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The Rockefeller University

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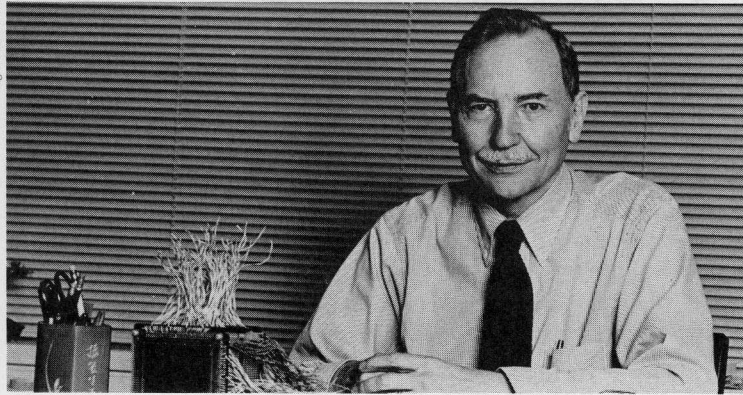
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news & notes

January 10, 1992 Volume 2, Number 16

The Rockefeller University



Emeritus Professor Floyd Ratliff wrote *Paul Signac and Color in Neo-Impressionism*, which explores the use of color in art.

Flu season arrives with a vengeance

The flu has come to campus with a vengeance this season, as it has to much of the nation. Only those wise enough to have gotten a vaccine or lucky enough to have a world-class immune system seem to have been spared.

"Last month there was a particularly high amount of absenteeism at Rockefeller, much of it attributed to the flu," said Ted Rock, Employee Health Office supervisor. "Many people are reporting that it's the most severe case they've had in years."

While the flu season usually peaks from December through February, statistics from the Centers for Disease Control show that this flu season started unusually early; major outbreaks were recorded as early as September. The organization warned that outbreaks would be severe this season.

"The severity of the flu varies from year to year depending on the virulence of the virus strain," said Richard Galbraith, medical director of the RU hospital. "It's a good idea for anyone who works at Rockefeller to get immunized every

October or November. The proximity of several health facilities, including The Rockefeller University Hospital and The New York Hospital, increases the risk of contracting the illness."

Every fall Rockefeller University receives about 200 doses of an influenza vaccine from the City of New York to administer to members of the community. This year the university received fewer doses than usual and more individuals asked to be vaccinated.

"The free doses of influenza vaccine supplied by the city ran out in early December," said Rock. "When we went to manufacturers to purchase more, we found that there had been such a high demand this year that most companies were completely sold out. After a good deal of searching, we finally found a supply. Almost everyone who requested a vaccination—with the exception of just a few latecomers—received one."

For those suffering from the flu, knowing that many others have fallen prey to the virus is of scant comfort. Flu symptoms—fever, congestion, cough, runny nose, swollen throat, and aching body—can linger for days.

"I've been getting a lot of calls from sick Rockefeller employees asking me for advice," said Rock. "But once you have the flu, there's not much you can do. Because it is caused by a virus, antibiotics do nothing to counteract it. All you can do is rest, drink lots of fluids, and treat fevers and aches and pains with aspirin, ibuprofen, or Tylenol. Of course, if the symptoms become severe, you should contact your personal physician."

1992 RU Press list to debut with 'opening of an art book'

Invitations will go out next week asking scores of New Yorkers to come to the university Feb. 19 to "open a book."

The book they will "open" is *Paul Signac and Color in Neo-Impressionism*, an opus 12 years in the making by Floyd Ratliff, a Rockefeller emeritis professor who now lives in Santa Fe, New Mexico.

The event combines a traditional book party with the opening of an art exhibit, for which the Ratliff work qualifies on both counts. The handsome, full-color volume, which explores the use and perception of color in art, will be published by The Rockefeller University Press in February as the first of its 1992 book list.

Ratliff will be on hand at 5:30 P.M. that day to deliver an informal talk, "The Theory of Color and the Practice of the Artist," and to autograph copies of the book, which is lavishly illustrated with both neo-impressionist paintings and

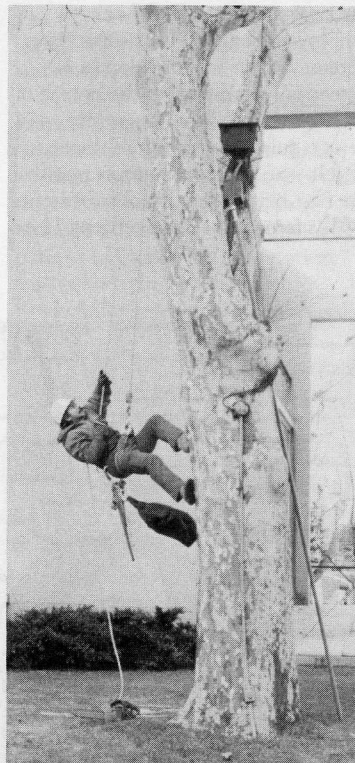
scientific drawings and diagrams. The book includes the first English translation of Signac's celebrated 19th-century monograph, "From Eugene Delacroix to Neo-Impressionism," and an extended introduction to it by Ratliff.

A reception in Abby Aldrich Hall will follow the presentation in Caspary Auditorium.

Ratliff is a physiological psychologist who came to Rockefeller in 1954 from the Harvard faculty. He had studied at Colorado College and Brown and trained at Johns Hopkins.

Ratliff was inspired to take up the research that led to this book by viewing Signac's masterpiece, "Le Petit Dejeuner," at the Guggenheim Museum more than 20 years ago. Struck by Signac's grasp of some of the most fundamental principles of the interaction of color, he built an integrated study of the development of color theory and modern painting technique.

Workers spruce up sycamores



Workers began pruning the trees that line the walkway near Caspary and Abby Aldrich Rockefeller Halls last Wednesday. Pruning will continue for about a week. Members of the Rockefeller grounds crew facilitate the contractor's work by marking off the area and clearing away the branches and wood chips.

2 Nurse by day makes music by night

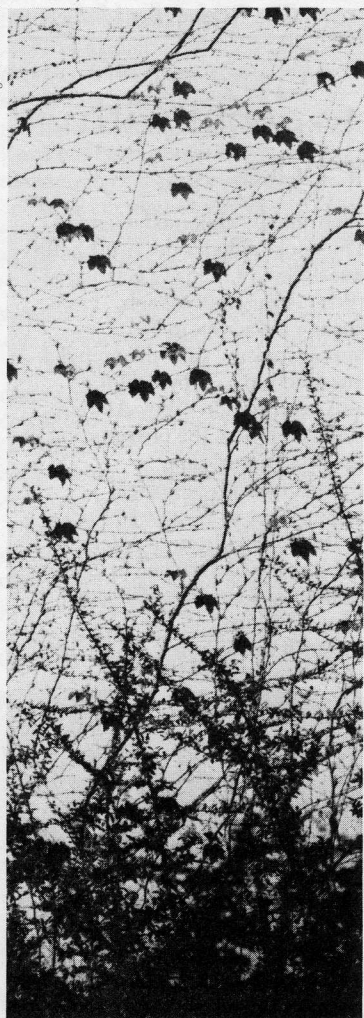
3 RU researchers examine cell cycle

4 Quiet revolution transforms library

Photo to the editor

Autumn shadows

Margaret Wortman



Margaret Wortman, postdoc in the Allfrey lab, took this photo of vines, leaves, and shadows near Sophie Fricke Hall. The small, faint forms are actual leaves; the darker forms are shadows.

RU nurse by day makes Brazilian music by night

Susan Lampert, research nurse in the Kreek lab, has the sound of Brazil ringing in her ears.

One fateful day about 10 years ago, Lampert was given an album by Milton Nascimento, one of Brazil's foremost singers. Immersed in another kind of music at that time—writing music for Off-Off Broadway shows and playing in a rock and roll band—she at first found it too different to enjoy. But after listening to the album a few times, she became completely enchanted. Lampert read the lyric sheet with a dictionary, looking up every word, and Brazilian music soon became her "obsession." She was so taken with it that she learned Portuguese.

Lampert now plays keyboard three or four times a week with *Terra Azul* ("Blue Earth") a band led by Brazilian singer and guitarist Mario De Oliveira, whom she met two years ago through mutual friends. Together they assembled *Terra Azul*'s lineup. (Lampert engaged the percussionist after a chance meeting on the subway.)



Susan Lampert (left), research nurse in the Kreek lab, plays with a Brazilian band, *Terra Azul*. She is shown here with Mario De Oliveira (center) and Mark Plank.

Behind the scenes, Lampert and De Oliveira co-write most of the band's material, which is entirely in Portuguese.

Terra Azul has played at the Cornelia Street Café and at Shutters on 34th Street. The band is also popular on both sides of the East and Hudson Rivers, gigging often at Brazilian clubs in Queens and Newark, New Jersey, which has a large Brazilian population. The band is currently recording 10 songs which will be sent to American and

Brazilian record companies. If *Terra Azul* signs a contract with a Brazilian company, Lampert's ambition to sing in her musical homeland will most likely be fulfilled.

Drawing blood samples in the Kreek lab by day and playing in a Brazilian band by night is an unusual combination, but Lampert is committed to making it work. Even after a busy day in the lab, the lure of the Brazilian beat is too powerful to resist.

Free mammography screening offered on campus

The Be SMART! mammography screening program will be on campus from Mon., Jan. 13, to Fri., Jan. 17.

"I strongly recommend that eligible women take advantage of the program," says Ted Rock, Employee Health Office supervisor. "Breast cancer will develop in 10 percent of women over the course of their lifetimes. Mammography detects tumors long before they can be felt—and early detection is still the best bet for successful treatment.

"It's free and it's convenient," he

adds. "The entire procedure, including registration, takes only about 15 minutes."

The American Cancer Society recommends that women 35 to 40 have one baseline mammogram, those between 40 and 50 have a mammogram at least every two years, and those over 50 have a mammogram yearly. Women who are pregnant or breast-feeding are exempted from these guidelines.

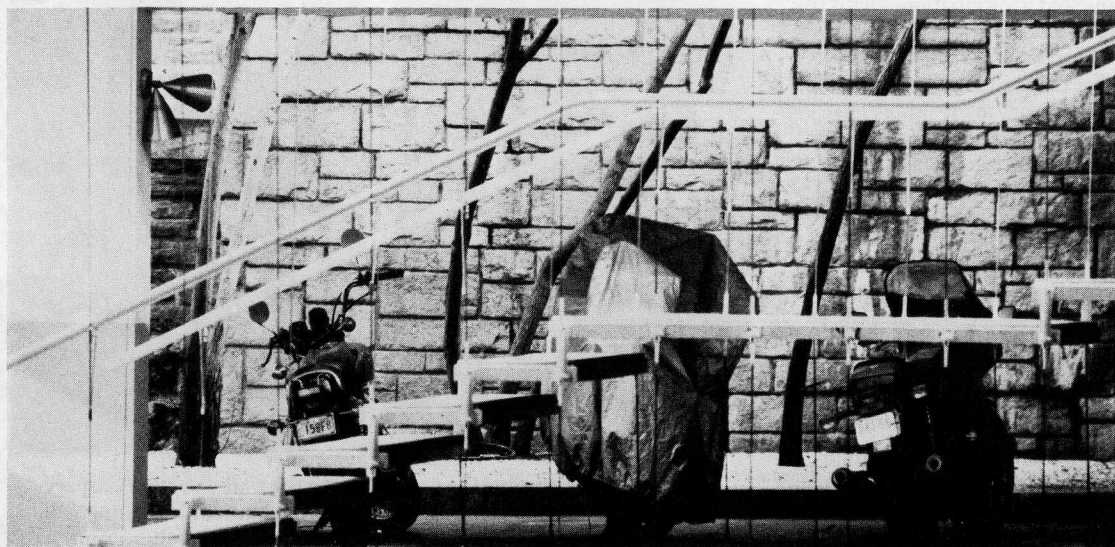
Screenings will be conducted in The RU Hospital's Radiology Department, Founder's Hall 316, by

technicians from Memorial Sloan-Kettering Cancer Center. To register, Rockefeller faculty and staff should call 1-800-8SMART8 (1-800-876-2788). While registration officially ends today (1/10), an effort will be made to accommodate those who call next week.

"Women over 35 who can't take advantage of this program should arrange to have a mammogram through a private physician," recommends Rock. "Because of a new state law, it is now a reimbursable medical expense."

Corners

Robert Reichert



Even in January, motorcycles appear to be a popular form of transportation at Rockefeller.

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Rockefeller investigators probe mysteries of cell cycle

by Susan Blum

DNA is the book of life, encoding all the instructions a cell requires to perform its specialized functions and to maintain and reproduce itself. Like any text, DNA can be read, and each cell does just that to make the countless proteins it needs.

The first step in reading the DNA text is transcription. In this process, the information encoded in a gene—a segment of DNA—is transcribed into a closely-related molecular intermediary known as messenger RNA, or mRNA. (In later steps of the DNA read-out, this information is translated into proteins.) Enzymes and specialized proteins called transcription factors interact with DNA control elements, and with each other, to stimulate transcription.

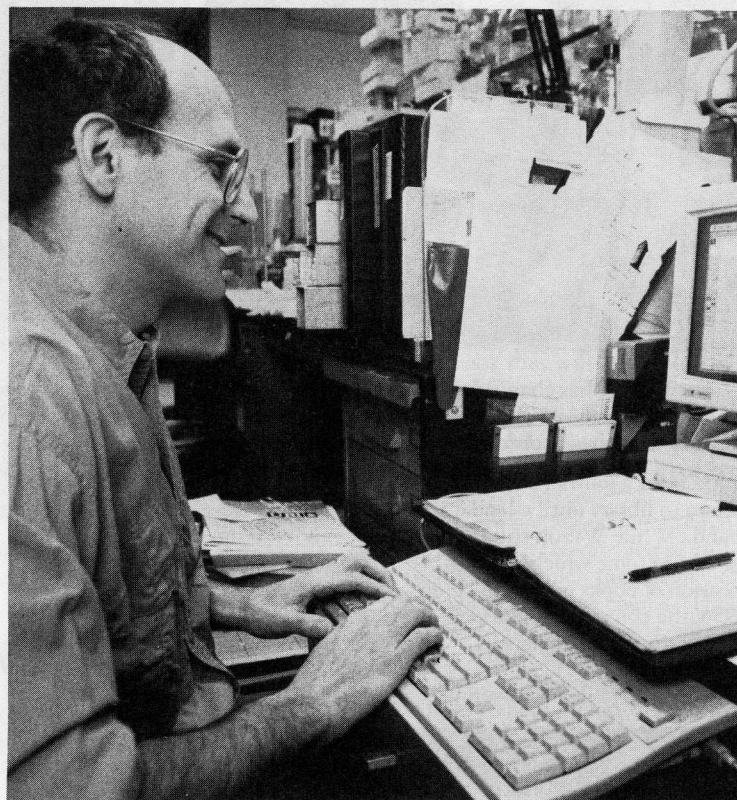
But cells are not only readers; they are publishers, too. Before a cell can divide, it must first accurately reproduce its DNA text, and then take the steps that ensure the duplicates will be correctly distributed to its two daughter cells. In eucaryotic cells—those in which the DNA is sequestered in a nucleus—the process of DNA replication and distribution is part of a highly regulated sequence of events known as the cell cycle. It is during the so-called “S” phase of the cycle (“S” stands for “synthesis”) that the cell’s chromosomes, which contain the DNA, are duplicated. During the “M” (for “mitosis”) phase, the duplicated chromosomes condense, the nuclear envelope surrounding the chromosomes breaks down, the chromosomes are evenly distributed, two new nuclei reform, and the cell’s cytoplasm divides, resulting in two new cells.

Researchers in the lab of Nathaniel Heintz are intrigued by the ways that gene transcription is related to cell-cycle events. To study these relationships, they focus on genes that code for proteins known as histones. One role of histones is to help pack nuclear DNA into units known as nucleosomes; without histones’ form-giving function, the DNA in each cell would be longer than a yardstick. Many scientists believe that, in addition to serving as genetic girdles, histones may also play a major role in controlling gene transcription by affecting transcription factors’ access to DNA.

Scientists study histone genes

Most genes are transcribed at a fairly continuous rate throughout the cell cycle, but some are transcribed at an increased rate in the S phase. Histone genes are

Robert Reichert



Neil Segil, postdoc in the Heintz lab, studies the ways that gene transcription relates to cell-cycle events.

among them. As Neil Segil, a postdoc in the Heintz lab, explains, “there is a significant increase in the level of transcription at the G₁/S border”—that is, at the time in the cell cycle when the cell becomes committed to completing the cell-division cycle and starts replicating its DNA.

To investigate this phenomenon, researchers in the lab have taken what Segil describes as a “bottom up” approach to studying the control of transcription during the cell cycle, focusing on a type of histone gene known as Histone H2B. First, they located the sequence in the gene’s control region (the site called the *octamer*) that is linked to cell cycle control. Next, they identified the transcription factor protein—named Oct-1—that interacts with the octamer region. Then, they sought to identify changes in the Oct-1 transcription factor and correlate them with particular cell cycle phases.

Two papers in the journal, *Science* (Aug. 30, 1991 and Dec. 20, 1991) present some recent findings of studies conducted by Segil and Susan Roberts, a former Heintz postdoc who has since moved on to a research position at Bristol-Myers-Squibb. The researchers found that as the cell cycle progresses, Oct-1 undergoes phase-specific changes in phosphorylation. (In phosphorylation, a highly charged substance

called phosphate is added to a protein, thereby changing its activity.) These changes may not themselves hold the key to why histone H2B genes are significantly transcribed only during the S phase. But they may help explain another aspect of cell cycle regulation of transcription.

Since the 1960s, it has been known that transcription in higher eucaryotes generally ceases during mitosis, but the mechanisms of this transcriptional inhibition have remained unknown. In studying the pattern of Oct-1 phosphorylation throughout the cell cycle, the Rockefeller researchers discovered that the transcription factor is “hyperphosphorylated” in mitosis—that is, it is phosphorylated to a greater extent, as well as in a distinctive pattern.

Why aren’t genes transcribed?

Moreover, the scientists found, this hyperphosphorylation prevents Oct-1 from binding to the H2B gene’s octamer sequence. Since transcription factors activate transcription by binding to DNA (or to other transcription factors) this fact offers a clue to why transcription may halt during mitosis.

It also offers an intriguing look into the cellular mechanics of mitosis itself. “It has been hypothesized that in order for the chromosomes to condense sufficiently

during mitosis, many proteins may have to be removed from them,” Segil says. Hyperphosphorylating the Oct-1 protein that is already bound to DNA may result in its removal from the chromosome. In this scenario, Segil says, “the inhibition of transcription is a secondary side effect of the need to condense chromosomes.” It is also possible, he speculates, that mitotic hyperphosphorylation is important for regulating specific transcriptional events that occur after a new cell cycle resumes.

Much current research into cell cycle control focuses on enzymes that catalyze phosphorylation events. One of these enzymes is a protein called *cdc2*, which teams up with other proteins, called cyclins, to nudge a cell through its various cell cycle stages. Segil and Roberts found that a *cdc2*-related enzyme may be responsible for some of Oct-1’s phosphorylation during mitosis. But that is far from the only enzyme involved in mitotic phosphorylation of Oct-1. The researchers also discovered that a particular site on Oct-1—the site correlated with the blocking of DNA-binding—is phosphorylated by an enzyme called protein kinase A, or PKA. PKA is prompted into action by a common cellular messenger molecule known as cyclic AMP or cAMP.

A new gene class is identified

This finding intrigues the researchers for several reasons. For one thing, explains Segil, it identifies a new class of genes (genes with an octamer control element) that may be regulated by the cAMP message transmission system. (One other class had been previously recognized.) For another, it throws more light on cell cycle control and its relation to transcription, since entry into mitosis is known to be accompanied by changes in levels of PKA activity.

The fact that Oct-1 is phosphorylated in a cell cycle dependent pattern makes it a useful model molecule for studying the activity of many enzymes involved in cell cycle control, Segil says. But it is not only in its role as a transcription factor that Oct-1 provides a good model. It is known that Oct-1 (as well as related proteins) can play a role in DNA replication as well as in gene transcription, so studying the changes it undergoes throughout the cell cycle may help identify the crucial checkpoints a cell must go through on its way to division, and may highlight common cell cycle mechanisms that regulate both transcription and DNA replication.

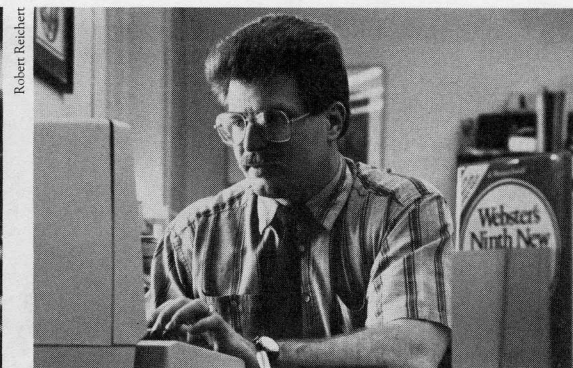
Quiet revolution transforms workings of Rockefeller library

While its dark, wood-paneled walls still convey the dignity of tradition, the Rockefeller Library has been the scene of a quiet revolution. The paperwork that used to keep track of everything from its book and journal collection to interlibrary loans has been transformed into a microcosm of digital information.

"Book circulation was the first to be automated in 1979," said Douglas Many, the Library's systems analyst. "By 1983 we were beginning a systematic effort to computerize almost every aspect of the Library."

"Technology has changed the nature of the work here," he continued. "Our methods even 10 years ago seem archaic. Today we have a leaner staff, and almost everyone is on a terminal."

John Wilson, who is in charge of interlibrary loans, now uses a computer to search for books and journals; the DOCLINE System connects libraries as far away as California and Puerto Rico, passing



Technology has changed the nature of the work in the Library, says Douglas Many (right), systems analyst. Angela Matthews (left) is one of the librarians who is often at a terminal; she uses the computer to keep track of journals ordered and received.

requests for a journal issue from library to library until a lender is found. While Wilson still finds use for a huge tome which catalogs the location of books published before 1956, the computer is indispensable for locating more modern publications.

In the past, Library personnel

could pore over printed indexes for hours to conduct a bibliographic search, sometimes without finding anything to show for the time and effort. Now Patricia Flowers can achieve results in a matter of minutes. A modem connects her terminal to a database in the National Library of Medicine. Two commercial databases, DIALOG and BRS, provide more broad-based coverage of topics from science to business. Another, Nexis, locates items in the press and popular journals.

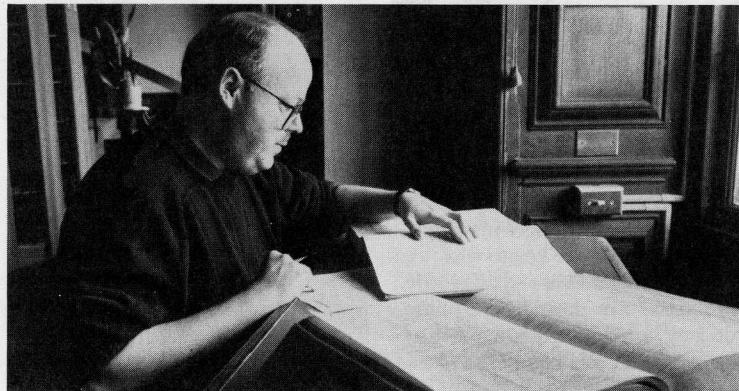
Computers also facilitate many of the administrative duties of the Library. Angela Matthews and Wilma Jacobs Dowden use the computer for journal receipt and book acquisitions, respectively. After items are entered, the computer tracks their location and automatically generates claim letters for those not arriving promptly. The computer also helps Rose Lawrence in book circulation by keeping tabs on the 500 books that

come and go from the Library each month and by printing recall and overdue notices.

"Computers save a tremendous amount of time," Many said. "But we've never let staff go because of automation; we've met our needs by reducing our staff through attrition and by retraining existing personnel. Computers do have a downside, though, and that's the price tag. Hardware, software, maintenance, and time on the mainframe are not free."

While most of the automation that the Library set out to accomplish in the 1980s is complete, the library continues to look toward the future.

"We're still reviewing ideas and suggestions," said Many. "More and more information is available electronically. But while we want to keep pace with technological progress, we also want to ensure that the Library remains accessible to individuals at all levels of computer competence."



John Wilson, in charge of interlibrary loans, still uses a hefty tome to find books published before 1956. To locate more modern books, however, the computer is indispensable.

Potpourri

Noon Recital

Pianist David Buechner will perform works by Joaquin Nin-Culmell, Manuel DeFallá, Henry Martin, and George Gershwin today (Jan. 10) at noon in Caspary Auditorium. Admission is free and open to the Rockefeller, New York Hospital-Cornell Medical College, and Memorial Sloan-Kettering communities.

Birth

Dawn Bisharat-McDonald, administrative assistant in the President's Office, and her husband Bill McDonald, are the proud parents of an 8 1/2-pound girl, Alexandra Jordan, born Sat., Jan. 4, at The New York Hospital.

Marriage

Andrea Abushady, administrative secretary in Technology Transfer,

was married to David Freiman, conductor and stage director, Mon., Dec. 30. They were the first couple to be married in Manhattan that morning.

Appointments

Guest Investigators: Cornelius Van Kessel, Cohn-Steinman lab; Albertha Welmers, Steinman lab; Takeshi Kaneko, Asanuma lab; Charlotte Andersson-Fisone, Edelman-Cunningham lab.

Postdoctoral Fellows: Jeffrey N. Wiemann, Nottebohm lab; Harold Brown, Pfaff lab.

Postdoctoral Associates: Douglas Baird, Heintz lab; Gilberto Fisone, Greengard lab.

Departures

Assistant Professors: Olli Janne, Population Council; Shelley Halpain, Greengard lab.

Adjunct Faculty: Philip Sass, Gotschlich lab; John Glushka, Agosta lab.

Guest Investigator: Bernard Grossman, E.G.D. Cohen lab.

Postdoctoral Associates: Dave Hongbin Wang, Wilson lab; Xin-Yuan Fu, Darnell lab.

Postdoctoral Fellows: Gary Truett, Hirsch lab; Jeanne Hirsch, Cross lab.

Lunchtime Film

The life and work of noted anthropologist Sir Edward Evans-Pritchard is documented in the 52-minute video, *Strange Beliefs: Sir Edward Evans-Pritchard*. The film chronicles Sir Evans-Pritchard's studies of witchcraft among the Azande and the Nuer tribes, of tribal organization, and of the influence that the beliefs of African peoples had on Western

theologians. The film will show Wed., Jan. 15, at noon, in Tower 305. Admission is free.

\$95 tickets free to RU community

Tropical forests are disappearing at the rate of 100 acres a minute. Tickets to the symposium "Tropical Forest Medical Resources and the Conservation of Biodiversity" at RU Fri., Jan. 24, and Sat., Jan. 25, could vanish as fast. Tickets—which sell for \$95.00 each—are free to members of the Rockefeller community. Contact the Deans' Office, x8086, to reserve a place.