

ENTIRE LIFE IS STERILE—

Germ-Free Calf Research Might Bring Cancer Cure

By Bob Moraczewski
A quiet, calm, sterility surrounds the four silent doctors as they give birth to a new life.

The new baby animal being rubbed dry by rubber-gloved hands inside a gleaming, sterile machine may be destined to save money, animal lives—and possibly human lives.

This newborn calf may never see the outdoors, green grass, or another animal. It will never contact a germ—unless by the will of man. However, this calf might save farmers millions of dollars and perhaps, just perhaps, help find a cure to cancer.

The calf is the result of a cattle hysterectomy research project, now in its second year. Dr. Robert Sweat, 32, a University of Nebraska instructor of veterinary science, heads the research. Similar work at the Agricultural College resulted in germ-free hogs.

The purpose of the calf research is to study three major virus diseases of cattle—pink-eye, shipping fever, and cancer eye.

Shipping fever costs U.S. cattlemen an estimated \$25 million annually. It is a respiratory disease "complex" in cattle caused by a combination or "complex" of

stress, bacteria and viruses. Stress includes such influences as dust, fatigue and fear, prevalent when cattle are shipped.

Pinkeye is a contagious disease which causes inflammation of the eye. It was first described in 1889 by Fr. Frank Billings of the University of Nebraska. Pinkeye may lead to blindness, loss of weight and perhaps to other diseases. There have been indications that pinkeye may cause cancer eye.

Cancer eye is common among older animals. It is a cancerous growth which begins in the eye, progresses in severity until the eye is destroyed. It can cause death.

Cancer eye in cattle is similar to human forms of cancer. Sweat is doing a preliminary study on the animal cancer to examine the relationship.

"The hysterectomy calf may someday prove to be an effective tool for cancer research," Sweat said. The University of Nebraska College of Medicine provided \$2,500 from an institutional Public Health grant to provide the calves.

The hysterectomy calf is an excellent tool in animal disease research. "It serves as a testing agent," according to Sweat. Producing a calf in this manner costs about \$250. A conventionally born calf costs \$30.

The production of the hysterectomy calf is, however, an exacting process. A cow is killed when she is nearly ready to give birth to her calf. The cow's uterus, which contains the unborn calf, is removed.

The 140 pounds—calf and uterus—are placed on the slanting table of the hand-made delivering machine. The uterus and calf are dipped into a pool of disinfectant, past through an airlock, and into the sterile interior of the machine.

Now, the doctors work swiftly. The calf has not had access to air since it was separated from its mother. The doctors place their hands into the sterile gloves which are part of the machine. In less than one minute, they have removed the calf from the uterus, tied the umbilical cord and painted the navel with iodine.

The calf gulps his first breath of filtered air. It will never breathe anything except filtered air.

After being alive about 40 minutes, the calf is usually feeling too important to be kept in a tin machine. So, he drops from the sterile-hooded machine into a sterile box. The box is wrapped in a sterile sheet and the package is delivered to a sterile laboratory.

The boxed calf is met at the lab's airlock by a technician.

He takes the calf to a 12x16 foot room. This aseptic room is where the calf will spend its entire life.

The temperature of the room is kept at 90 degrees during the first few days of life. The filtered air pressure is kept constant.

The humidity of the room is kept at a high level. This prevents a tough tissue from forming on the undeveloped air sacs in the lungs of the premature calf. The development of this tissue results in the same type of ailment that caused the death of President and Mrs. Kennedy's baby boy.

Now, the calf is ready to earn his keep. Dr. Sweat follows Koch's Postulates in the disease research:

- 1. Find and isolate the organism which causes the specific disease in an infected animal.
2. Grow the organism in an artificial culture.
3. Inoculate a healthy animal. The experiment is successful if the animal will get the disease.
4. Recover the same organism from the diseased animal.

The completion of Koch's Postulates is considered as definite proof that a particular organism causes a specific disease. Then a vaccine can often be developed to counter the disease.

Using this principle, Sweat injects a tiny virus culture

YG's Hear Founder

National political figure, Mrs. Truman Wood, past president and founder of Gold for Goldwater, assistant-chairman of Nebraskans for Goldwater and Freedom Foundation Award winner, will speak on Communism, Tuesday, March 3, at 7 p.m. in the north and south conference rooms, Student Union.

The event will be sponsored by the University Chapter of the Nebraska Youth for Goldwater Club. The public is welcome to attend.

Campus Calendar

TODAY UNICORNS will meet at 7 p.m. in 235 Union.

TOMORROW YOUTH FOR GOLDWATER will meet at 7 p.m. in the Union.

AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS, student branch, will meet at 7 p.m. in 206 Ag. Engineering building.

into a hysterectomy calf. Any changes in the calf's health are directly related to the injection because the calf has never contacted any other germs.

Last year Sweat completed all four steps with two agents in his pinkeye research. The next step is to find any other agents that may be involved and develop a vaccine for pinkeye.

Sweat records his data in a blue notebook and takes colored slides of any visible changes in the calf's appearance.

His dates will include a tissue analysis of infected body cells. Sweat, who has an office wall filled with degrees, licenses, and certificates, drives 100 miles to and from Omaha twice a week to learn how to use the electron microscope at the Appley Institute. He plans to examine his experimental results by doing his own complicated tissue analysis.

Sweat, who is rarely seen without a white technician's coat, says that his research is "really getting started now."

In 1964, 11 hysterectomy calves will be used in the study. In 1963, eight hysterectomies were performed. Six of the calves survived and three were successfully raised. "This year will be much better," Sweat predicts.

The disposal of manure was the biggest problem encountered in last year's experiment. It had to be removed, but traffic through the pens had to be kept at a minimum.

How does a scientist solve a problem like this? The researchers found and fed a high-energy, low-fiber ration. Then, water pressure from a garden hose pulverized the resulting manure and sent it down the drain.

"The experimental animals are quite happy in their controlled environment. They don't seem to suffer any psychological problems, although they are isolated," Sweat said.

Sweat has received \$26,081 in public health grants and \$18,400 from Corvel Inc. and the Eli Lilly Co., Inc. for his studies to date.

Where will this cattle hysterectomy research end? No one is sure. A similar experiment with pigs resulted in Specific Pathogen Free (SPF) hogs.

Research on SPF hogs was started by Dr. George Young and Norman Underdahl. Both men are now with the University of Nebraska department

Faculty's Art On Display

The 1964 public exhibition of works by the University's art faculty opened over the weekend in the auditorium of Miller and Paine.

The works of eight faculty members, primarily oils, water colors, casein, intaglio, and bronze sculpture, will remain on exhibit until Saturday.

Two new members of the department are exhibiting their works for the first time in Nebraska. They are:

—William Saltzman, on temporary assignment replacing Richard Trickey, assistant professor, on leave. Saltzman is a well-known American muralist and former director of the Rochester, Minn. Art Center.

—Thomas P. Coleman, instructor. Coleman's works have been exhibited in a number of national shows, and are included in the collections of the Library of Congress, the St. Louis Art Museum and the University of Kansas, where he studied for his master's degree.

Other art department staff on display include: Duard Lagging, chairman of the department, Gail Butt, Thomas Coleman, James Eisentrager, David Seyler, Thomas Sheffield and Richard Trickey.

Baubles—

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To be gained by such trade. Secondly, there has been speculation on a consumer boycott imposed by the people of the U.S. with the encouragement of our government. Such a boycott would include such things as Triumph autos and French perfumes. As yet, however, the government has had nothing to do with such a plan.

Let us not forget also that it is an election year, a highly unlikely time for candidates to press issues which would incur the wrath of our allies.

What it all amounts to is this; that the U.S. has gotten itself into a rather potty mess, and it is unlikely that we will extricate ourselves from it, at least until elections are over. Even more probably, it will be another decade before our general foreign policy is cleared of the ambiguities which allow such a problem to come into being.

For right now, however, the problem is how do we discourage our allies, trade with the Communist bloc while we, witness the sale of wheat to the Soviet Union, indulge in it ourselves.

Politics—

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premises about the underdeveloped countries, including the premise that they all need and wish industrialization. We ought to hear much more about our own "military-industrial complex," and whether or in what degree we could safely disarm. We need a realistic picture in our heads about the coming American age of leisure, and clarification of the maddening problems of how we shall manage to live comfortably with one another in our cities, and how we shall prevent the total destruction of the beauty of our landscape.

The shaking of hands is not going to win the presidency, for anyone. What will win — what should win it — will be the offering of a new vision of Americans within their new society and of America within a new world.

In the very recent time of Pope John and John F. Kennedy, a new vision was beginning to take form and substance. It must not be allowed to fade away into the misty mists of good intentions.

Wing-Ding Slated

The purpose of this column, which will appear every Monday, is to give the reader an insight to the goings-on in the Union for the following week.

For example, those readers that have recently joined the OACC (Organization for the Abolishment of Campus Cops) will be very much intrigued by the Foreign Film presentation of the "Wrong Arm of the Law" starring Peter Sellers this Wednesday evening at the Nebraska theater.

Shows are at 7 and 9 p.m., and for those who live anywhere west of 27th Street, the weekend film of "Cowboy" at the Union small Auditorium, Friday and Sunday, will hold a special meaning. Shows are at 7 p.m. and 9 p.m.

For those who frequent such events, there is a real wing-ding going on Friday night... in the Union. No, it's not a drastic change in policy, it's the Folk and Jazz Wing Ding of the Ford Company Road Show, starring Nina Simone and the Herbie Mann Sextet. Besides the main attractions, one may listen to the

Moonshiners (they sing) and the folk song satires of Ron Elliron. In addition to this, there are 50 Capitol record albums that will go as door prizes. But the best deal for anyone without wheels, (or just about) is this: on this road tour the Ford Motor Company is giving away five 1964 Ford Falcons. One may find out more by attending the show at the Ballroom Friday night at 7 p.m. Tickets are \$1. Reserved seats are \$1.25.

By Bill Harding

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