KANSAS STATE UNIVERSITY

AG STUDENT

MARCH 1968

Coeds in the Little American Royal . . . Page 6

The Missing Ingredient . . .

Personal Concern

By Joan Sistrunk

IF THERE are high school students in your home town who could benefit from attending college, but who are definitely not considering it or are uncertain about going, there may be many reasons for their reluctance. Insufficient finances, parental influence, lack of knowledge about the benefits of a college education, and lack of self-confidence may all play a part in the motivation of such young people. In spite of the obstacles, however, some worthwhile student may be able to realize his or her potential in college—if *you* supply the missing ingredient.

"Who, me?" you may wonder. "What could I do?"

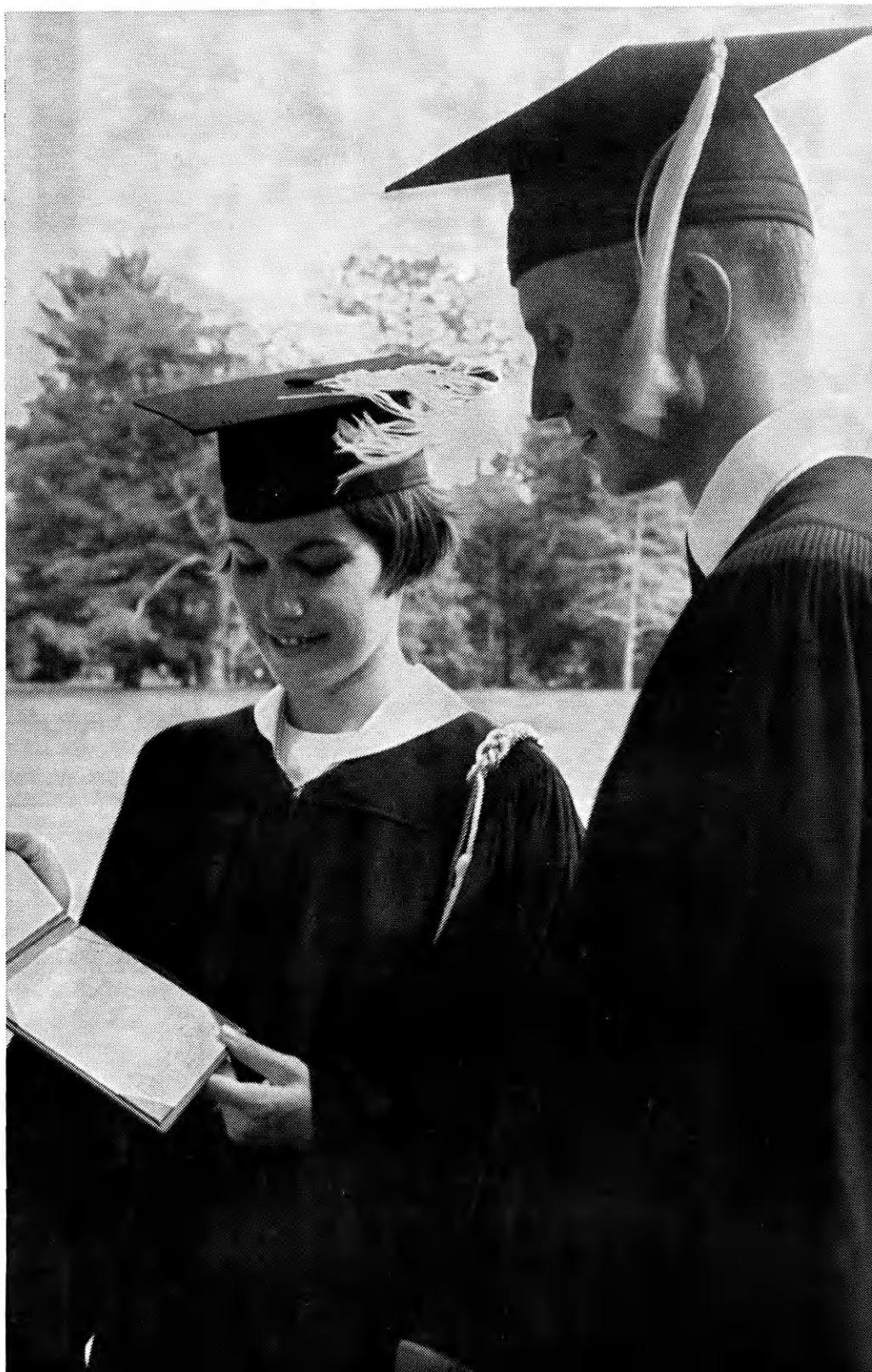
The answer is deceptively simple: let the student know you are interested in him, that you care about the plans he would like to make for his future. The missing ingredient is *personal concern*. And research findings prove the importance of "somebody caring" in the college aspirations of capable high school students.

Studied 10 Communities

A recent study comparing 10 rural communities of low-income Kansas counties has found that some small high schools send as many as 90 percent of their graduates to college, while other similar schools send a very small percentage or even none to college. There are significant differences in attitudes of people living in "High" and "Low" communities, attitudes which evidently influence some students to work toward college, and other students not to try.

For example, many high school students in the 10 communities studied said they could "afford to go to college—with sacrifices." However, in most "Low" community schools, such students said they were *not* planning on college; while in most "High" community schools, similar students said they had definite

Whether or not the graduating high school senior continues his search for knowledge may depend on the enthusiasm shown by his hometown college friends.



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About the cover—K-State coed Jule Kopp, from Fairview, Kansas, takes time off from books to put in some outside-the-classroom time grooming her dairy heifer. Jule is one of several coeds who will participate in the 40th annual Little American Royal. She and the other coeds featured on pages 6 and 7 demonstrate the fact that there's more to showing livestock than just hanging onto the halter.

Editor ..... JOHN GERSTNER
Adviser ..... LOWELL BRANDNER

plans to attend. Making financial sacrifices to afford college seems to be a deterrent to some students, and a stimulus to others. The difference appears to be in attitudes, not in ability to pay.

Consider Education a Luxury

Interviewers questioned high school students, their parents, teachers and selected community leaders, and found many other differences between "High" and "Low" communities. In towns where students felt most townspeople were *indifferent* to young people and their needs ("Low" communities), emphasis on "becoming a success" was also slight. Opportunities for recognition of accomplishments, such as student clubs and activities and newspaper coverage of school events, were few in "Low" communities. Many students reported poor communication with their families, or at least lack of encouragement.

Adults, in general, from "Low" communities often considered higher education a luxury for most boys and especially unnecessary for girls. In contrast, most townspeople in "High" communities (where high percentages of high school graduates went on to college) seemed to feel "becoming a success" was important, and they displayed more active interest in their schools and young people. More opportunities existed to experience feelings of "belonging" and to gain recognition for accomplishments through school and community activities. A college education in "High" communities was valued more for both boys and girls, and many of the adults, themselves, were better educated than those in "Low" communities. Students, usually college-bound, reported family communications to be close, especially when important decisions were made. "High" community adults, as a group, were much more optimistic in their general outlook on life than "Low" community adults.

Encouragement Needed

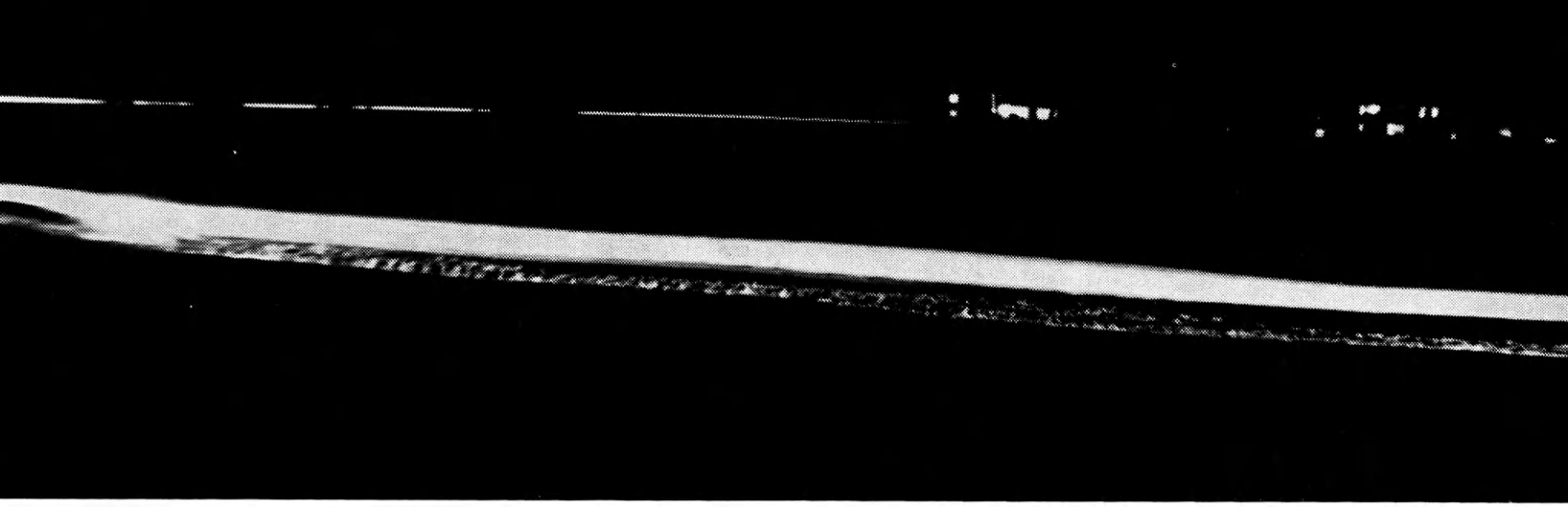
In other words, strong evidence points to the fact that, in communities where young people are encouraged and their accomplishments are valued, they will tend to aspire to higher educational and occupational goals. When you stop to consider what prompted *you* to come to college, you undoubtedly think about someone who encouraged you, who was interested in your plans for the future, and who had confidence in your ability to succeed. Perhaps it was one or both of your parents, but it might also have been a teacher, a relative, a family friend, or someone already attending college who took an interest in you. Maybe all these people encouraged you, and if so, you know that your initial fears and worries counted much less than your enthusiasm over your decision to attain a college education.

Other research on college students has shown that they hope to improve society. Encouraging capable students to continue their education is one way to do it.

In Your Hometown

In your home town, there may be several students whose abilities are higher than their aspirations, and who feel most people they know are indifferent to their need to achieve. Perhaps your personal concern will supply the "missing ingredient" and help them set new goals to accomplish.

You can start while you are at home during weekends or Easter vacation. One way is to promote discussions with high school students of the pros and cons of attending college, the value of college experiences, and practical tips for "making it" in college, regardless of the colleges they choose. If they express interest in Kansas State University, you might make it a point to invite them to visit you some specific weekend. At that time, introducing them to professors working in a field of the students' particular interest would perhaps give them some answers, plus a worthwhile glimpse into the academic side of college life. Other ideas along this line may occur to you, with your friends' needs in mind. The important thing is the *personal touch,* the quality that gives meaning to your interest in someone else's success.



The eerie path of a tractor's light pierces a darkened field as agronomists study how light, or the absence of it, affects germination.

Farm at Night?

Research indicates light is a key to seed germination

By Bill Blauvelt

TIRED of the typical farm routine? Up at the crack of dawn to spend a long day working in the field.

Preliminary research at Kansas State University indicates you may get to change all that. You will rise at sundown and spend a long night, preferably a moonless one, working in the field. Here's why:

The typical field contains thousands of weed seeds per acre. Studies indicate seeds that have lain in the soil for as long as 1700 years are still viable, so many buried seeds will readily germinate when the soil is cultivated.

Light regulates dormancy

Scientists aren't sure why the seeds haven't germinated but the presence or absence of light may be the most important factor regulating their dormancy.

The germination of seeds in response to light is controlled by phytochrome, a light-sensitive, proteinlike, plant pigment.

Phytochrome exists in two forms which are reversible by exposure to light. When phytochrome is inactive, exposure to red light converts it to the active form. When it is active, exposure to far-red light converts it to the inactive form.

Phytochrome activates reactions

When active, phytochrome apparently activates specific biochemical reactions. That, in turn, apparently sets off subsequent reactions that lead to flowering, stem elongation, germination and pigmentation.

Germination-triggering waves are at 6,500 Angstrom units, or the normal red light visible in a rainbow. (There are 254 million Angstrom units in an inch.) Some seeds need only one ten-thousandth of a second exposure.

In the longer, far-red wavelengths the opposite reaction occurs.

At 7,300 Angstrom units, the bare edge of visibility, the phytochrome suddenly orders the seed not to germinate. It is the last exposure that counts.

Dr. Kurt C. Feltner, who is conducting research at K-State, thinks this is a clue to why there is an infestation of weeds in crops during some seasons and times of the year and not in others.

Germination varies with month planted

Research conducted at the University of Nebraska has proven that wild cane (shattercane) seed taken from plants sown in July has a lower germination percentage than seed from plants seeded in May or June. August-planted shattercane produced no viable seed.

The Nebraska tests didn't consider why the germination was reduced but Feltner thinks it may have been due to different light quality available in July and August as contrasted to that in May and June.

Have you noticed how weeds generally fail to germinate when a crop canopy covers the soil? It was once assumed that this was due to reduced light intensity after crop foliage shaded the area. Researchers now say it is because leaves absorb certain light wavelengths more than others. The light passing through foliage changes in quality (wavelength) as well as in intensity.

Meanwhile, under the shade

What happens under the shade of a crop canopy? Plant physiologists R. B. Taylorson and H. A. Borthwick of the USDA's Agricultural Research Service exposed seeds of pigweed, lambsquarters, cinquefoil, yellow rocket, pepperweed and broadleaf dock to sunlight, to fluorescent light and to incandescent light, all filtered through tobacco leaves.

They found most of the seeds would not germinate under the leaf-filtered light because light from the red region of the spectrum, which promotes germination, was absorbed by the green chlorophyll in the tobacco leaves. However, light from the far-red region, which inhibits germination, was transmitted freely through the leaves.

Leaves from other plants act the same way.

The duration of illumination required by light-promoted seeds is often very short. Lettuce seed needs 1 to 2 minutes of illumination while 0.1 second has a marked effect in promoting germination on spiked loosestrife.

Will it work in the field?

It works in the lab but will it work on a crop? Richard Waldren, junior in agronomy, under Feltner's direction, tried it on 10 acres of fallow ground near Tribune, Kansas.

Waldren used a disc and stubble mulch sweep to work plots of sandy loam and silt loam soils. Some were worked on moonless nights with only the front lights of the tractor being used. The others were worked in the daytime.

With some species of weeds the weed population was about the same but germination of two species, pigweed and devil's claw, was reduced 40 percent when cultivated at night.

What is the significance?

Dormancy eludes herbicides

While herbicides control many weed plants effectively, most have little effect on dormant weed seeds. Many such seeds—a cup of soil may contain hundreds—remain dormant in the soil for years until conditions favor germination and thus elude herbicides.

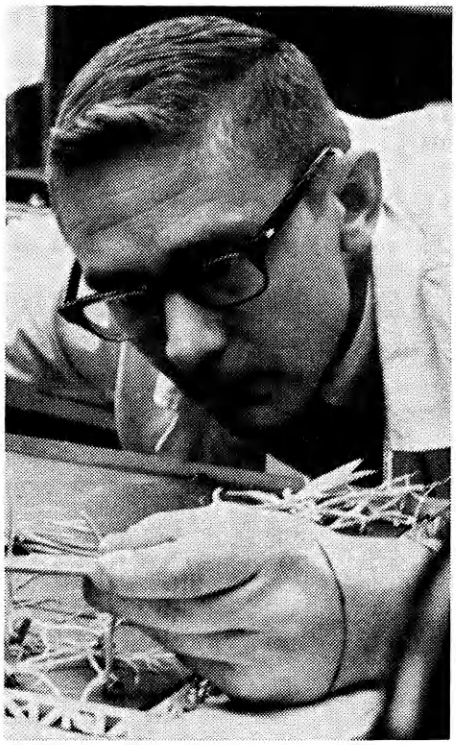
Feltner says if scientists can learn how to apply the proper wavelength of light to germinate the vast numbers of seeds lying dormant in the fields, the weeds could then be killed by mechanical or chemical means.

If light intensity and quality are that important for germination of certain seeds, he speculates, then might not these same variables be important during the development and maturity stages on the mother plants?

Since light quality varies throughout the day and season of year, perhaps maturity dates or cultivation times can be changed.

Apply light for cultivation

If an implement can be developed to expose the seeds to red light and cultivate the soil in one operation, it could be substituted for the first cultivation we now use to germinate seeds and possibly even do a better job.



Dr. Kurt Feltner

If the last cultivation prior to planting was done at night, that would prevent many seeds from germinating. Cultivation after planting is usually only to kill weeds—not, according to Feltner, to aerate the soil. It is conceivable, then, that the number of required cultivations could be reduced.

Perhaps, after planting, mulching with a filter that absorbs red light but transmits the germination-retarding, far-red light would be possible.

Ford proposes domes

The Ford Motor Company proposes in the next 50 to 75 years it will be feasible to enclose 160-acre fields with domes. Perhaps filters transmitting alternate seed-germinating and plant-maturing light wavelengths could be built into the domes.

Although phytochrome research deals with some of the most fundamental plant-growth processes, practical application of these phenomena may be far reaching.

In fact, they have already shown practical value. Florists now use short successive light treatments to control the time that chrysanthemums and several other flowering plants bloom for market, and alfalfa has been made to flower "out of season" in Arizona by using floodlights for a few minutes in the middle of the night.

Dr. O. G. Russ, associate professor of agronomy, cultivates at night.

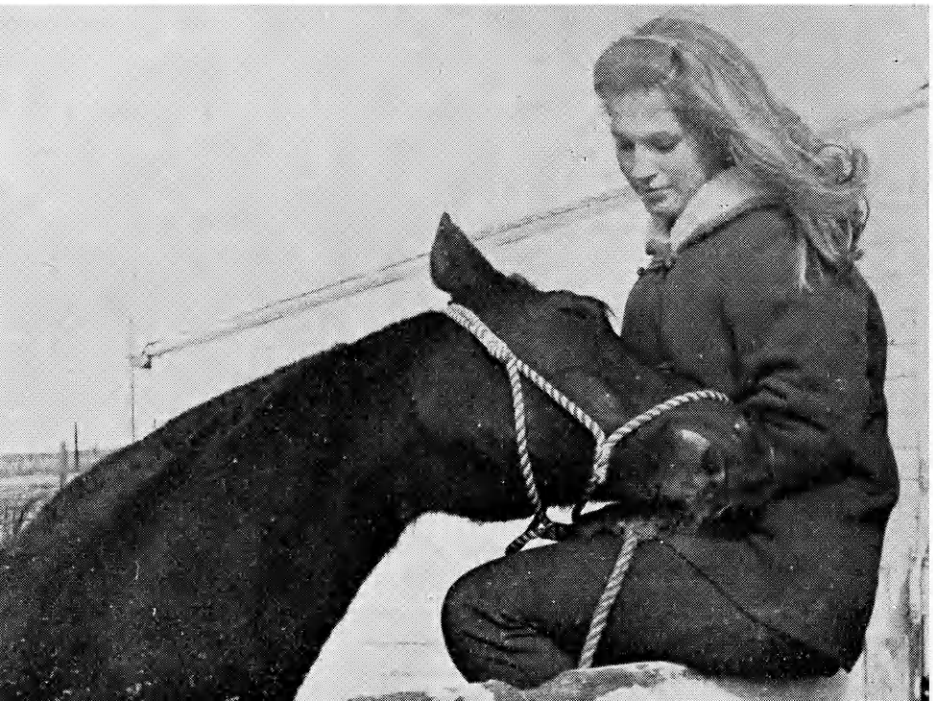
Freshman Jule Kopp adds a not-so-gentle feminine touch to an uncooperative dairy heifer.

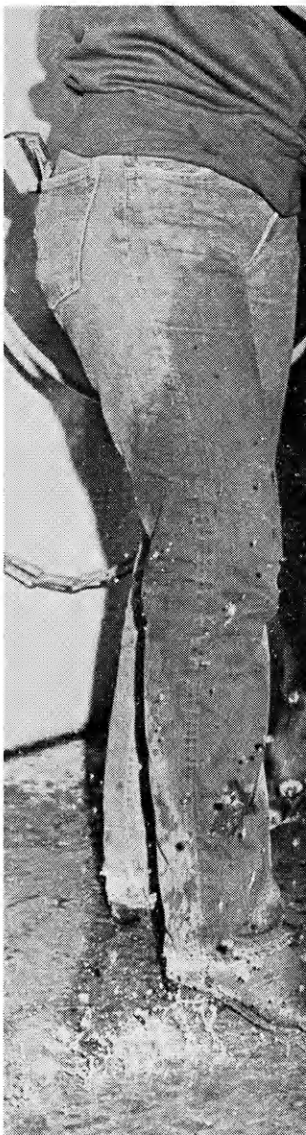
Patience, Affection, and Feminine Persuasi

Showmanship Coed Style

By Bill Blauvelt

Sherry Black, clothing retailing freshman, takes a pause.





Behind-the-scenes scrub down.

SIX WEEKS of hard work for our three pictured coeds and 173 other students will end Saturday evening, Mar. 30. That's the date of the 40th annual Little American Royal in Weber Arena.

Students from all K-State curriculums will display their showmanship finesse in competition for trophies and three $150 scholarships.

Preceding the Royal is Ag Science Day, a day-long open house for departments in the College of Agriculture. Capping the weekend's activities for K-State ag students is the annual Agriculture Awards and Honors Assembly which is set for 2:30 p.m. Sunday in Williams Auditorium.

n

Patience aids this Little American Royal showman.

Checking her beef animal for correct stance is Pat Murphy, pre-vet sophomore.

Floriculturists Predict . . .

Flower Power in Kansas

By Bob Stallbaumer, Jr.

KANSAS and flowers in the past have been about as compatible as sunflowers in a cornfield.

But floricultural experts at Kansas State University are working to change all that. Now you can grow several different flowers in any of the state's 105 counties.

Flowers have always been an excellent way to beautify your home, but the problem has been to select varieties to match Kansas' changing climate.

Zinnias and petunias in Kansas

Based on several years of field trials, K-State experts have divided improved varieties of flowers into four recommended state areas.

Among the factors determining what areas are best for the flower varieties are average annual rainfall, average daily temperature and soil type.

Average wind velocity is probably the most important factor, says William Carpenter, K-State professor of floriculture.

The four major areas of flower production, as mapped out by K-State florists, are eastern Kansas, central Kansas, western Kansas and the entire state.

"With our recommendations we do not imply that a flower variety will not grow in a given region, but that certain varieties have performed better in a particular area in our field trials," Carpenter says.

Plant recommended varieties

You don't have to plant a particular variety if you live in its recommended region, but under average conditions the recommended variety will provide an excellent flower with minimum care, Carpenter says.

K-State recommends the following varieties of annual garden flowers for *eastern Kansas* (area 1 on map):

Ageratum (6 to 12 inches high); Blue Blazer, Blue Mist, Blue Mink or Snow Carpet varieties make excellent beds.

Alyssum (4 to 6 inches) is an easy-to-grow edging plant, but it slumps in mid-summer high temperatures. Recommended varieties are Carpet of Snow, Rosie O'Day and Royal Carpet.

Balsam (10 to 15 inches) remains attractive until mid-August. Dwarf compact varieties are best; try the Tom Thumb varieties, Scarlet, Salmon Rose and Salmon Shades.

Calendula (12 inches) shows best growth and flower color during cooler-than-normal summers. Orange Coronet and Golden Beauty are recommended.

Castor Bean (8 to 10 feet); all varieties grow well, so your choice should be based largely on height and attractiveness of foliage, stem and seed pod coloration. Suggested varieties are Crimson Spire and Zanzibariensis Mix.

Coleus (12 to 18 inches); for best results, band or pot, then transplant. Seed propagation is unsatisfactory. For eastern Kansas, green, red and yellow varieties will perform well.

Heliopsis is a perennial that blooms well the first season and thrives in summer heat. Very colorful golden-yellow single or semi-double daisylike flowers provide beauty from mid-July until frost. Summer Sun variety requires minimum care.

Hollyhock (4 to 5 feet), because of its height, usually does best in eastern Kansas. Many varieties bloom erratically during mid-summer heat. Indian Spring and Triumph Supreme have performed best in K-State trials. The new double strains are very attractive and available in many colors. Powderpuffs, Double Mixture and Powderpuff Rose are best.

Flowering Tobacco (Nicotiana) is a free-flowering annual 30 inches high with scented blooms. Crimson Bedder, White Bedder and Lime Sherbet are superior.

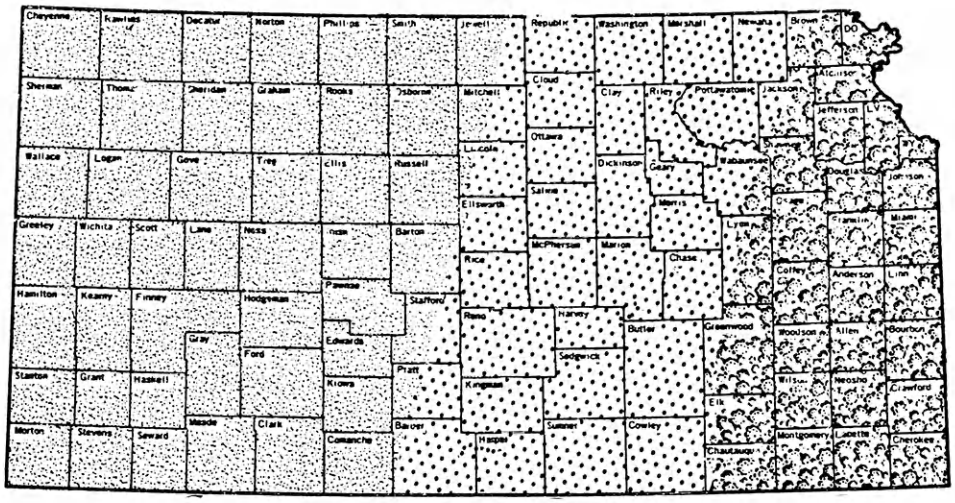
Phlox Drummondi (6 to 12 inches) is a popular and colorful bedding or edging plant. It flowers freely in spring and early fall but produces few or no flowers during hot weather. Crimson Beauty and Pink Beauty are impressive.

Coneflower's (Rudbeckia, 30 to 36 inches) Gloriosa Daisy varieties were selected as the Kansas Centennial Flower because of their abundant flowers and vigor. Best varieties are Double Daisy, Golden Daisy, Golden Glory and Pinwheel.

Periwinkle (Vinca Rosea, 10 inches) starts slowly in the spring but flowers freely the remainder of the season. Its glossy deep green foliage, fine plant form and abundance of flowers make it an attractive addition to any garden.

Annual flowers that perform best in *central Kansas* (area 2 on map) are these:

Annual Pinks (Dianthus, 10 to 12 inches) flower all summer, although



RECOMMENDED ANNUAL FLOWERS FOR KANSAS

REGION NO. 1, WESTERN KANSAS*

- Dusty Miller
- Globe Amaranth *(Gomphrena)*
- Kochia
- Marigold
- Multiflora Petunias
- Scarlet Sage *(Salvia)*
- Pincushion Flower *(Scabiosa)*
- Snapdragon

REGION NO. 2, CENTRAL KANSAS*

- Annual Pinks *(Dianthus)*
- Multiflora Petunias

REGION NO. 4, ALL OF STATE

- Cornflower *(Centaurea)*
- Gaillardia
- Four o'Clocks *(Mirabilis)*
- Pansy
- Crinkled Coleus *(Perilla)*
- Rose Moss *(Portulaca)*
- Zinnia

REGION NO. 3, EASTERN KANSAS*

- Ageratum
- Alyssum
- Balsam
- Calendula
- Castor Bean
- Coleus
- Heliopsis
- Hollyhock
- Flowering Tobacco *(Nicotiana)*
- Phlox Drummondi
- Coneflower *(Rudbeckia)*
- Periwinkle *(Vinca Rosea)*

*Flowers recommended for all of the state would be recommended in addition.

they don't produce enough flowers at one time for colorful display. Bravo (red), Baby Doll, Border Beauty Mixed and Jubilee Mixed are good varieties.

Multiflora Petunias are bushy and free flowering during hot weather; therefore, numerous varieties are recommended for central and western Kansas.

In *western Kansas* (area 3 on map) these annuals have performed the best:

Dusty Miller (8 inches); its variety, Silver Dust, has been quite good in trials for flower bed edging or to accent a mixed border.

Globe Amaranth (Gomphrena, 18 to 24 inches) is adapted for central and western Kansas because it resists drought. The dwarf varieties (12 inches) of Buddy and Cissy take wind best.

Kochia (Summer Cypress, 2 to 3 feet) is a medium-high-hedge that is light green during summer and red in the fall. Best garden variety is Kochia Childsii.

Marigold (8 to 12 inches) dwarf types are colorful and trouble-free bedding plants. The varieties Petite, Sparky, Spun Gold and Cupid grow and flower well.

Multiflora Petunias are vigorous plants that resist rain and wind. The multiflora varieties are bushy and free flowering, which suits them well for bedding.

Scarlet Sage (Salvia) is one of the best bedding annuals in full sunlight or partial shade. Reds are most popular but rose salmon, blue, purple and white varieties are available.

Pincushion Flower (Scabiosa) dwarf varieties are best for bedding, have good form and flower freely. Good choices are Tom Thumb, Dwarf Mixture and Imperial Giants Mixed.

Snapdragon's shorter varieties allow it to stand up to western Kansas winds. Snapdragons begin to flower in early summer and continue until cold weather. Best variety is the dwarf Floral Carpet series (8 to 10 inches).

Annual flowers best adapted for the *entire state* are these:

Cornflower (Centaurea); dwarf and semi-dwarf are best for areas where tall varieties require support. Recommended varieties are Little Boy Blue and Jubilee Gem.

Gaillardia is a perennial that flowers the first season. The Lollipop Series are compact, with double flowers that perform well.

Four o'Clocks (Mirabilis) are well adapted to Kansas' summer climate, but the many flowers produced are closed part of the day.

Pansy (10 inches); banded plants do well in shaded beds from May to mid-July. Some newer varieties like Majestic Giants, Mammoth White and Show Mixture resist heat well.

Petunias (12 to 24 inches) are the most dependable free-flowering and popular annual garden flowers in the United States. F_1 hybrid varieties are best in Kansas.

Crinkled Coleus (Perilla, 18 to 24 inches) is easily grown in full sun. It requires water but limited attention otherwise. It has attractive purple-black and green foliage. Burgundy and Fancy Fringe are excellent varieties.

Rose Moss (Portulaca, 3 to 5 inches) is a low-growing annual that is very tolerant of hot, dry weather. Its flowers are closed in the late afternoon and evening. All varieties perform well.

Zinnias are a large and popular group of annuals. All types do well in Kansas.

"Buy your flower seeds from your local garden and floral center," Car-

(Continued on page 10)

Mysteriously

Western Kansas Leads State in Beef Gains

By Jerry Engler

THE BEST beef-producing area of the state has long been disputed among Kansas farmers and ranchers. After five years of study by Kansas State University scientists, Dr. Draytford Richardson, animal science and industry professor and head of the project, says the trend is for higher beef gains in western Kansas.

In addition to Manhattan, experimental feedlots were located at the Colby, Garden City and Mound Valley branch experiment stations. Uniform concrete lots and sheds were used at each location.

Animals for the project, averaging 475 pounds each, were purchased from the same commercial herd to insure close genetic background. At each station they were subdivided into two lots of six animals each. After being fed, they were slaughtered at the same Wichita packing plant.

For the first four years animals were fed sorghum silage free choice and 5 pounds of second-cutting alfalfa hay per head daily during the wintering phase. As sorghum grain was added for the finishing phase, the silage was gradually decreased until grain was self-fed. Salt was the only mineral added. All feed was locally grown in the areas of the stations.

Gains ranked by location

Satisfactory economical gains were made at all locations, but in total gains the stations ranked in this order: Garden City, Colby, Manhattan, Mound Valley.

In general, Richardson said, wintering gains at Mound Valley were higher than at the other stations. But, during the summer and fall finishing phase the other stations had higher gains and Garden City took the lead.

Richardson said differences in local feed and climate were factors that could influence weight gain. Analysis of feeds of the different areas indicated significant differences in protein and carotene (vitamin A). But, difference in animal performance due to nutrient differences was not detectable.

Correlation of animal growth with local weather showed that 5.6 percent of the rate-of-gain variability could be attributed to temperature, rainfall and humidity.

Molybdenum affects gains

Several ideas have been advanced to explain the difference. One is that Mound Valley area soil has a higher molybdenum content that slowed weight gain. Molybdenum is a mineral essential to plants and animals in trace quantities, but it is toxic to animals in large amounts. That idea was supported when two sick dairy cows were given a copper treatment standard for molybdenum toxicity. One cow died, but the other responded, and recovered.

Richardson thinks climate may play a more important role than the 5.6 percent variability indicates. For instance, eastern Kansas, although not so hot as western Kansas during the day, does not cool down as much at night either. A person feels better the next day if he slept in a cool room rather than a warm, muggy room; perhaps cattle respond the same way.

Most likely, the differences in weight gain are due to many factors involving the climate and one or more nutrients. Richardson says it is unlikely that any one factor alone produced the differences. He plans more detailed analyses of the feeds, using an atomic absorption spectrometer.

For the past year all four locations have been using feedstuffs produced at Garden City. That should eliminate all but climatic differences. It is too early yet to determine anything significant from the new data, but Richardson plans to continue the analyses and more experiments.

Flower Power in Kansas

(Continued from page 9)

penter said. "They follow recommendations for your local area and have the best seeds for your area.

Don't choose flowers from pictures

"Many failures result from selecting flowers from photographs, rather than following recommendations."

You will have better luck if you select flowers recommended for your area and use proved varieties, Carpenter said, and, of course, take care of them.

"Some people plant flowers recommended for shaded areas in the sun and flowers recommended for sunny areas in shade and wonder why they don't blossom."

K-State has flower test plots at Mound Valley, Topeka, Manhattan, Hays, Colby and Garden City.

The sunflower need not be the only flower you see this year. Get the flowers suited to your conditions, take care of them, and enjoy them.

More Extracurricular Learning

THE COLLEGE of Agriculture's move to reduce the number of hours required for graduation from 136 to 132 is a step in the right direction. A further cut in hours required, to say 124, should be considered, however.

As it is now, the grade-pressured undergraduate wages a four-year battle for a degree which, in many cases, leaves little time for the outside-of-classroom education that can be more important than that furnished by books and lectures.

Since the agricultural major is designated a four-year curriculum, the draft law requires that one-fourth of the total hours be satisfactorily completed each semester for the student to maintain a 2S deferment.

Unfortunately, many students are thus forced to choose between studying and a wide realm of extracurricular learning experiences such as joining clubs, attending cultural programs, reading, and just thinking.

Technical Obsolescence Threatens Grads

A recent study by Careers Incorporated, a college-graduate placing firm, reveals the somewhat startling fact that one-half of 20,000 educated, work-experienced, technically trained scientists and engineers wanting to change jobs couldn't because they weren't wanted by any companies.

The reason: "technical obsolescence," meaning what they learned in school is no longer needed today.

"A realistic—if brutally frank—recruiter might well tell you that 25 percent of the graduating engineers this year are already technically obsolete," the report says.

Of course engineers aren't the only students affected. Certainly agriculture graduates, working in one of the most dynamic and changing fields, must be wary of the problem, too.

College Expenses, Salaries Increase

DID YOU know that a senior in college must spend 15 percent more for tuition, books, fees, board and room than he did as a freshman? But on the credit side of the ledger, starting salaries are up 25 percent in the same period.

KANSAS STATE UNIVERSITY

AG STUDENT Viewpoint

By John Gerstner

Another Banner Year for K-State Ag

IT LOOKS like another banner year for K-State's College of Agriculture and ag grads. First semester enrollment topped 1200 students, up 500 from 1963. That's a 10 percent increase from last year, again the largest increase of all colleges at K-State.

Demand is up also. An average of 2.1 jobs are available for each K-State ag graduate, up from 1.7 in 1963. And salaries have also mushroomed. Average starting salaries have risen from $480 in 1963 to $632 per month (nearly $7,600 per year) in 1967.

GROWTH . . .

There's plenty of it
in agriculture.

Like the tiny seedling
pushing toward the sky,
today's agriculture is
bursting its buttons with
technology and mechaniza-
tion, expanding in every
direction.

The new agriculture needs
your training, your ideas.

For continued growth.

Kansas State University

College of Agriculture