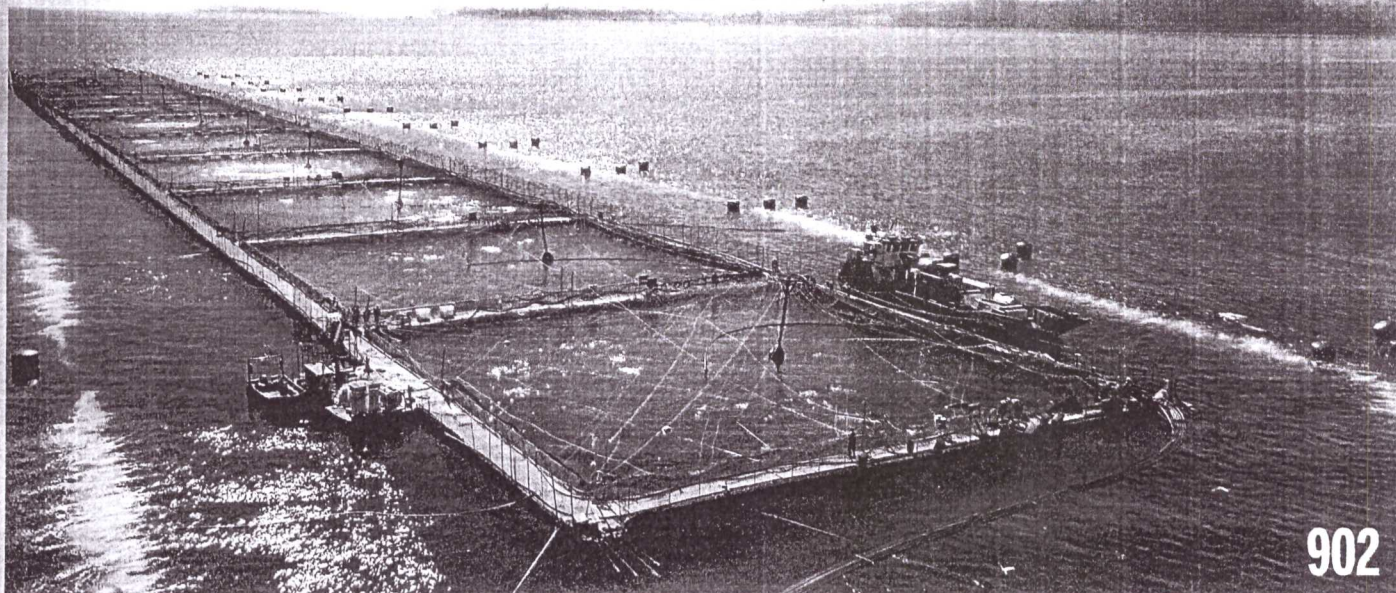
Hazcards, CLEAPSS, latest version, and other relevant publications, on the CLEAPSS website: www.cleapss.org.uk (almost all schools, colleges and teacher training establishments in the UK outside Scotland are members, as are many overseas).

Hazardous chemicals database, SSERC, latest version on the SSERC website: www.sserc.org.uk/health-safety/chemistry-health-safety/hazchem_database-2/ (schools, colleges and teacher training establishments in Scotland).

Preparing Risk Assessments for Chemistry Project Work in Schools & Colleges, SSERC, 2020.

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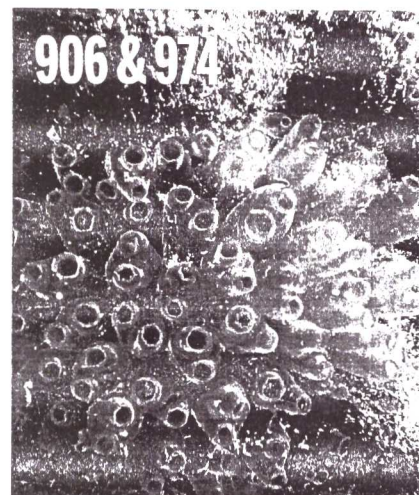
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Spatial control over molecular movement is typically limited because motion at the atomic scale follows stochastic processes. When single dibromoterfluorene molecules are aligned along a specific direction on a silver surface, they become highly mobile and can be controllably transferred between two sharp probes, as illustrated here. Such a sender-



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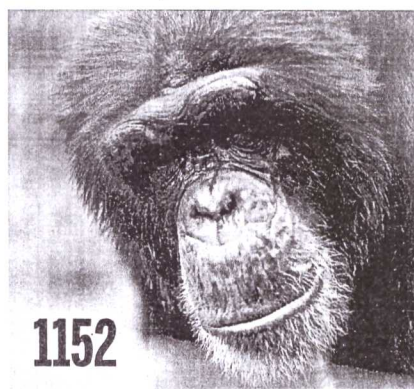
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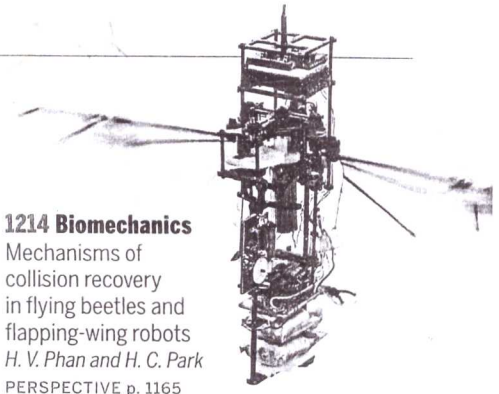
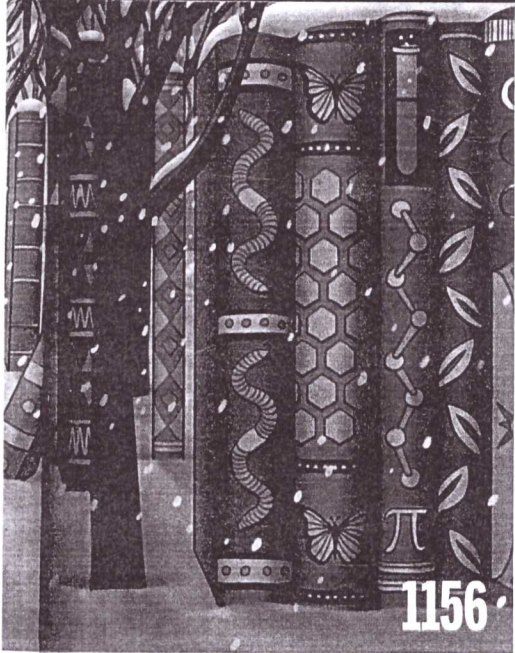
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Schematic representation of the gliding phenomenon in a micrometer-sized cathode crystal charged to high voltages. Crystal gliding, induced by localized stress, is partially reversible and eventually evolves into microcracks after extensive battery cycling. A critical crystal size has been predicted to prevent such gliding in battery cathode crystals. See page 1313. Illustration: C. Bickel/Science



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As the COVID-19 pandemic exploded in 2020, scientists mobilized to develop and test dozens of candidate vaccines targeting the new coronavirus. Many aim to stimulate antibodies against the virus' protruding spike proteins, which enable it to infect human cells. In record time, several vaccines showed strong evidence of efficacy, giving a beleaguered world new hope. See page 1392. *Illustration: Adam Simpson/Heart Agency*



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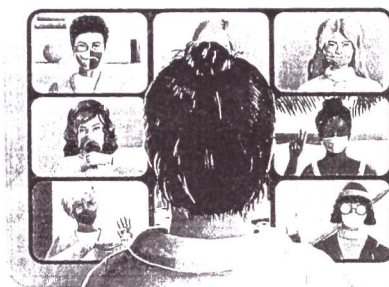
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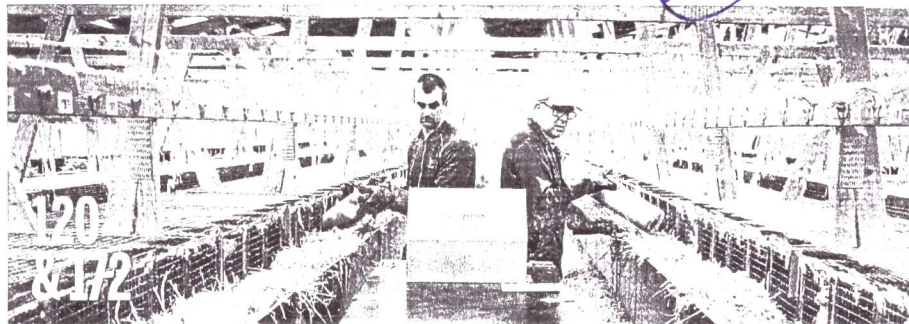
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A mouse sperm lacking glycylation swims
in circles. Glycylation is a posttranslational
modification of tubulin that is predominately
found in cilia and flagella, where it contributes
to coordinating axonemal dynein motors that
power the flagellar beating. Lack of glycylation causes
an abnormal flagellar beat
and results in circular
instead of straight sperm
swimming. This in turn
severely affects male
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Illustration: C. Bickel/Science

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On 1 December
2020, four cables
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The 305-meter-wide radio dish of Puerto Rico's Arecibo Observatory, as seen from above in the late 1980s. For nearly 60 years the telescope stood at the vanguard of astronomy, planetary science, and atmospheric science. On 1 December 2020, its heavy instrument platform collapsed after



the failure of its suspension cables. Researchers are examining the causes of the disaster even as they advocate for rebuilding. See p. 225. Photo: Bruce Da. National Geographic Image Sales

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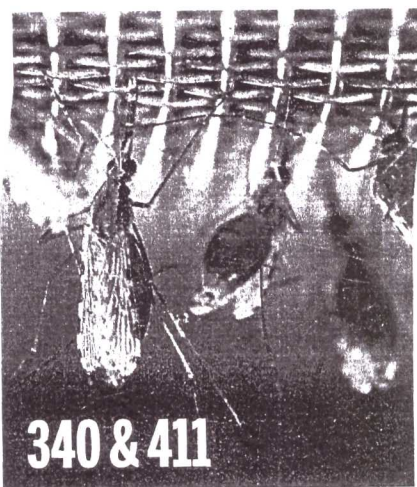
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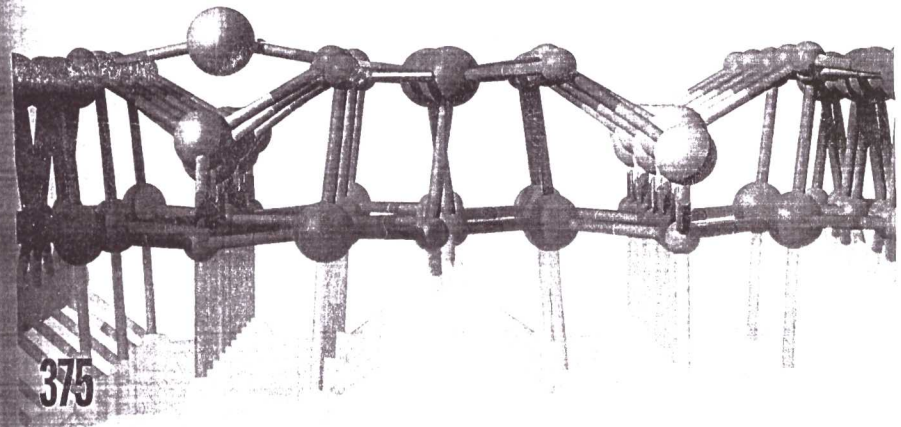
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Some cobras, such as this Mozambique spitting cobra (*Naja mossambica*), use venom spitting as an effective long-range defense mechanism. The three origins of venom spitting in snakes coincide with convergent changes to venom composition, allowing venom to serve a defensive function by producing enhanced pain in the recipient. These findings emphasize that evolution can funnel complex adaptations down repeatable pathways. See page 386.
Photo: Guy Edwardes/NPL/Minden Pictures



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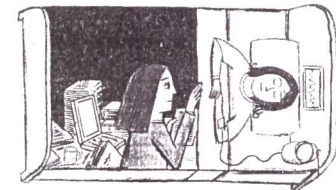
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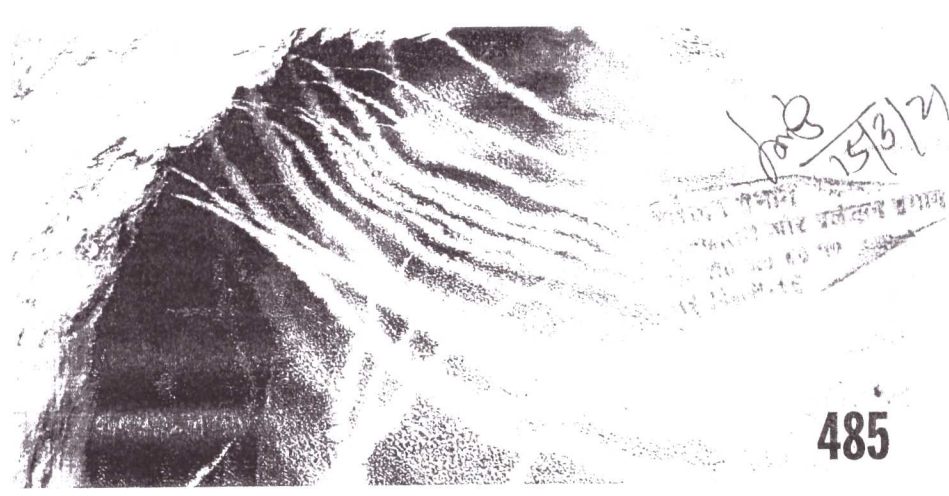
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Naked mole-rats (Heterocephalus glaber) display rich vocal repertoires. Analysis of their greeting call, the soft chirp, reveals that this sound can be used to communicate social membership. Individuals from different colonies use distinctive dialects that are learned early in life. Dialect

usage in naked mole-rats is similar to that in humans, a finding that may shed light on mechanisms of social communication. See pages 461 and 503. Photo: Felix Petermann, Max-Delbrück Center for Molecular Medicine (MDC)



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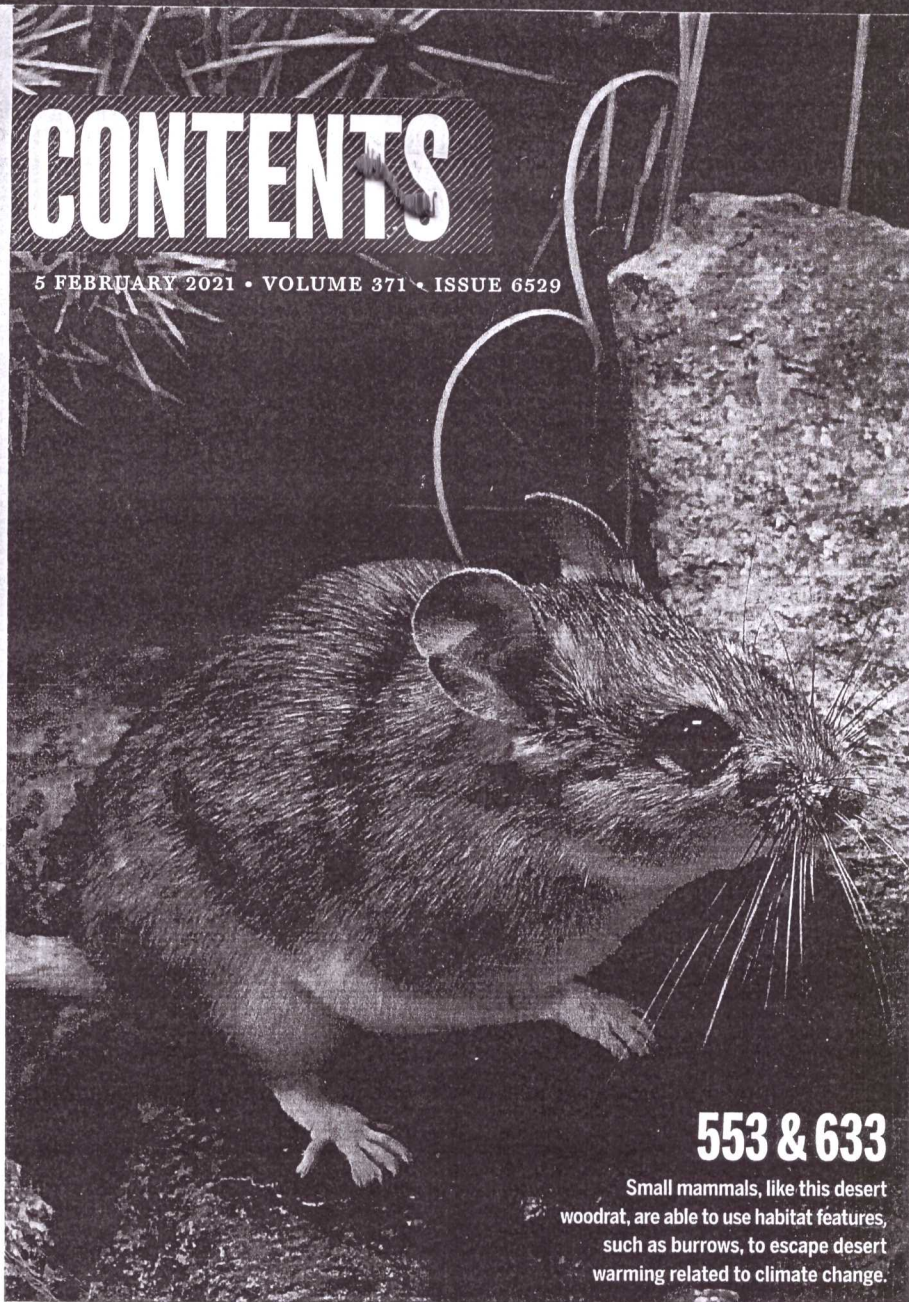
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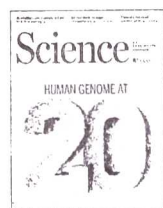
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Twenty years after two groups published the first draft sequences of the human genome in *Science* and *Nature*, the intricate code embedded in human chromosomes has transformed research,

medicine, and our concept of ourselves. This special issue explores the achievement's complex legacy. See pages 545, 556, 560, 564, 570, and 578. *Illustration: Charis Tsevis*



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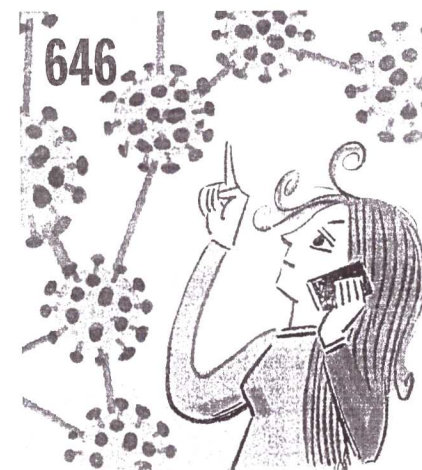
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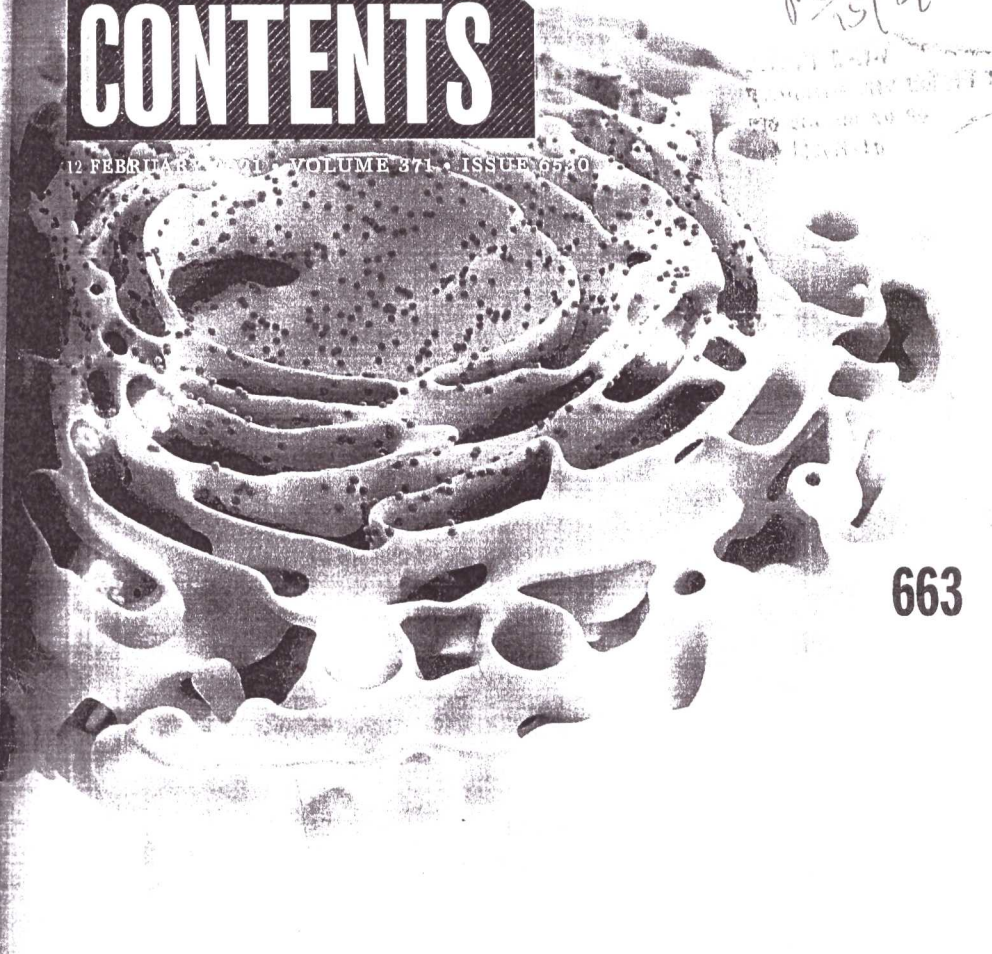
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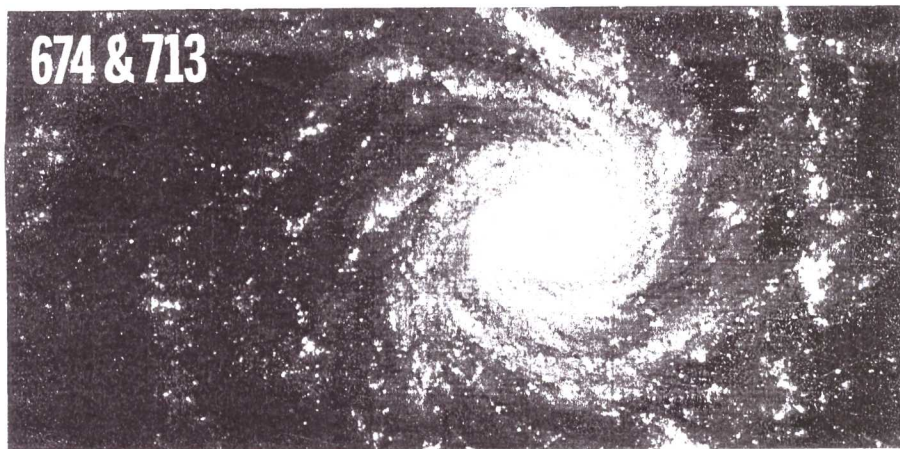
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for minor infractions than white and male officers. These disparities are particularly pronounced during encounters with Black civilians. See pages 661, 677, and 696. Illustration: Reyna Noriega

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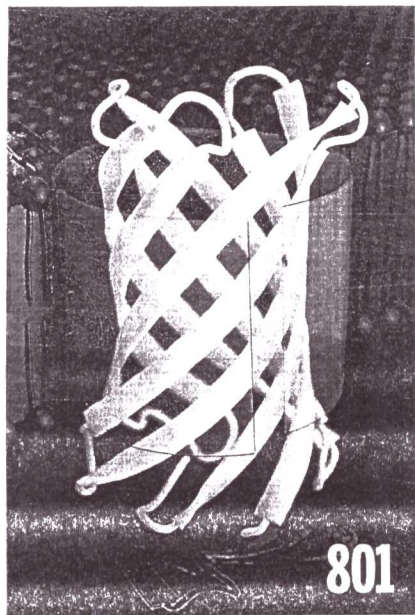
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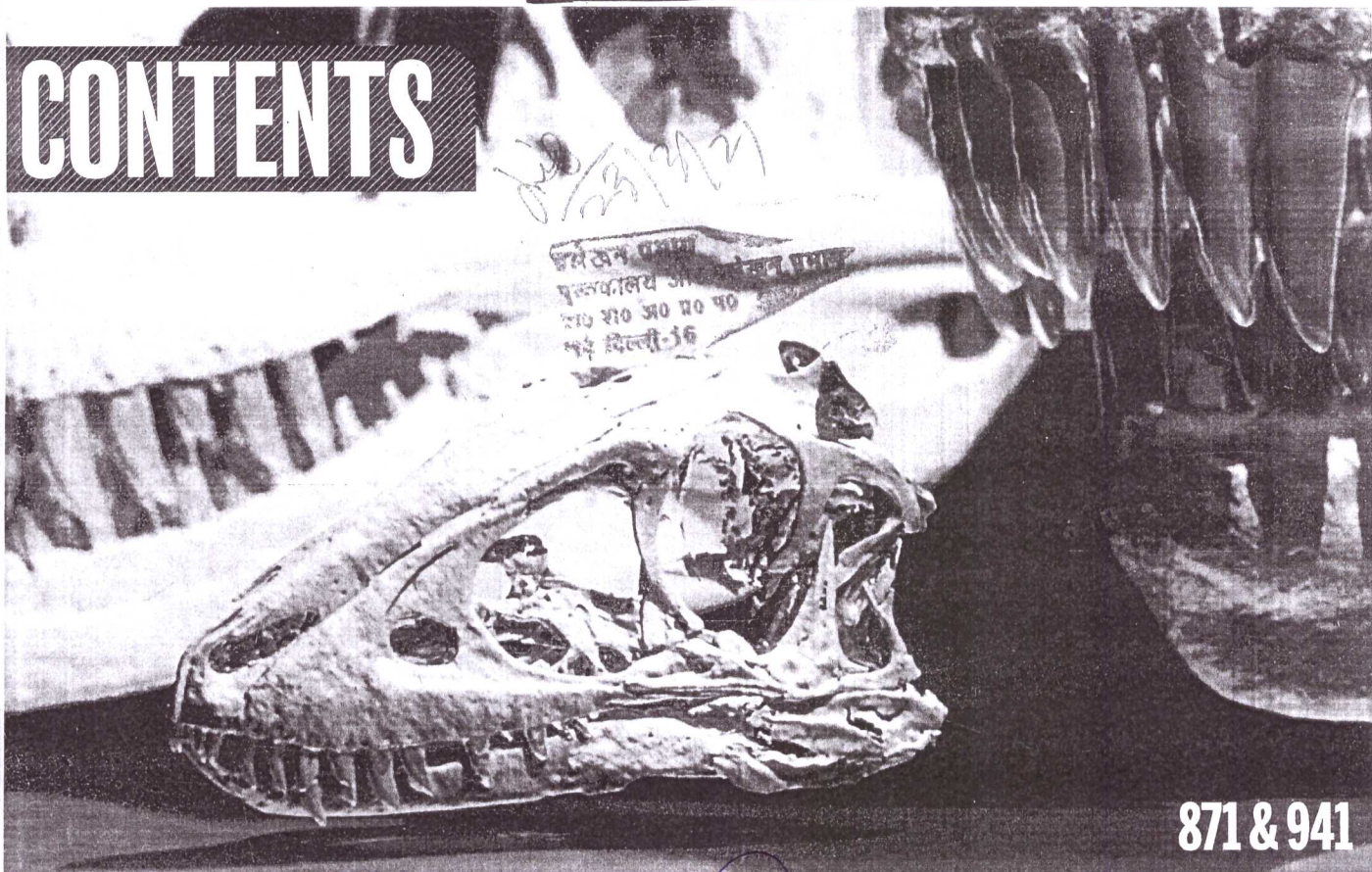


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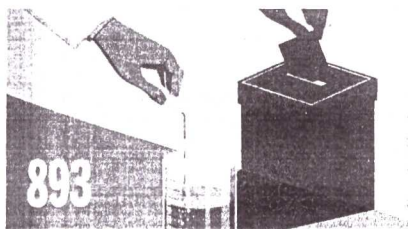
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can see shifts in ground surface related to
flooding (yellow and red indicate increasingly
substantial surface change). A surge in SAR
data is enabling researchers to study changes
like these at finer scales and frequencies.



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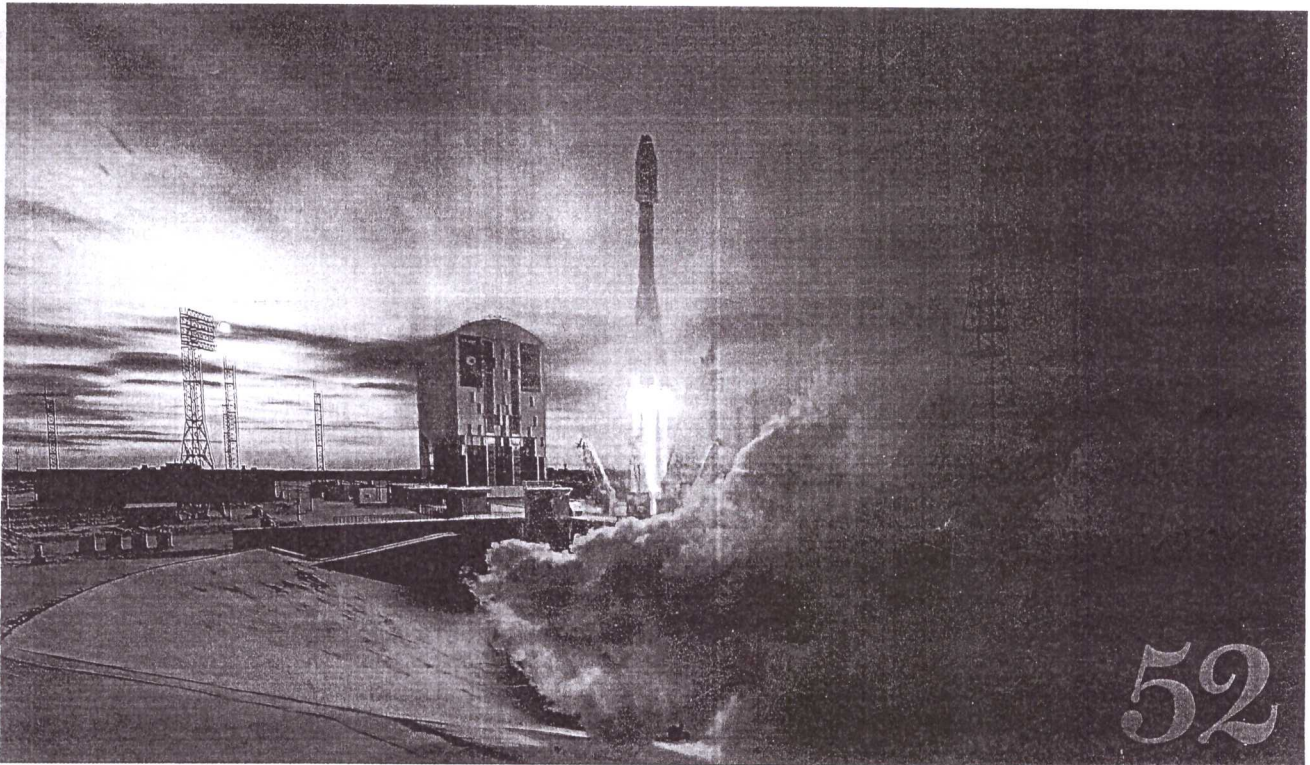
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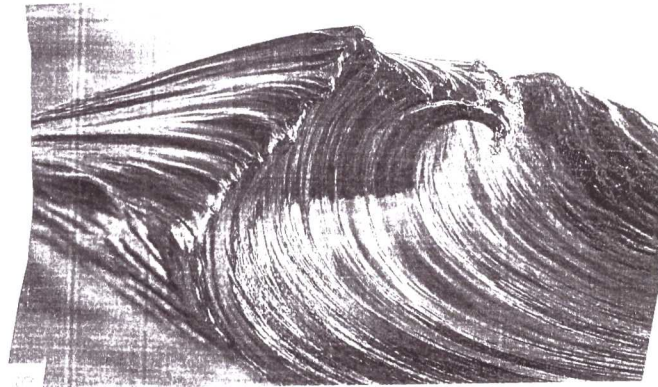
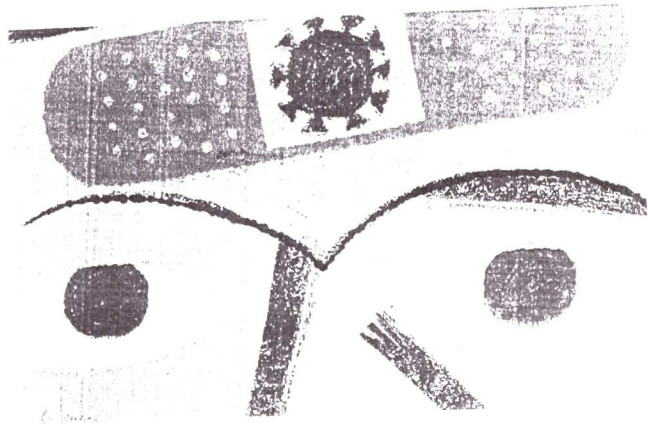


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Illustration by Egle Plytnikaite.

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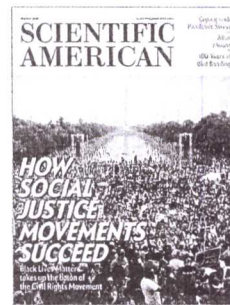
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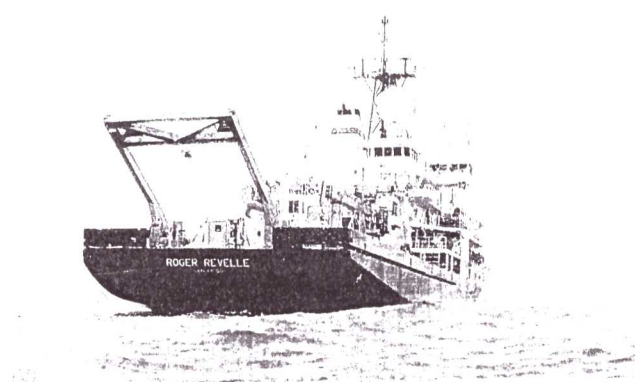
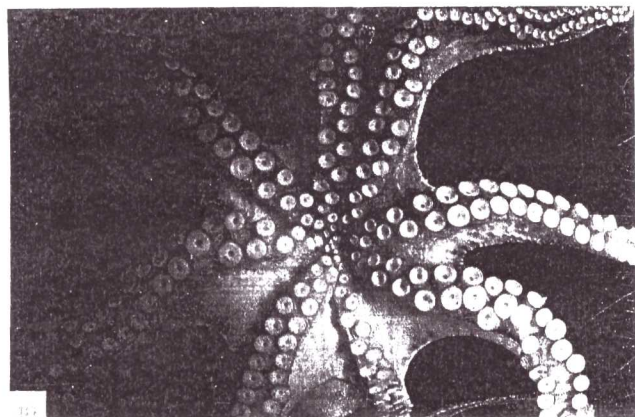
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A Black Lives Matter protest last August at the National Mall in Washington, D.C., honored the 57th anniversary of the historic March on Washington during the Civil Rights Movement. Successful movements require organization, strategy, and material and cultural resources that largely emanate from within the community experiencing injustice. Photograph by Mel D. Cole.

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अक्सर हम पेड़-पौधों की उम्र के बारे में चर्चा करते हैं जैसे एकवर्षी और बहुवर्षी पौधे। पेड़ों की उम्र के साथ कभी-कभी पतियों की उम्र की भी चर्चा होती है जिसके आधार पर जंगलों को पतझड़ी एवं सदाबहार जंगलों में बाँटा जाता है। परन्तु पेड़-पौधों के सबसे महत्वपूर्ण एवं आकर्षक अंग यानी फूलों की उम्र की चर्चा कम ही होती है।

विभिन्न अध्ययनों से समझ में आया है कि फूलों की उम्र के सम्दर्भ में बहुत सारे कारक काम करते हैं। फूलों की आयु या दीर्घायु को समय के अनुरूप परिभाषित किया जा सकता है। इस अन्तराल में फूल खुला और कार्यात्मक रहता है, और पौधों की प्रजनन सफलता के लिए यह एक महत्वपूर्ण विशेषता है क्योंकि यह सीधे परागण प्रक्रिया के लिए उपलब्ध समय को निर्धारित करती है। इस लेख में फूलों के खिले रहने की अवधि किन-किन कारकों पर निर्भर कर सकती है, उसे समझने का प्रयास किया गया है।

प्रतिबिम्ब: वास्तविक या आभासी?

आम तौर पर लोग सभी मौजूदा वैज्ञानिक सिद्धान्तों और कानूनों को स्वीकार करते हैं क्योंकि वे सभी त्रुटियों और अपवादों के बावजूद वर्तमान स्थिति में सर्वोत्तम सम्भव स्पष्टीकरण हैं। उक्त लेख में लेखक ने छवि निर्माण के सरल उदाहरण के साथ उन पहलुओं के साथ होने वाले नए अन्वेषणों को समझाने की कोशिश की है जिन्हें अनदेखा किया जाता है। प्रतिबिम्ब निर्माण में जब हम वस्तुओं को दर्पण में देखते हैं, तब क्या होता है और वे कैसी दिखाई देती हैं? भिन्न प्रकार के दर्पण जैसे समतल, अवतल आदि में प्रतिबिम्ब कैसे बनता है और दिखाई देता है? लगता तो ऐसा है कि वस्तु का प्रतिबिम्ब दर्पण की सतह के 'पीछे' है, लेकिन हम जानते हैं कि दर्पण के 'अन्दर' कोई जगह नहीं है जहाँ से हमें वह सारी गहराई दिखे जो हमें प्रतीत होती है। विभिन्न लेंसों के साथ किरण-पथ बनाने के क्या-क्या नियम आदि हैं, पढ़ते-समझते हैं प्रतिबिम्ब निर्माण के विस्तृत विवरण को इस लेख में।

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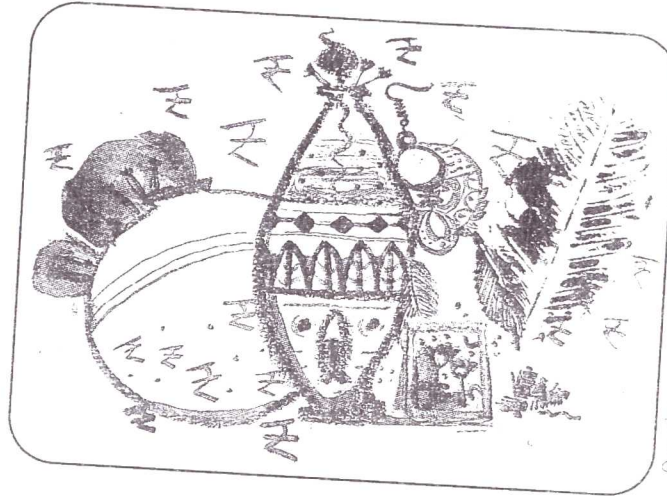
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शिक्षा के रचनावादी और निर्माणवादी सिद्धान्त के अन्तर्गत यह माना जाता है कि एक बच्चा अपने ज्ञान का निर्माण स्वयं करता है। आखिर इस 'ज्ञान के स्वामित्व' का क्या मतलब है? इस सवाल को टटोलते हुए, नाटक की प्रक्रिया में इसको हासिल करने की सम्भावना को खोजने वाला यह लेख अनुभवात्मक चर्चा प्रस्तुत करता है।

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चित्र: शैलेश गुप्ता

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महाराष्ट्र में कई स्कूलों में अर्ध-अंग्रेज़ी यानी सेमी-इंग्लिश नीति अपनाने की अनुमति थी इसलिए सेमी-इंग्लिश स्कूलों की परिपाटी रही है। ये स्कूल हैं तो मराठी माध्यम के, परन्तु माध्यमिक शाला में विज्ञान और गणित के लिए अंग्रेज़ी पाठ्यपुस्तकों का उपयोग करते हैं। इस कारण बच्चे इन्हीं स्कूलों में टिके हुए हैं और प्राइवेट स्कूल की तरफ पलायन कम हुआ है। इस मुद्दे में विरोधाभास तो यह है कि जहाँ महाराष्ट्र में अंग्रेज़ी सीखने की महत्वाकांक्षा के लिए एक मध्य-मार्ग अपनाया गया है, वहीं आदिवासी भाषाओं के प्रति नकारात्मक नीति अपनाई गई है। इसी चर्चा के साथ अन्य पहलुओं को भी विस्तारपूर्वक पढ़ते हैं उपरोक्त लेख में।

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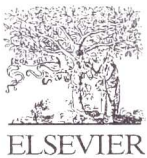
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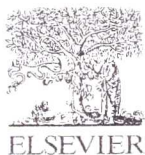
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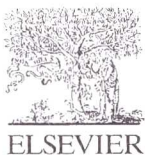
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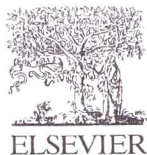
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National Service Scheme as a Laboratory of Emotional Intelligence

M S Sodha*, Anshumali Sharma and ** Rashmi Soni***

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National Service Scheme (NSS) is an Indian government-sponsored public service program conducted by the Ministry of Youth Affairs and Sports of the Government of India. Popularly known as NSS, the scheme was launched in Gandhiji's birth centenary year, 1969. The Education Commission headed by Dr. D.S. Kothari (1964-66) recommended that students at all stages of education should be associated with some form of social service. This was taken into account by the State Education Ministers during their conference in April 1967 and they recommended that at the university stage, students could be permitted to join the National Cadet Corps (NCC) which was already in existence on a voluntary basis and an alternative to this could be offered to them in the form of a new programme called the National Service Scheme (NSS). Promising sportsmen, however, should be exempted from both and allowed to join another scheme called the National Sports Organization (NSO), in view of the need to give priority to the development of sports and athletics.

The main objectives of NSS are to understand the community, identify the needs and problems of the community, develop among themselves a sense of social and civic responsibility, develop competence required for group living and sharing of responsibilities, acquire leadership qualities and democratic attitudes etc. Students undergo major physical and psychological changes in their teenage. It is considered as a highly emotionally charged period of life. During this period there are enormous changes in the person's social interactions and relationships especially in their relationship with the community. There is also difficulty in building up and keeping healthy relationships. The ability to manage one's emotions is important in attaining a successful career. Here comes the importance of the development of Emotional Intelligence in NSS students.

East or West, North or South, youth everywhere, is in a state of restlessness and revolt. It was so in the past and it shall be so in future as well, howsoever glamorous and glittering the social fabric might become, and howsoever secure and stable they might feel under the new indulgence. The young have never rested on their past laurels; nor have they felt contented with their present possibilities. The chords of their impulses, instincts and intuitions are always vocal and vibrant. No doubt, the problems of youth in different parts of the world, under different socio-political systems, differ in form and content. But it is

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Using ICT to Cope With the Impact of COVID-19: Response of the Educational Sector

Diksha Rajput*

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#Let'sBeatCoronaTogether

The turn of the millennium made it evident that Information and Communications Technology (ICT) would soon bring sweeping changes to the management and governance landscape across the world. It was only a matter of time before by-the-minute advancements in ICT would reach a point where governments would reap rich dividends on every investment in technology, which would in-turn enable them to optimise the utilisation of costs, time and resources. The arrival of the Corona Virus or COVID-19 pandemic changed all of that in December, 2019.

The WHO declared COVID-19 as a pandemic spreading the disease worldwide (WHO, 2020). As per OECD, 'the spread of COVID-19 has sent shock waves across the globe. The public health crisis, unprecedented in our lifetimes, has caused severe human suffering and loss of life. The exponential rise in infected patients and the dramatic consequences of serious cases of the disease have overwhelmed hospitals and health professionals and put significant strain on the health sector' (Schleicher, 2020). The Sustainable Development Goals (SDGs)- Education 2030 Steering Committee (SDG 4 education 2030, 2020) in its recommendations for COVID-19 education response has referred to the COVID-19 pandemic as a global health crisis as well as an educational crisis, with over 1.5 billion learners affected by near-universal school closures.

As the COVID-19 pandemic spread worldwide, governments across the world were forced to shut down offices, educational institutions, businesses etc. Efforts to stop the viral outbreak included working from homes, providing flexible working hours, or closing many institutions where people could infect one another with COVID-19. Protocols to shut down buildings involved schools, universities and many other educational institutions. This situation forced all levels of educational institutions to operate remotely and to put emergency remote teaching into practice (Bozkurt and Sharma, 2020).

As per World Economic Forum Report (World Economic Forum, 2020), the COVID-19 has resulted in schools shut all across the world. As a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms.

According to UNESCO Director-General Audrey Azoulay, "while temporary school closures as a result of health and other crises are not new unfortunately, the global scale and speed of the

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Issues and Challenges in Creating Inclusive Educational Institutions

D Venkateshwarlu*

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Inclusion is one of the major challenges faced by education systems worldwide, set within the overall frame work of Education for All, whose aim is the development of institutions that can respond to students' diversity, focusing in particular on groups of students that are vulnerable to marginalization, exclusion and under achievement. The inclusive orientation is a strong feature of Salamanca Statement (1994) on principles, policy, and practice. Arguably the most significant international document that has been ever appeared in the field of education of Students with Special Needs, argues that institutions with an inclusive orientation are the most effective means of combating discriminatory attitudes, building an inclusive society and achieving education for all. It can provide an affective education for most of the students and improve the efficiency and ultimately the cost effectiveness of the entire education system.

The framework for action says, "Inclusion and participation are essential to human dignity and the enjoyment and exercise of human rights." In the field of education this is reflected in bringing about a 'genuine equalization of opportunity'. Education of students with special needs incorporates the proven methods of teaching from which all students can benefit; it assumes human differences are normal and that learning must be adapted to the needs of the student, rather than the student adjusting to the process.

Inclusion implies a radical reform of the institution in terms of conviction and philosophy followed with curriculum, assessment, pedagogy, grouping of students and the institutions environment and ethos. It is based on a value system that welcomes, respects, and celebrates diversity arising from gender, nationality, race, language of origin, social background, religion, class and caste, level of educational achievement, disability, etc.

The fundamental principle of the inclusive institution is that all students should learn together, wherever possible and that regular institutions must recognize and respond to the diverse needs of their students, while also having a continuum of support and services to match these needs.

Inclusive institutions are the 'most effective' at building solidarity between students with special needs and their peers.

All of this requires a major shift in the way we look at education. This shift in thinking is based on the belief that changes made in response to students experiencing difficulties can benefit all students. Within such a formulation, those students who are currently seen

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Improving Quality of Teaching-learning Involving Students and Industry Personnel

R Nagaraj* and C Sivapragasam**

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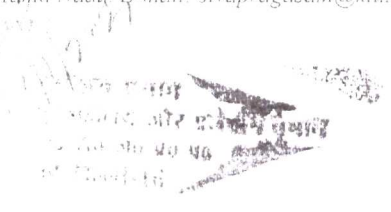
Of the many innovative recommendations in the National Education Policy (NEP)-2020, the recommendation to give more autonomy to institutions and faculty members to design curriculum, pedagogy and assessment methods is highly welcome. The need for creative thinking and competence in higher order skills in students have been recognized by many across the globe [1-3], but its effective implementation is lagging in the Indian higher education system which is mostly dominated by teacher-centred learning. There are some good initiatives by many institutions which have gone for NBA accreditation of their programmes but such initiatives are yet to receive recognition beyond the institution boundary. The recommendation in NEP-2020 will certainly break this barrier in the days to come.

Proposed Model

This article proposes a model for improving the quality of teaching learning (Figure 1) by increasing the participation of the students and industry personnel at different levels. A partial implementation of this model in terms of allowing faculty members to have flexibility in designing assessment methods for a given course is already in place at the Kalasalingam Academy of Research and Education (KARE). At first stage, for a given course, a faculty comes up with a set of assessment methods which promote higher order thinking such as mini project, model development, field visit, experimental design, open book test, evaluation by industry personnel as well as peer evaluation. The other conventional assessment methods such as quizzes and written exams can be retained but with greater emphasis on higher order thinking questions. For each of the assessment methods chosen, proper justification has to be given. This can become an important document along with the course plan for the course. At the second stage, this document is made available to students and industry personnel to invite their suggestions. When students are made part of the design of the assessment methods itself, their interest in the course is expected to increase even before the course is taught. The student will most likely begin to see the faculty as a facilitator of effective learning. The involvement of industry personnel at the stage of design of assessment methods will add lot of practical values to impart necessary skills in students to improve their employability. It is better to include assessment by industry personnel as one of the mandatory assessment methods, atleast for those courses which are most important from the employability perspective.

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Special Issue

on

IMPLEMENTATION STRATEGIES FOR NATIONAL EDUCATION POLICY -2020

*Equity and Access in Higher Education including
Promotion of Indian Languages, Art & Culture*

on the occasion of

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Special Issue

on

IMPLEMENTATION STRATEGIES FOR NATIONAL EDUCATION POLICY--2020

*Reimagining Teacher Education, Vocational Education
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#Let'sBeatCoronaTogether

Sustainable Development and Higher Education: Initiatives of Rajiv Gandhi University, Arunachal Pradesh

Saket Kushwaha*, A Mitra**, D N Das*** and Anamika Yadav****

It is a well known fact that higher education is key to development. This is because the human resources play a crucial role in sustaining the pace of economic development through continuous upgradation of productivity of both labour and capital. However, the concept of economic development has been changing over a period of time. In the early 1980's a new concept of development emerged as a reaction to negative experiences of development which is known as sustainable development. The concept sustainable development may be interpreted to mean the development which can be sustained in the long run. Sustainable development is a process in which economic and social welfare of the people can be maximized with minimum damage to our environment and ecology. Thus, sustainable development has been defined in many ways, but the most frequently quoted definition is from the document 'Our Common Future' known as the Brundtland Report. It defined, "Sustainable development as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The concept of sustainable development emerged in Brundtland Commission in 1987 and popularized in the United Nation Earth Summit in Rio-de-Janerio in 1992. In the earlier one there was emphasis on environmental conservation and sustainable development.

However, the United Nations General Assembly in 2015 broadened the idea of sustainable development by covering various social and economic development issues like poverty, hunger, health, education, global warming, gender equality, water, sanitation, energy, urbanization, environment and social justice. It has set 17 global goals which are known as sustainable development goals (SDGs). These goals of sustainable development envisage a society free from poverty and economic dependence on others, free from prejudice and traditional thinking, free from fear, discrimination, injustice, intolerance and violence and also free from insensitivity towards different forms of life and environment. It calls for a society where economic, academic, social and environmental needs of the future generation could be met successfully. Now, the question arises how the higher education of India in general and the universities, in particular can play an important role in achieving the sustainable development goals. This paper attempts to highlight these dimensions considering the catalyzing role of Rajiv Gandhi University, Itanagar in developing trained human resource at regional level in this remote part of India to work towards achieving SDGs.

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on the occasion of

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at

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#Let's Beat Corona Together

Moving towards Education without Examinations

Neeraj Saxena*

The global COVID-19 pandemic slammed brakes on the academic cycle at a time when the students were ready for the end semester/year examinations besides lakhs of school-leaving students aspiring to pursue professional/ higher courses, waiting to take competitive examinations/ tests. The stunning unprecedented scenario has sent academicians into a huddle thinking hard about the options to complete the academic year by conducting the examinations. As embedded presently, examinations *serve as checkpoints for both the learner and the certifying bodies and in handing them out an acknowledgement that a certain level of education (unfortunately not the competence or proficiency) has been acquired. But* is it not surprising that education content and delivery have changed over the last two centuries, but examinations have not? By examinations in this article, I confine to the proctored test of fixed duration conducted by an authorized/ certification body and demanding recall of predetermined content, in the answer sheets. Sadly, the efforts during the pandemic, as evident from the array of webinars on examination/ online courses, have been about how to stop copying of answers instead of getting better answers and hardly anyone speaks about the assessment of everything else that makes a graduate well-rounded!

The idea of examination seems to have percolated into the education system, geared up as it has been for mass production of trained workers aligning with the needs of the industrial age. Examinations in the education (prescriptive learning as I would call) that we have had, have been extensively used for facilitating clearing the grades, upwardly progression, conferring degrees, admitting people into elite folds etc, basically for grading, segregating and labelling scholars. They have also been used to admit students whenever the supply has been overwhelmingly higher than the demand and in the process created a highly competitive, at times cut-throat, environment that rejects the majority. What's more striking is that each individual is admittedly unique and different in the terms of abilities, proclivities and capacities, yet the same yardstick or battery of tests is used to grade each individual and label her/him as passed or failed. Can a human pass or fail? Only an object meeting or not meeting predetermined parameters can. So do examinations fit into the learning process and academic transactions? Why not check a person for what she or he can do? Why identify a person with what he cannot do or is lacking in? Should not there be an assessment of what the person can improve upon in further? Why not empower a person to chart her/his own learning trajectory that aids in unleashing the full potential?

Before delving deep to explore answers to these questions, let's see if the term "examination" itself is the right word or expression at

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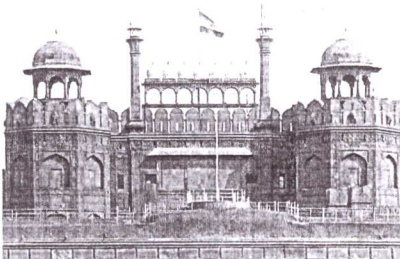
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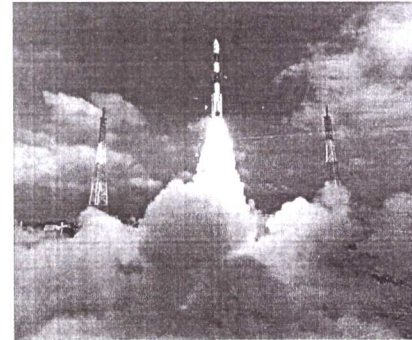
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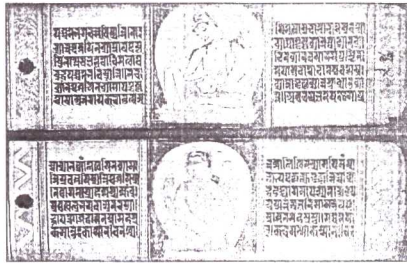
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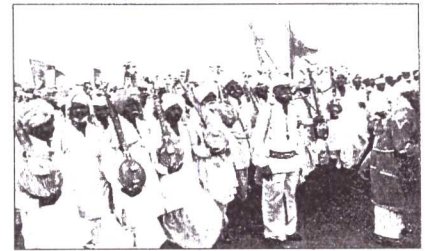
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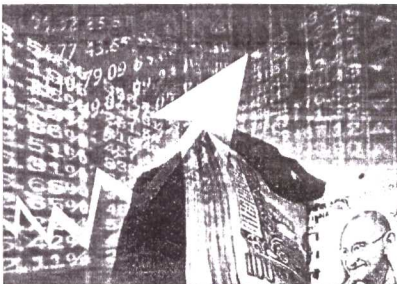
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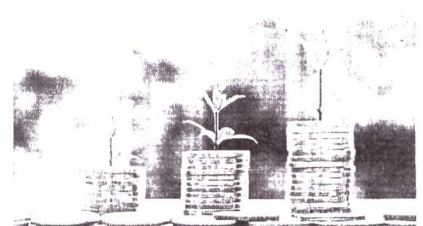
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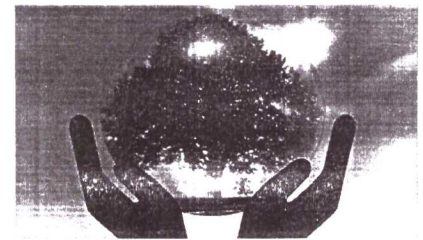
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