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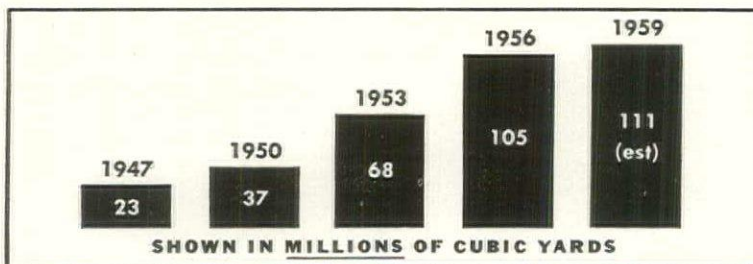
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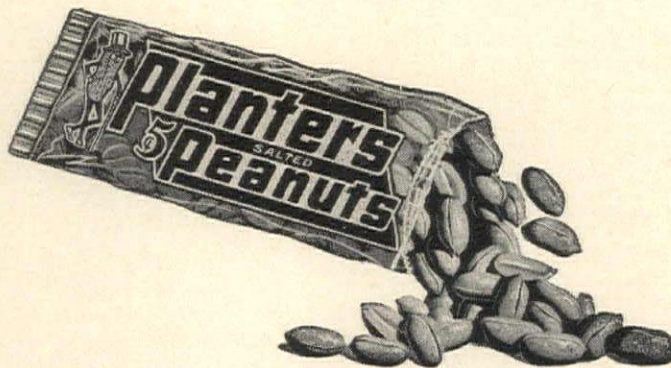
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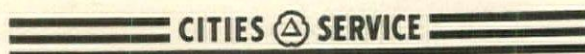
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APRIL 1960

NUMBER FOUR

THE ROOT OF THE MATTER

SECOND OF TWO PARTS

by CLIFFORD DOWDEY

THE SOCIOLOGICAL experimentations, which we shall soon see extended into the arena of presidential nominations, only superficially concern the revived issue of the Negro. Beyond the Negro, the various issues in social experiment reflect a certain vacuum in the realm of deep convictions, of true causes that have grown to meet the needs of mankind and prepare the way for a better tomorrow.

The only potential candidate whose religion is an element is regarded in some quarters as a liability because he has a religion. No Protestant candidate's religion is regarded as an asset. In terms of the spiritual forces of religion, then, man's relation to God is not a positive consideration in selecting political leaders, nor has it ever been in the history of this country. The people's sensibilities would probably be offended by an avowed atheist, but if he kept quiet about it nobody would know the difference. The people are not seeking leaders who represent a religious force, and this is true of the whole Western civilization of which we are a part. Whatever the private faith of individuals in America and Europe, religion has long ago ceased to be a motivating force in political entities.

Aside from religion, and nationalism (with its expression in wars), the other great forces in the past grew out of ideas designed to change the status of mankind in relation to his environment. During the nineteenth century, a time of the stirrings of revolt in Europe, the Marxist attack on capitalism represented one of the most definite ideas which, designed to meet needs, offered a course of action.

The ultimate result, in Russia, led to a totalitarian society with inequities and cruelties as great as in the replaced system. However, the appeal to intellectuals and leaders in segments of all societies caused a strong advocacy of the general principles of Communism throughout the Western World. The economic basis of Communism was joined around the time of World War I by various idealistic notions about the "New Freedom" and the "New Spirit," which were essentially assertions against the repressions of the Victorian Age. Under the stimulus of the Depression the ideas around the Communistic economic concept coagulated into a single and powerful force.

It is possible that a number of the expediencies used by Roosevelt in his first term provided a brake to the momentum of this force. By then intellectual spokesmen had largely identified the sociological force entirely with the Communism of Soviet Russia, and World Communism from the capital at Moscow became the goal. At this stage, in the thirties, this Cause was clearly in conflict with both the American character and nationalistic interest; but, as the intellectual cause-joiner is chronically a rebel, it seemed fit and proper to be against the *status quo*. This opposition to the conservative position became a matter of pride, even snobbery, and no one could be intellectually fashionable without at least leaning to the "Left."

After the unnatural alliance between Russia and America ended with World War II, the succeeding behavior of Soviet Russia placed the

(Continued on page 42)

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COVER NOTE—Shoots of young spring oats, growing in January under the artificial light and heat of the State Department of Agriculture's seed climate chamber, seem to symbolize the impact of science on the farmer's crops—and on the farmer.

VIRGINIA RECORD wishes to express its appreciation to the Virginia Department of Agriculture for the preparation of the editorial matter on agriculture in this issue and for supplying the photographs.

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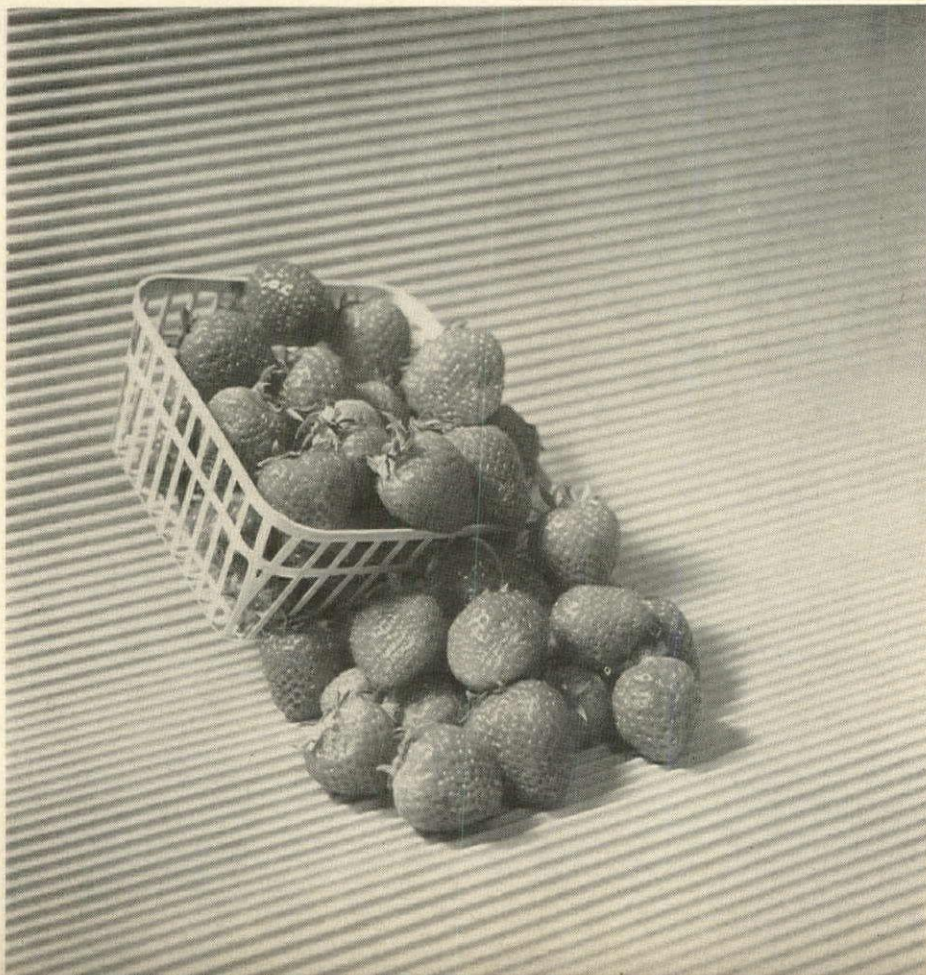
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CHARLOTTESVILLE, VA.

FARMER JONES: PRACTICAL SCIENTIST

The best of crops needs a package to help make the sale to Mrs. Consumer.



WHAT'S YOUR BET for the profession that requires the most knowledge? Aeronautical engineering? Jet propulsion? Analytical Chemist? Doctor? Lawyer? Indian Chief?

You will probably lose your money on any one of them. Because the man today who needs the most precise scientific knowledge on the most subjects is probably the farmer.

Gone is the day when a man with a strong back and a love of the great outdoors could make a living on the production side of agriculture. The successful farmer today must use his head much more than his hands or back.

With tremendous technological advances and constantly shrinking margins of profits, the successful farmer today must be a combination veterinarian, nutritionist, agronomist, mechanical engineer, architect, and construction superintendent. Above all, he must be an uncommonly good business man with a wealth of common sense.

Suppose today's farmer is in the poultry business, raising broilers. His place of business may be hardly a farm at all in terms of the size we normally think of in connection with a farming enterprise. Just a few acres are enough, in fact, sometimes the fewer the acres the better. Our modern broiler grower must carefully plan first of all, his housing operations.

Because the old chicken house isn't a chicken house any more—it's a scientifically designed factory for turning out so many pounds of broilers on so many pounds of feed with as few hours of labor as possible.

Before science and technology hit the broiler business, a man and his family were hard put to handle a couple of thousand birds in the houses and with the feeds and the birds themselves of that day.

Today a good poultryman can handle thirty or forty thousand broilers, but he must be many things to set himself up to do it.

First, he must select the type of building. It must be large enough to handle economically, say five to ten thousand birds at a time. He must design overhead conveyors for automatic feeding. He must provide the proper number of waterers per thousand birds. Above all he must have proper ventilation and proper heating, because unless he keeps his mortality way down, there will be no profit at the end of the batch of birds.

Tour the broiler areas of Virginia, and you can see what today's scientific poultrymen, together with the researchers in our experiment stations and

feed company installations have come up with to meet the housing problem. Pole type buildings with scientifically designed trusses to cut down construction cost, aluminum roofing to keep down the heat that kills the birds, ridge ventilators the length of the long houses to keep the hot air flowing upward, windows that can be opened and closed by turning one handle at the end of the building, double doors at each end to let in a tractor and scraper to clean out the house after each batch of birds.

In the same areas you can see experiments at even more efficiency—special slated wooden floors to combat the problem of dampness and consequently disease in the droppings, different designs for feeders to lick the problem of waste. Feed today is nearly 90 per cent of the cost of growing broilers and a good poultryman spends many hours with pad and pencil trying to cut down what the birds themselves seem to waste. On slated floors, for instance, feed costs are higher because the feed scattered by the birds themselves drops through the slates and cannot be retrieved.

After the house, comes the type of occupant. A chicken is no longer a chicken in today's poultry business. First off it is either a production type bird bred for egg laying or a meat type bird bred for quick maturity with lots of meat on legs and breasts. Within these two big divisions of the chicken family, are dozens of smaller units, broilers that do better in colder climates or in warm southern exposures, hens that perform better under one set of conditions or another.

Once a good broiler grower has picked his breed, he knows that he must bring that bird to market within a range of perhaps two or three weeks, because a broiler, bred like a race horse to mature at eight to ten weeks, may be all legs and neck three weeks to a month later.

But the bird and the house he lives in are only the beginning of the problem. The most care of all must be taken with the feed, and today's commercial feeds, delivered in bulk by trucks, and augered up into huge bins, is formulated like a prescription. It must have the proteins, vitamins, and minerals, not just to keep broilers alive but to bring them to market in the shortest possible time and with the minimum of feed consumed. This combination of specially bred birds and specially prepared feeds has enabled Virginia's broiler growers in just the last ten or 12 years to reduce the amount of feed necessary to produce a pound of broiler from about four



Generations of hybrid corn breeding are needed to produce ears like this.

pounds to in many cases less than two pounds.

But the feeds must do more than feed. Highly bred broilers, run together in a huge house, with often no more than a square foot per bird of floor space, are especially susceptible to disease. In fact, C. W. Wampler of Harrisonburg, patron saint of Virginia's turkey industry, says that if anything puts our state out of the poultry business, it will be diseases.

To lick the problem, baby chicks are vaccinated against Newcastle disease and treated for a number of other diseases. They are even de-beaked to prevent pricking among the birds which bring on mortality rates too high for the poultryman to live with.

In today's prescription feeds are sometimes as many as 20 or 25 separate drugs, preventive medicine on a wholesale scale, including growth stimulants as well as specific preventives for the innumerable diseases that poultry seem to be heir to.

Even with all this, poultrymen may awake one morning to find his birds coughing. There must be a quick diagnosis of what is wrong, either by the poultryman himself, the field man for his contractor, or a veterinarian, and then still another drug added to the feed or the water to bring the problem under control.

But Farmer Jones, the architect and construction engineer, the poultry breeder, the nutritionist, bio-chemist, and pathologist has just begun to fight. If he is like 95 per cent of the broiler growers in Virginia today, he operates under a contract to a feed company, processing plant, or a business man who is willing to put up some of the capital and assume a good part of the risk and share, with the producer himself, the profits, if any.

Here Farmer Jones, the business man, must make himself heard. He must realize, for instance, that if he pays the cost of catching the birds to send them

(Continued on page 24)

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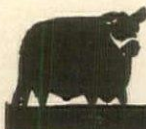
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Prescription Feeds for Today's Livestock

IF PEOPLE were scientific about their nutrition and preventive medicine, as the poultryman is about his broilers, nearly everybody would live to be a hundred. In the poultry business today and to a lesser extent in beef and other meat animals, there's no room for a cup of coffee and doughnut breakfast or a gulped sandwich and coke.

There's no place either for cocktails followed by a five course dinner.

The difference of course, is that human beings aren't sold for meat in a highly competitive market where proper nutrition and minute attention to diseases is often the difference between profit and loss.

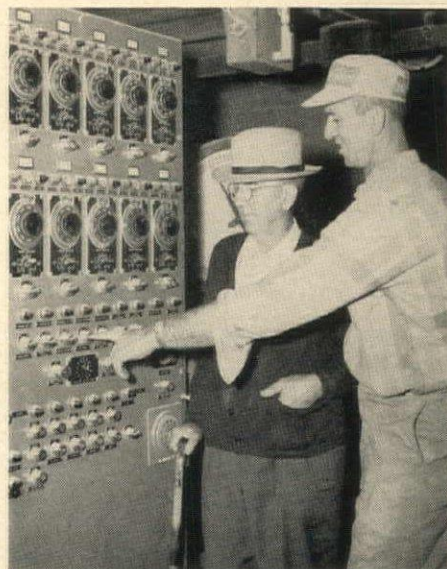
Likewise human beings will walk around with the sniffles for days because nobody has found a way to lick the common cold, but let a flock of chickens develop the sneezes and the poultryman wastes no time in applying expensive antibiotics to end the problem.

Once again the reason is economics. A red-nosed office worker may be condemned privately by his fellows for spraying cold germs but the broiler faces a different sort of condemnation. If a federal meat inspector doesn't like

the look of the lungs as the bird carcasses pass by him down the stainless steel over-head track, the bird may be condemned for human food. Such condemnations are now plaguing the Deep South where better than ten per cent of the birds are being turned down. Here in Virginia, between one and two per cent is the average figure.

The modern human youngster gets his diphtheria and typhoid and tetanus shots and probably polio too, but he is still not as well off as the young broiler. The young birds not only are vaccinated against the more contagious and fatal poultry diseases but are regularly fed small quantities of drugs to prevent even the start of other diseases. Further than that, still other drugs are fed to hold down the number of harmful bacteria in intestinal tracts so that the young chicken will grow up faster and stronger. These growth stimulants today can also be the difference between profit and loss to the poultryman.

Behind this particular change in the nutrition and health of broilers, turkeys, and laying hens is one of the most progressive industries in America, the



The modern feed mill operates from a push-button control panel like this one at Wampler Feeds in Harrisonburg.

animal feed industry. Time was when the farmer grew his corn and small grains, ground the kernels himself, or simply sprinkled them whole around the barn yard and let the poultry scratch for themselves. Today's poultryman feeds a prescription mixture of grains and drugs which carefully control protein, fat and fiber intake of his birds, provide required minerals and may contain as many as 25 different ingredients, some of them only present in the amount of a few grams per ton.

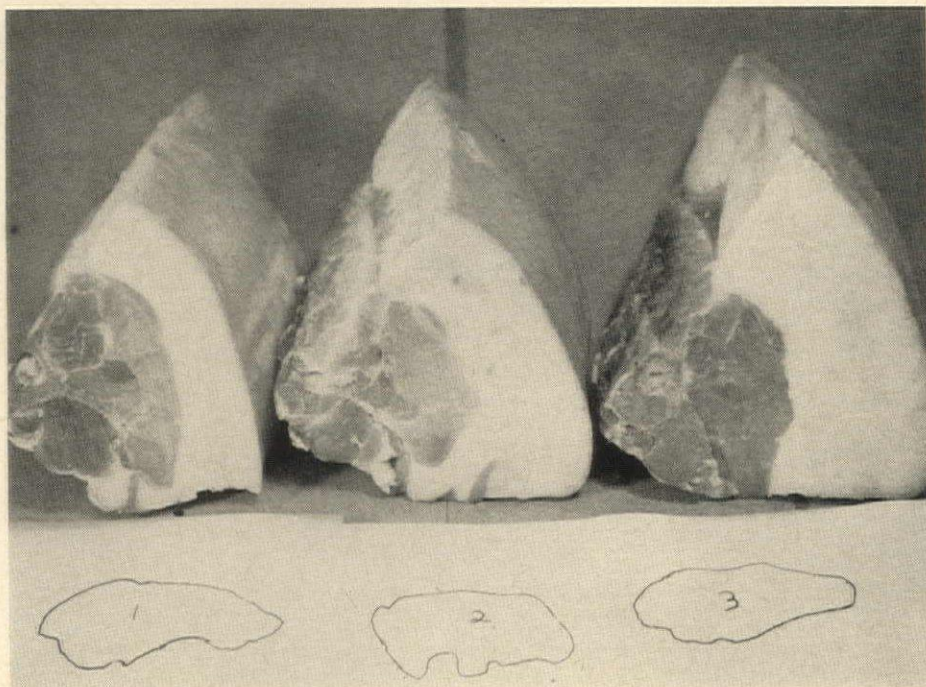
Of these present day prescription feeds, those for poultry are the most complicated because the poultry industry has become more scientific and because margins are closer and differences in rations make a difference in profits. Just a small variation in one or more feeding ingredients may throw a flock of broilers off feed and resulting loss in gains will mean a dollar loss to the grower or contractor.

The potential broiler doesn't get just one feed. The standard procedure is at least four especially prepared rations, each designed to meet the needs of the chick at a particular stage of development.

For the first few weeks the young bird will be eating a chick's starter, with special ingredients to combat diseases that he is subject to at this stage and like baby foods, designed to meet his peculiar nutritional needs as he starts down the road of life.

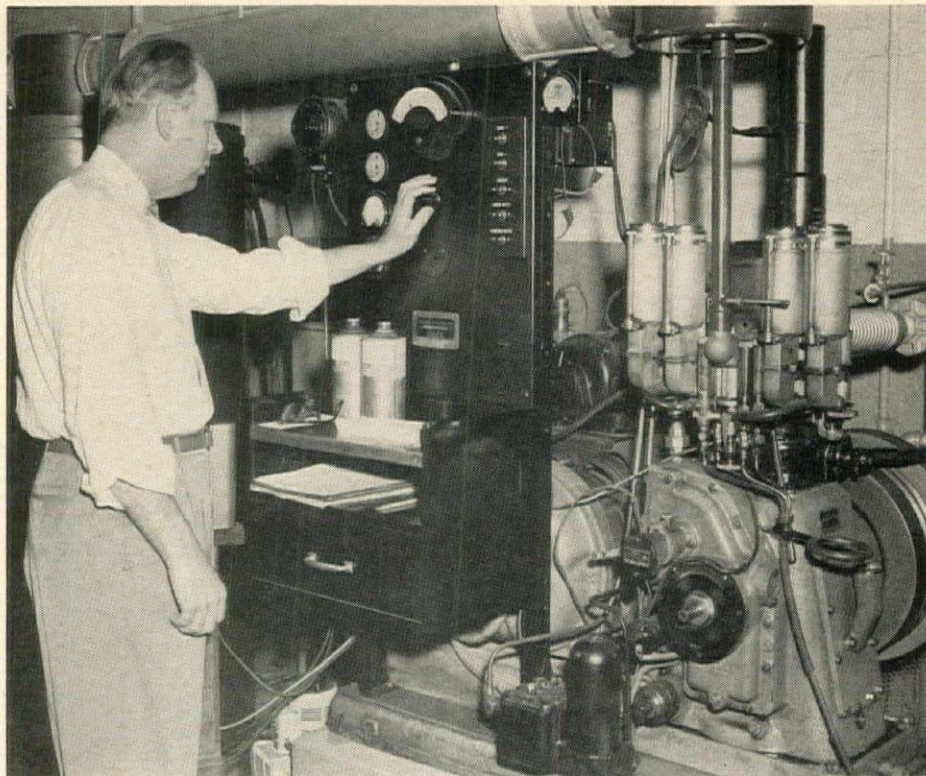
A couple of weeks more and he goes on a starter-grower ration to help him over the long-legged stage. Then he

(Continued on page 30)



Proper feeding, along with long, lean breeds, makes the difference between fat and lean pork loins.

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ON THE FIRST FLOOR of the Governor Street end of the State Finance Building there is a one cylinder gasoline engine that cost more than your automobile. It has four carburetors and more plumbing than a pipe organ. And when it runs it has an engine knock to end all engine knocks—literally.

This monumental one lugger is the State Department of Agriculture's octane engine. Its complicated dials register the octane rating of your gasoline.

The manufacturer or distributor of any gasoline in Virginia must register his product with the Department along with the minimum octane rating. This is what the anvil-like beat of the octane engine is doing.

The modern motor fuel is a carefully compounded organic chemical custom designed to get the most from that vital part of the Virginia economy, the gasoline engine.

Say "gasoline" to the average motorist and the next word that pops into his head is octane. He knows pretty well what gasoline is and how it is made. As far as octane goes he is probably considerably hazier.

The octane rating of any gasoline is actually based on an arbitrary scale formulated for the performance of that gasoline in an actual engine. It is a measurement of the anti-knock quality of the fuel.

Any gasoline engine is basically composed of a crank shaft to which is attached the piston which rides in a cylinder. A mixture of gasoline and air is sucked into the cylinder, compressed by the rising piston and fired by a spark plug. The resulting explosion forces the piston down, turns the crank shaft and translates the energy in the gasoline to mechanical energy.

In the modern gasoline engine the way the gasoline does its exploding determines the efficiency with which this power is transmitted.

Gasoline itself is a combination of a number of organic chemicals derived from the refining of raw petroleum. Some of these chemicals explode faster than others. Unless this burning is controlled, the faster-burning substances may result in pre-ignition, which gives the piston an initial half-hearted swat before the rest of the fuel gets a chance.

It's like four men pushing an automobile out of the mud. If one slams his shoulder into it, then another and then two more, chances are it will stay put. But if all four shoulders are applied evenly and forcefully, the car comes loose.

Inside an automobile cylinder, pre-ignition of some of the component parts of gasoline not only result in loss of power but the familiar metallic ping as though someone were beating a bell

inside the engine.

Actually motor knock results in very little mechanical damage, as the octane engines which knock all day long in the Department of Agriculture's Gasoline Laboratory amply demonstrate. But it does mean that all the force of the gasoline is not applied to the piston at the same time so you get loss of power.

Actually a slight engine knock on a hard pull means that you probably are getting maximum efficiency out of your engine for the money spent on octane. For most driving there is enough octane to eliminate knock but no more. In gasoline, octane is expensive and there is little to be gained by paying for more than your engine needs.

In today's higher compression automobile engines, higher octane rating in the gasoline is required. Gasoline itself is under more compressive force and smooth, even burning of the mixture of air and gasoline is harder to obtain.

Today's high octane gasolines have achieved their ratings by better refining and the use of more gasoline components with proved high anti-knock qualities and in most instances the use of tetra-ethyl lead. Other additives keep carbon and ash deposits to a minimum, slow down formation of gum and rust and help the engine dispose of water without stalling.

Octane ratings are arrived at in the Department's laboratory by a combination of chemistry and auto mechanics. For the chemistry, the American Society of Testing Materials, in co-operation with the automotive industry and petroleum industry, have settled on two organic chemicals which can be used as yardsticks to measure octane rating.

One is iso-octane, which has an excellent anti-knock rating and is used as 100 in the octane scale. The other is heptane, which has poor anti-knock qualities and is rated as zero. By using combinations of these two reference fuels, any octane number from zero to 100 can be obtained. To check octane ratings above 100, small amounts of tetra-ethyl lead are added to iso-octane. For instance, 0.16 milliliters of tetra-ethyl lead added to one U. S. gallon of iso-octane gives a reference fuel with an octane rating of 102.

The mechanical end of an octane determination is made in the Department's octane engine. First step in the laboratory procedure is to get a reading of a sample of unknown octane on the knockmeter gauge dial on the engine, which is controlled by an electronic detonation meter.

Next two mixtures of iso-octane and heptane are prepared with anti-knock qualities not more than two octane numbers apart, one with a knockmeter reading one octane number higher than the gasoline sample, one with a reading one number lower. With the sample bracketed, the octane rating of any sample can be interpolated to the nearest tenth of an octane, although the ASTM method suggests ratings to the nearest whole octane number.

The reading from the octane engine is then compared with the minimum octane guarantee filed by the manufacturer to see whether the gasoline comes up to snuff. You can read the comparative results every three months in the Virginia Department of Agriculture Bulletin which carries a table of guaranteed minimum octanes against laboratory findings.

The octane rating of your gasoline will tell you whether or not it will knock in your engine but it won't tell you how fast it will start, how much of a problem you will have with vapor lock or the relative performance of that gasoline on the road.

But the State Department of Agriculture's gasoline laboratory checks this out for you too.

Close by the one lunker octane engine there is a still which actually boils off the gasoline. By checking the

percentage that is volatilized at certain thermometer readings, the laboratory can get a pretty good idea of the various performance qualities of the fuel.

The first reading, taken at 70 degrees centigrade, indicates whether there is enough of the more volatile materials in the gasoline needed for easy starting. More of these volatile materials are needed in winter than in summer. Actually, gasolines are climatized to suit the average temperatures in the areas where they are sold.

The next two readings, at 140 degrees and 200 degrees centigrade are primarily for classifying and identifying the fuel. They also give some in-

dication of warm-up and roadability qualities.

The final reading is the end point reading, which means the temperature at which all of the sample is distilled off and the thermometer reading has reached its peak. The Virginia Gasoline law and regulations say this end point should not exceed 225 degrees centigrade.

Normally, the end point of gasolines is well below this point, because otherwise they probably would tend to form excessive carbon in the explosion chamber of your engine. End point readings above 225 degrees usually in-

(Continued on page 38)

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and

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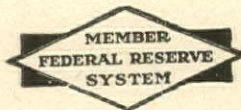
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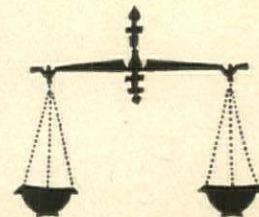
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NOT SO MANY years ago the average farmer scratched the ground, shouldered a sack of seed he saved from last year's crop and sowed it by hand as he walked across the field. This done, he felt it was up to the elements to produce him a crop.

This will not do for seeding today. Farming has become too scientific and too complicated. Today, the farmer's seed is tailor made just like your suit to do a particular job in a particular way and to do it at a particular time.

Today also, the farmer no longer saves his own seed in many instances. A giant seed industry, with its own research field and genetic laboratories has developed to give him the kind of seed he wants to do the kind of job he wants done.

Varieties of seeds today are bred like race horses and seed breeders juggle genes to give the finished product almost any characteristic they want—disease resistance, stiffer stalks, higher yields, tighter grain sheaths, or many other characteristics.

In the earlier stages of the seed industry's development, the chief problems encountered were largely mechanical ones. Before crop improvement associations developed to their present level with field inspections and many restrictions around the certified seed, the chief problems were seed purity and germination.

Purity was simply a high percentage of the proper crop seed with a minimum of other crops or pesky weeds which would grow up in the field and give the farmer real trouble. Older cleaning equipment in seed plants and older harvesting equipment also pre-

sented a good sized trash problem in seed samples.

Once there was assurance of a high percentage of the proper crop seed, there was still the question of how much of it would actually grow—how many of the seeds carried the spark of life. Special germinators duplicating ideal growing conditions would cause seeds to sprout and determine pretty accurately the germination. Likewise, trained seed analysis could take a seed sample to pieces and determine purity, weed seed content, other crop seeds and other purity factors

In years gone by, this was the job of the seed side of the State Department of Agriculture's Division of Plant Industry.

But as Agriculture rushed headlong into the future and seeds became more and more tailor made, with hundreds of different varieties of one crop, the problems were of a different kind. Most of the problems of purity and germination had been licked by an ag-

gressive seed industry. The problem of varietal purity and proper labeling of seed as to variety was more complicated.

Up until very recently, nobody could look at a handful of seed and tell you what variety it was. This created a real problem for the seedsman buying seeds from farmers and for the farmer buying seeds from the seedsman in making sure that variety actually was what the purchaser in each case thought he was getting.

The Virginia Department of Agriculture was an early pioneer in efforts to get at this problem of variety determination and purity. First attempts were simple enough. Samples of seed collected in the field were planted in special Department of Agriculture test plots out on Mechanicsville Pike near Richmond alongside seed of known varieties. As the plants grew, different characteristics became obvious and discrepancies could be spotted.

(Continued on next page)

To a commercial turnip grower, variety makes all the difference.



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Test plot results did show that varietal purity was a problem. Department seed enforcement men, accompanied by a special committee including representatives from the seed industry, examined the plots and determined that certain lots were not the variety they had been labeled.

But this procedure had one big draw-back. By the time the test plots had determined that the variety was off, the farmer had already planted his crop and it was growing in the field.

So the Department cast about for another way to tell the difference between one seed variety and another.

Seed breeders had carefully recorded differences in the characteristics of the growing plant between one variety and another. But only some lonely experimenters had tried to find minute differences among seeds and seedlings. Under microscopes and magnifying glasses, seed of known varieties were studied and compared. So far only a few small grains have undergone these painstaking tests and comparisons. The conclusion seems to be that each variety of seed, like each individual set of human finger prints, is different. The shape or color, length of seed hairs and a number of other characteristics now enabled Department seed specialists to distinguish among a number of small grain seeds as far as variety is concerned.

There were still holes in the problem of quick and accurate variety identification in time for the farmer to avoid planting something he didn't want. Seed characteristics were tabu-

(Continued on page 28)

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FROM THE TIME the Indians first showed the early colonists how to put a fish in each hill of corn for fertilizer until the early 1900's, Virginia farmers made scant progress in feeding their plants beyond what the soil itself provided. As far as fertilizer was concerned, they progressed from the contents of the river to the contents of the barnyard but no further.

Agronomists knew which chemicals the plants needed for proper growth and production of fruit, and chemists knew that industry was capable of producing these chemicals economically, but it took a revolution in agriculture to produce the scientific dry chemical fertilizers without which farming today would be unprofitable and virtually impossible.

Even when industry began turning out the grayish powders that research had demonstrated would make plants leap out of the ground, farmers for years were convinced they would "burn the crops up." Even today, the average Virginia farmer uses much less fertilizer than experiment stations indicate would be profitable to him. On corn alone, research shows every dollar spent for fertilizer up to the maximum recommended rate will return \$4 in additional corn yields.

But in recent years both industry and farmers have changed their ways. Today, fertilizers are not only formulated to do specific jobs with specific crops but are mixed with insecticides to kill the bugs and feed the crops in one trip across the field.

Industry is approaching the point of no return in attempting to pack more and more of the principal plant foods, nitrogen, phosphoric acid and potash into a ton of fertilizer and to include in that ton the minor elements that research is now finding are necessary to plant growth in certain soils.

To give plants a quick shot in the arm, nitrogen today is sold in liquid form and even in the form of a gas to be applied with special equipment.

Instead of the familiar and traditional bag of fertilizer, materials are now being delivered in special spreader trucks that run right across the field and put the farmer's fertilizer on the land for him. Some trucks even blend the three plant food ingredients on the truck itself, varying the formula according to the individual farmer's order. These innovations in the fertilizer business have caused no end of problems for the industry itself and also for the State Department of Agriculture, which has the job of making sure the farmer gets the fertilizer he orders and

(Continued on page 32)

Special equipment was needed when the Department of Agriculture inspectors were confronted with gaseous fertilizers.



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Garden Gossip

Section

Mrs. Gerald J. Pierce, Editor
Phone AT 8-0202, 7700 Hillview Ave., Richmond 29, Va.

THE STANDARD FLOWER SHOW

MRS. CURTIS DAVIS,
Virginia Flower Show School Chairman

The Standard Flower Show is the official title designating the amateur flower show planned to conform to certain established standards and executed by National Council of State Garden Club member clubs or groups of member clubs for credit rating toward National Council Flower Show Awards and National Council Accredited Amateur Flower Show Judges Certificates. (The Virginia Federation of Garden Clubs is an affiliate of the National Council and its clubs are member-clubs). The specifications for the Standard Show are listed by National Council as follows:

- Planned and executed by National Council member clubs or groups of member clubs.
- Planned and executed according to standard requirements (one-half of the classes calling for Horticultural exhibits and one-half for Artistic)
- Advised Divisions are strongly urged—a Junior, Educational, Sponsored, or Commercial division although omission of any one or more of the Advised Divisions will not imperil Standard Show credit.
- A minimum of five classes in each Required Division.
- A written schedule, preferably printed, mimeographed or by any other means of exact duplication.
- Awards by the Standard System of Awarding.
- Judged by Accredited Judges.

Attention has been focused recently on the fact that many so-called Standard Flower Shows presented by groups of garden clubs—some federated and some non-federated—are not Standard Shows.

Of the requirements for a Standard Flower Show the first one is most frequently overlooked. The National Flower Show Committee interprets this requirement as follows: "All Committee Chairmen must be members of a club affiliated with National Council through its own State Federation".

To encourage non-federated clubs to participate in flower shows, and to invite interested gardeners who are not garden-club members to exhibit in shows, is good flower show practice, in that it fulfills the purpose of a flower show—to stimulate interest in horticulture, to develop aesthetic sense, and to educate the public in horticulture and

(Please turn to page 19)



Photo courtesy Jackson & Perkins

HAWAII, a hybrid tea different in color—a warm orange coral blend—represents the newest state in the Union. Each bloom is said to be large, up to 6 inches across, and unique in a pronounced raspberry scent. Those who have had the privilege of testing Hawaii before it was named Rose of the Year for 1960 by its creators, Jackson and Perkins, found the plants to be hardy, tall growing with a glossy foliage that took on tints of red as the cooler fall days approached. Now is the latest time for planting roses until fall and remember, the early and systematic spray or dust program, begun when the leaves are about two inches long, and continued weekly throughout the season, produces healthy plants, free of blackspot and mildew.

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The Strawberry

By STELLA CRAFT TREMBLE

In old Saxon, the word for strawberry was *strewberige*; and there are several traditions about the naming of this delicious fruit. It was an English practice to lay straw between the rows to preserve the fruit from rotting on the wet ground. Hence, the name strawberry.

It might too, be due to the wandering habit of the plant, straw being a corruption of the Anglo-Saxon *strae*, from which the English word *stray* comes.

Another tradition tells us that in olden times, children strung berries on straw for sale; therefore, the berries were called *strawberries*.

The strawberry belongs to the rose family, and its botanical name is *fragaria*, from the Latin, *frago*, meaning to smell sweet.

We find that the Alpine strawberry was the strawberry of the ancients. Virgil wrote,

"Ye boys that gather flowers and strawberries,

Lo, hid within the grass an adder lies!"

Ovid and Pliny also name the fruit casually, but we have no record of the Romans having paid any attention to strawberries, so far as I could find. They might have found strawberries a more unusual delicacy than the nightingales tongues and peacocks brains which they loved!

From the poet, Spenser, we learn that to go a-berrying was one of the earliest pastimes of the English people.

In *Faerie Queen* we find,

"One day, as they all three together went

To the green wood to gather straw,



There chaunst to them a dangerous accident."

The combination of strawberries and cream was first named by Sir Philip Sidney; and Old Thomas Tusser in the sixteenth century in his work, "Five Hundred Points of Good Husbandry United to as Many of Good Housewifery", says to his wife,

"Wife, into the garden, and set me a plot

With strawberry roots, of the best to be got;

Such, growing abroad, among thorns in the wood,

Well chosen and picked prove excellent good."

Isaak Walton wrote in "The Compleat Angler",

"Indeed, my good scholar, we may say of angling as Dr. Boteler said of strawberries,

"Doubtless God could have made a better berry, but doubtless God never did."

John Parkinson, the apothecary-gardener of London, whose quaint work was published in 1629, said of a wild strawberry,

"It may be eaten or chewed in the mouth without any manner of offense; it is no great bearer, but those it doth beare are set at the toppes of the stalks, close together, pleasant to behold, and fit for a gentlewoman to wear on her arme, etc., as a raritie instead of a flower."

In England the strawberry leaf is part of the insignia of high rank, since it appears in the coronets of a duke, marquis, and earl.

"He aspires to the strawberry leaves," is a well-known phrase abroad; and the idea occurs several times in the novels of Disraeli.

Thackeray, in his "Book of Snobs" writes, "The strawberry leaves on her chariot panels are engraved on her Ladyships heart."

In Shakespeare's play, Henry V, the Bishop of Ely says:

"The strawberry grows underneath the nettle,

And wholesome berries thrive and ripen best

Neighbored by fruit of baser quality."

Early in the seventeenth century the Virginia strawberry was introduced in this country; and it grows wild from the Arctic regions to Florida, and westward to the Rocky Mountains. Jean Robin, botanist to Louis XIII, named it in 1624.

The *Fragaria Chilensis* is a native of the American continent and grows wild on the Pacific slope, from Oregon to Chili, creeping higher and higher up the mountains as it approaches the equator.

Mr. Frazier says that in 1716, in his journey to the South Sea, he found it at the foot of the Cordillera mountains near Quito and carried it home to Marseilles, France. At that time, it was called chili strawberry; and the Spaniards said they brought it from Mexico.

On June 12, 1876, in the *Evening Post*, William Cullen Bryant wrote an editorial in which he says that Wilson's Albany strawberry is "a crude berry with much acid". He deplores the fact that a better berry is not on the market, and hopes, by crossing, that a sweeter berry will be obtained.

Strawberries need much attention and much water: when asked what the chief factor was in the successful culture of strawberries, the Honorable Marshall P. Wilder once replied:

"In the first place, the strawberry's chief need is a great deal of water.

"In the second place, it needs more water.

"In the third place, I think I would give it a great deal more water".

Many other things enter into the culture of the strawberry that I will not discuss here.

But I will say in conclusion, that of all the strawberries there are . . . and there are many indeed . . . to me, there is only one perfect strawberry in existence, the strawberry of memory . . . the little wildlings I used to gather on the roadside in Illinois when I was a bare-footed child; and when my husband leaves a box of luscious berries on the kitchen sink now, I sigh for those little berries that grew on the hillside long ago!

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August School at VPI

August 1-4 is the date set aside for attending the summer Flower Show School, sponsored by the Virginia Federation of Garden Clubs and V.P.I. Registrations will be the order of the day on the first with two days of intensive study to follow. Mrs. William Engard, Jr., of Richmond will instruct students and accredited judges in Flower Show Practice and Dr. Wesley Judkins, Head of the VPI Department of Horticulture, covers the requirements of this Course III in Horticulture. Mrs. Harrell Wilson of Spartanburg, S. C. lectures the second day of instruction of Flower Arrangement. Examinations will consume the third day of the course with successful students gaining another credit toward their judge's certificate and accredited judges renewing their certificates for another three year period. All the classes will be held on the campus at Virginia Polytechnic Institute, Blackburg, Va. A complete program, listing background reading and other information, may be secured from Mrs. Curtis Davis, 2124 Lennox Rd., Richmond, Va.

Conservation Courses Planned For Summer

Virginia's public school teachers will again this summer be offered training in conservation of natural resources at short courses at three colleges.

Sponsored by the Virginia Resource Use Education Council in cooperation with VPI, the short courses will be held June 15 to July 2 at VPI, June 27 to July 15 at Virginia State College, and July 25 to August 12 at William and Mary.

Although primarily for public school teachers, the short courses may also be attended by other interested individuals. A limited number of scholarships to cover tuition, meals, lodging, etc., will be available to teachers. Applications for scholarships must be submitted by May 1 to the Council at Box 1642, Richmond. Four and one-half quarter hours credit will be given for satisfactory completion for the course.

Subjects to be taught, in classroom, laboratory, and field sessions, are geology, soils, forestry, and wildlife.

The Chapel Hill, Oakwood and Green Sprouts Garden Clubs will hold a Horticulture Show, May 7th; open from 1-5 and 7-9 PM at the Chapel of St. Thomas Moore, Durham. Flower arrangements and gardens to be shown at private homes. Admission \$1.

Seven Garden Clubs Join to Present Show

Almost one year ago, representatives from seven garden clubs located in the western part of the city of Richmond, Virginia met to discuss the possibility of presenting a Flower Show to the public as a joint endeavor. As a result of this meeting plans were set in motion for dividing the responsibility for various committees among the participating clubs.

Mrs. Alfred Benson, Jr. was chosen general chairman for the show which will be presented at the Carillon in Byrd Park on May 7, 1960 from 3:30-6 p.m. and Sunday, May 8 from 2-7 p.m. Theme of the show is "Spring Romance" with the artistic division developing the story in flowers. The 75 cultural classics include roses, peonies, iris, poppies, and bulbous specimens as well as annuals, perennials and vines and shrubs in bloom.

There is no admission charge but a silver offering will benefit the Nature Camp of the Virginia Federation of Garden Clubs to which each of the seven clubs is affiliated. Participating clubs are: Commonwealth, Colonial Place, Monument Avenue Crest, Old Fashioned Bouquet, Thomas Jefferson, Village and Willow Lawn.

The Standard Show

(Continued from page 17)

floriculture. However, if members of non-federated clubs serve as chairmen of committees of a show, that show cannot be interpreted as being "planned and executed" by federated garden clubs.

Effective, *immediately*, ALL COMMITTEE CHAIRMEN must be members of federated clubs in order for the flower show to be a Standard Show. Ribbons won and judging done in shows not conforming to this requirement will not be acceptable for credit toward a Judging Certificate.

Your State Flower Show School Chairman has been instructed by the National Chairman of Flower Show Schools to publicize this requirement before the Spring shows get under way.

Schedules of shows presented by groups should list the federated club to which each Committee Chairman belongs. This will eliminate much unnecessary correspondence and delay when credentials are presented to the State Chairman for approval. This is not necessary, of course, for a show presented by a single garden club.

VFGC Convention Slated For May

The twenty-sixth annual convention of the Virginia Federation of Garden Clubs opens May 23 at the Chamberlin Hotel, Old Point Comfort. Members representing clubs from all through the state register from 11 AM to 5 PM as well as the next morning, when the convention opens officially at 10 AM. Mrs. A. H. Culpepper of Norfolk presides over the business sessions which occupy the bulk of the three days scheduled.

Mr. Frederick Huette of Norfolk is the featured speaker at the informal dinner on May 24th, honoring life members. Mr. Huette's subject, "European Tour" is appropriately illustrated with his own colored slides. Awards for which members have worked long and hard will be announced and presented at the luncheon on May 25th. The climax of the convention, the formal banquet on the last night, features the Horticultural Chairman of the National Council of State Garden Clubs, Prof. E. R. Honeywell, from the mid-west. A reception honoring national and state officers, past presidents and distinguished guests will be the final event of the convention at which well over two hundred delegates are expected.

Officers of the Virginia Federation of Garden Clubs include Mrs. Culpepper, president; Mrs. J. W. Inge, Jr., of Blue Ridge, 1st vice president; Mrs. P. E. Ahalt, recording secretary, of Pearisburg; Mrs. C. H. Ellis, corresponding secretary, of Norfolk; and Mrs. Howard R. Hook, Jr., of Richmond, treasurer.

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Hardy Chrysanthemums

for Virginia Gardens

By A. G. SMITH, JR., Horticulturalist
V.P.I. Extension Service

Hardy chrysanthemums are easy to grow if the garden is in full sunlight and if the soil is well drained. There are many varieties with a wide selection of colors. The flowers range from small button-types to aster-like blooms 4 inches or more across.

Chrysanthemums are classified according to shape and arrangement of petals. Some nurserymen list their varieties of hardy mums as double, semi-double and single. Others group them in categories as shown below.

The principal types of hardy mums are:

DECORATIVE — Double flowers usually 2 to 3½ inches in diameter. Often called aster-flowered mums. They are lovely in the border; and are useful as cut flowers. There are many varieties and colors. Examples: *Abundance*, bronze and gold. *Crystal Maid*, an early white. *Crowning Glory*, bronze with red eye. *Fascination*, lavender pink. Decorative varieties bloom in September and early October.

POMPOM — Spherical or button flowers, 1 to 1½ inches in diameter. Dainty, compact plants. Examples: *Chiquita*, yellow. *Pepita*, white. *Rosita*, rose pink. Bloom mid-September to early October.

SINGLE—Daisy-like blooms 2 to 3½ inches in diameter. Excellent for arrangements. As a group, they bloom a little later than some other types. Known to many as Korean hybrids. Examples: *Apollo*, orange-bronze. *Daphne*, old rose. *Fred Stone*, red. *Gold Daisy*. Bloom late September to October 15.

SPOON—Semi-double with open centers. The petals are extended to form spoons. A strikingly beautiful type. Flowers 2 to 4 inches across. Examples: *Charm Spoon*, dark red. *Orchid Spoon*, orchid-lilac. *Yellow Spoon*. Early October.

CUSHION—An old type. Often sold under fancy names at premium prices. Forms a pillow of flowers. Young potted plants, put in the field at V.P.I., by the writer around May 15, were 4 feet across when they were in bloom. No pinching is required. Examples: *Early Harvest*, orange-bronze. *Mischief*, purple to amaranth. *Bantam Yellow*,

Powder Puff, white. Bloom mid-September to early October.

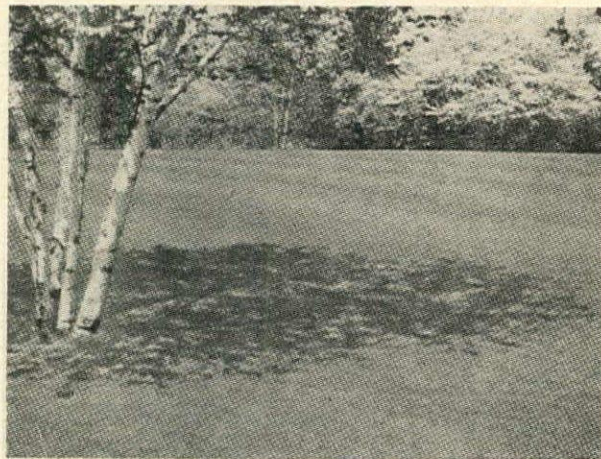
Soil

Hardy mums do best in full sunlight where there is good air drainage. If grown in shade, the plants will be tall and the stems weak.

The preparation of the soil is important. It should be thoroughly drained and contain enough humus to keep it open and friable. It should be prepared to a depth of 6 to 7 inches.

A fertilizer, which is low in nitrogen but high in phosphate and potash, should be worked into the soil a week or more before planting. Use a mixture, such as 5-10-10, at the rate of 2 pounds to 100 square feet. If individual holes are prepared for single plants, it would be best to 1) set the plant 2) water thoroughly and 3) about a week later put 4 level tablespoons of fertilizer in

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a 12 inch circle around each plant, then 4) work it into the soil. The roots will be "burned" if the fertilizer is put too close to the plant.

Plants

Potted plants from rooted cuttings are the best to buy for spring planting. If the plants have made good roots, they are ready to be set in the border as soon as the last frosts are over.

Divisions from old clumps are next best. Only the new shoots should be used. Discard the older part of the clump.

Sometimes it is necessary to grow the mums in larger pots and put them in the border after the early flowers have gone. Some plant growers offer potted mums for mid-summer sale. This practice will be more useful in eastern Virginia, than in the piedmont or mountainous areas.

Spacing

Hardy mums are often ruined by crowding. The size of the plants will vary with variety, season and time of planting. Some varieties, which are allowed to produce only a few blooms, may be planted 18 inches apart and be supported by stakes. With no staking or disbudding, some plants might need 3 to 4 feet of space. The average width of many varieties, which were grown by the writer at V.P.I., was 21½ inches.

When the plants are growing close together, diseases and insects are much more difficult to control.

Pinching

This is an important operation. It is required on all hardy mums except the cushion types.

When the young plant has developed 4 to 6 sets of leaves, pinch (or cut) the end of the tender stem. The plants will then develop side branches. As soon as each of these has made 4 to 6 sets of leaves, pinch the tender end. If the plant should later develop too many branches, cut out the weaker ones.

Disbudding

Disbudding of hardy mums is not recommended unless you are growing the larger types for exhibition. If done properly, disbudding may increase the size of flowers. If done too late or in the wrong manner, the stems will be crooked or rough.

1. Choose at planting time the plants to be disbudded. Spray undersides and tops of leaves with Bordeaux or ferbam.
2. After the first pinching, select several stems and remove all others. Omit later pinchings.

3. Protect foliage with Bordeaux or ferbam.
4. Rub off all side buds as soon as they can be seen.
5. Support stems by tying them to stakes.

Summer Care

Hardy mums should not be allowed to wilt for lack of water.

Protect foliage by spraying or dusting.

Additional fertilizer, such as sulphate of ammonia, may be applied after the flower buds are set. Dissolve about 2

level tablespoonfuls in a bucket of water and divide between 2 plants. Repeat in 10 days.

Insects and Diseases

The most common pests are aphids and leaf spots. These can be controlled by using malathion and ferbam. Numerous materials on the market may contain these chemicals. Malathion cannot be used with Bordeaux.

For the control of other pests, see your county agent or write to the Department of Entomology, at V.P.I.

New Flower Show Judges Accredited

Congratulations to the newly accredited judges in Virginia whose names we include below! The achievement of the title of National Council Accredited Flower Show Judge became theirs March 1st, following their successful completion of the requirements established by National Council and endorsement by the Virginia Federation of Garden Clubs:

Mrs. Stanley B. Campbell, 8004 Spottswood Park, Richmond, Va.
Mrs. Harvie A. Carter, 908 East 58th Street, Richmond 24, Va.
Mrs. Elbert Cox, 3816 Seminary Avenue, Richmond, Va.
Mrs. James E. Crinkley, Eppington Forest, Blackstone, Va.
Mrs. W. L. Damewood, 1417 Clover Lane, Richmond 24, Va.
Mrs. Joseph M. Dietz, 605 Hartman Drive, P.O. Box 145, Harrisonburg, Va.
Mrs. C. R. Fagg, 5021 King William Road, Richmond, Va.
Mrs. Walter Higgason, 4427 Bromley Lane, Richmond 21, Va.
Mrs. W. Thomas Holmes, 1706 Oakdale Avenue, Richmond 27, Va.
Mrs. L. D. Jones, 316 Westham Parkway, Richmond, Va.
Mrs. W. G. Madison, 3037 Westgate Drive, Bon Air 35, Va.
Mrs. E. H. Moore, 2515 Willowlawn Street, S.W., Roanoke, Va.
Mrs. G. B. Morris, 6707 West Franklin Street, Richmond 26, Va.
Mrs. J. C. Pounds, 4 Woodlawn Avenue, Richmond 21, Va.
Mrs. Clifford W. Robertson, 606 Horsepen Road, Richmond 29, Va.
Mrs. Charles H. Tenser, 1104 Ridgecrest Drive, Richmond 29, Va.
Mrs. P. W. Underwood, 6919 Everview Road, Richmond 26, Va.
Mrs. Chester A. Waleski, 111 McMurdo Drive, Ashland, Va.

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GEORGE PICKETT

By CLIFFORD DOWDEY

with drawings by ALEX ALLEN

Major-General George Edward Pickett was the only one of Lee's generals to be known for a single episode, one hour of destiny. To people whose knowledge of the Civil War is limited to the names of Lee and Grant, "Pickett's Charge" is a familiar compound word.

Yet, the third day assault in which part of Pickett's division participated at Gettysburg was not "Pickett's Charge." Nor did the attack represent Lee's lost opportunity at Gettysburg, any more than Gettysburg—as Northerners claimed—represented "the high tide of the Confederacy." Nevertheless there was a dramatically climatic element in the attack and Pickett was chosen by chance to epitomize that moment in history. To him personally, however, the unsuccessful charge represented only a blighting of his hope for fame, and the years of his life following the charge ran downhill.

George Pickett was born in Richmond of a well-established family, and his grandfather had acquired something of a fortune. Pickett's father, settled on an estate at Turkey Island, had no hand for finance, and the strong man in the family was Pickett's uncle, Mr. Andrew Johnston, a one-time law associate of Abraham Lincoln. George Pickett was a young friend of the future president and it was through Lincoln that the Richmond boy was appointed to West Point from Illinois, while his cousin, Harry Heth, and Powell Hill were appointed from Virginia.

From the beginning, Pickett was a good soldier in the Regular Army, with a penchant for spectacular action. Of graceful build, he had striking good looks and a flair for colorful dress. He wore his dark hair long, curled and perfumed at the end, and sweeping, pointed mustachios. Longstreet spoke admiringly of his "pulchritude."

When Virginia seceded, Pickett held the Regular Army rank of captain, average for his age, and in the Confederate Army soon made brigadier. Shortly after Lee evolved the structure of the Army of Northern Virginia, Longstreet, in command of the First Corps, saw to it that his favorite, then upped to major-general, was given a large (five-brigade) division of crack troops. However, opportunity for glory passed him by. Pickett's division was not significantly engaged in the Battle of Fredericksburg (December, 1862) and in the great victory at Chancellorsville, in May

of the following year, Pickett was detached with Longstreet in some futile goings-on in the Suffolk area.

During this winter of desuetude, Pickett, a 38-year-old widower, fell madly in love with a young girl whose soldier-ideal he had been since her childhood. They became engaged to be married and, under the inspiration of his middle-life romance, Pickett thirsted for his chance at the fame that had come to his contemporaries. The Northern invasion, which ended with the clash of armies at Gettysburg, seemed at last to offer him his hour with destiny.

Due to the authoritarian interference of President Davis, two of Pickett's largest brigades were held in the South, and he and the others escaped from the clutches of Davis' bureaucracy only in time to go north as rearguard. Thus it was that, with Pickett chafing for action, his three brigades were the last to reach the field and represented, on the third day of the battle, the only fresh troops with the army.

In the three-quarters of a mile advance across the open ground of the shallow valley between Seminary Ridge and Cemetery Ridge, Pickett's compact division—less than one-third of the assault force—caught and held the spotlight because his lines were the first to appear out of the shadowed woods and they struck at the precise center of the Federal position. Also, in the bungled command of Longstreet, Pickett's all-Virginia division was the only unit to hold its structure intact from the moment the troops moved out until they clashed in the hand-to-hand fighting at "the angle" on Cemetery Ridge.

Nobody could have done more than Pickett did in the doomed assault, but he never recovered from the debacle which wrecked his division. The rest of his career was undistinguished, and enemies—some probably jealous of the glory gathering around his name—invented unfounded canards about his personal behavior at Gettysburg. Finding solace in his young bride, Pickett lived ten years beyond the war, dying at the age of fifty, a disappointed and somewhat embittered man, with an immortality he never dreamed of.



... the hour of destiny at Gettysburg was to Pickett personally a tragic failure. . . .

VIRGINIA BUSINESS REVIEW

by

ROSEWELL PAGE, JR.

At the end of the first quarter in 1960, U. S. Government sources report that a startling spurt in production has carried the nation's output in the January-March quarter to the record rate of about 500 billion dollars a year.

In spite of the nervousness of the stock market and the wavering business confidence, the economy has been making the greatest production gain in ten years, and these gains have been made without benefit of sharp price rises to inflate the dollar-value of the goods turned out and the services performed. The remarkable fact is that they were achieved in spite of a lag in housing and a cut in production schedules set by the automobile producers.

* * *

Burlington Industries, Inc., the U.S.A.'s largest textile concern, and James Lees & Sons Co. plan to merge. If the plan is approved by the stockholders of both companies, Lees would become a subsidiary of Burlington, with Joseph L. Eastwick, the president of Lees, continuing as that company's principal executive officer.

J. Spencer Love, president of Burlington, and Eastwick said they consider the combination beneficial to the two companies.

The above proposed merger has actually come into being by reason of its approval at recent stockholders' meetings of the two companies. Burlington stockholders also voted to increase the company's authorized common shares from 12½ million to 17½ million.

* * *

Trailer Train Co., which leases flatcars for piggyback operations has added the Richmond, Fredericksburg and Potomac Railroad and the Chesapeake and Ohio Railway to its membership.

The Seaboard Airline, the Atlantic Coast Line and Norfolk and Western were already members of the organization.

The Norfolk and Western and the Pennsylvania Railroad formed Trailer Train in 1956 for the purpose of stand-

ardizing equipment so that trailers could be handled in interchange between railroads.

Stuart Shumate, vice-president and general manager of RF&P, said the line joined Trailer Train so it can get flatcar equipment that will enable it to participate better in interline piggyback movements. Members of Trailer Train share ownership of the company and lease cars from its pool.

* * *

More than a score of farmers from Mathews and surrounding counties signed contracts recently to supply

vegetables to a new commercial grading and packing plant which will go into operation in June at Cobbs Creek, according to E. L. Phillips, Mathews County Agent.

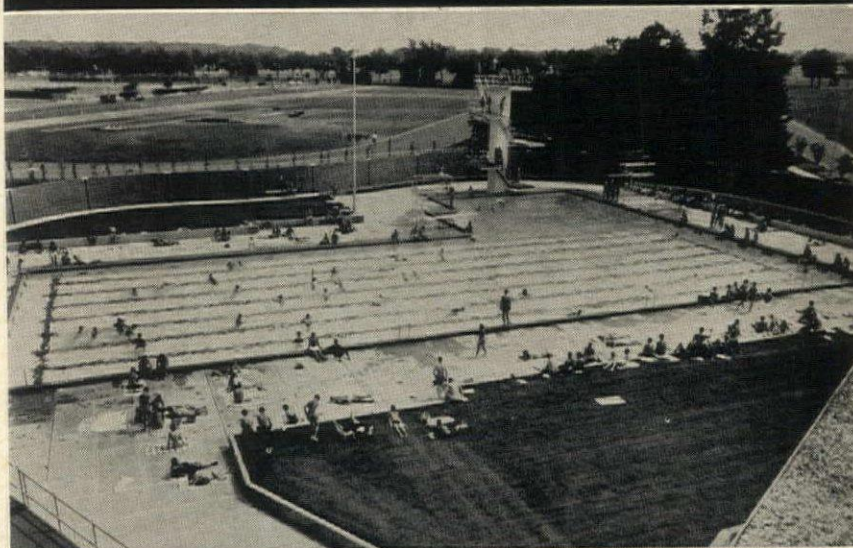
The new plant to be established by Farmers Corp. of Kempsville will pack cucumbers, winter cabbage, Irish potatoes, and strawberries grown locally and supplied by contract from surrounding farmers.

* * *

NAMES IN THE NEWS

Promotions of three executives of
(Continued on page 40)

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Farmer Jones

(Continued from page 7)

to market it may eliminate his profits, or that the disposition of the feed bags may mean real dollars to him. In the broiler business today, if he makes a couple of cents a bird at today's prices he will probably consider himself fortunate.

Farmer Jones, businessman, must also be Farmer Jones the banker and credit manager because few farmers starting out in broilers today have the capital necessary to build those houses, buy the feeds, and start the batch of birds.

When he is through figuring, Farmer Jones may decide he is better off in the egg business, but he will need all his boiler know-how to make the decision.

His laying house will have to be as carefully designed as his broiler house was. If he is strictly up to date, he will have to figure out a system for collecting eggs that takes less time. He may build his house on the center aisle plan, with patented nests from which eggs roll out in the aisle to be picked up in special rubber or plastic coated wire baskets and carried to the central cooling room, where they are run over mechanical graders and carefully stored in a refrigerated egg room until they are picked up and taken to the country point grading station.

He must, of course, start out with a different chicken. A laying hen but one specially tailored to his climatic conditions or to the peculiar taste of the consumers in his market. If he is producing in the Boston area, brown eggs are the order of the day. Whites are hard to sell. In the South it's mostly the other way around.

His feed problems are just as complicated and his diseases just as disastrous. He just needs a few different pieces of knowledge to fit into this mental jigsaw puzzle.

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For instance, he must know what to do if his eggs begin to show excessive cracks and broken shells; he must know this means more calcium in the diet and how to provide it at the least cost.

He must be up on the latest dope about lighting in the henhouse—how long to keep the lights on at what periods of the year to make the hens think it is still spring time and keep on laying eggs.

Today, if he is an up-and-coming egg producer, Farmer Jones is probably figuring whether it would pay him to force his hens to an early molt, with special feeds to keep them out of production when prices are low, and have them back in again when his neighbor's hens are taking a breather from peak production.

Farmer Jones, the egg producer, has to do a little more careful planning on when he puts his birds in the house than Farmer Jones, the broiler man. Although, today both strive for year round production and figure their profits based on an average price for the year rather than how much they got for a load of broilers or a dozen cases of eggs.

In either case, even the droppings come in for scientific consideration. Farmer Jones has already read about experiments in cleaning and pelleting poultry litter for feeding to cattle or sheep. The broiler or the laying hen must have the proteins and vitamins in larger amounts than she needs to get her job done at a profit to her owner. But the result is that much of the nutrition in the feeds winds up in the litter.

Traditionally, the refuse of the hen or broiler house has been spread on the land as fertilizer, but if he is the kind of nutritionist and businessman that today's farmer must be, Farmer Jones is wondering whether this isn't mighty expensive stuff for fertilizer indeed.

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Commissioner Brinkley
and the
Virginia Department of Agriculture*

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With truck crops, machinery never replaces all the labor.

Let's suppose that Farmer Jones has more room than he needs for the birds and is building top-notch pastures with his litter. He must cope with a new set of problems over on the cattle side of his operation. Cattle have three stomachs instead of one and sometimes that makes the problem three times as complicated.

Chickens produce their meat or eggs from the commercial feeds dumped into the trough. Beef cattle pluck theirs up from the land itself.

And so, Farmer Jones must plan agronomy. He must know the acidity of the soil and the mineral content and he must know which combinations of legumes and grasses to plant to give him maximum grazing year after year without depleting his soil. He must be up on the latest experiments in strip grazing, dividing his land with electric fences into a checker-board and moving the cattle from square to square while the grass grows up again behind them. He must know when his grass needs a general fertilizer and how much, and when it needs a top dressing to give it extra growth—a shot in the arm.

He soon finds out that grass needs water as well as food and like as not will soon turn to his engineering know-how to rig an irrigation system, and build a pond to supply it.

When the pond is built he must enter into a new field of knowledge. A pond means fish and scum and weeds and stagnation and a whole new batch of problems. He must know he can fertilize the plants in the pond with the same fertilizer he uses on his pastures and grow himself a bigger crop of fish. He must know what chemicals he can spread and in what amounts to get rid of some of the objectionable marine plants without hurting the others. He may or may not make use of the in-

formation put out by the fish scientists that the more a pond is fished the bigger the fish will grow.

The cattle too will bring their own peculiar diseases with them, starting perhaps with bloat springing from too lush grazing early in the spring. Some of these diseases carry a special urgency because they can be transmitted to Farmer Jones himself or his family.

For instance, there's brucellosis, a breeding disease of cattle, that brings on undulant fever in humans or tuberculosis, a vicious killer now virtually stamped out by agriculture regulatory officials, which once produced a crop of twisted spines among farm people. Many an older farmer today, on a visit to his doctor, is told he has the healed lesions of bovine TB.

The cattle also bring Farmer Jones a problem he has heard little about in the poultry business, carcass quality. By and large, if broilers were healthy and good strain to begin with and were well fed and his drug program kept diseases to a minimum, there is no need for him to know whether one bird was better than another. They all brought about the same price.

With his own candling light he could tell what the quality of his eggs was running.

But with his cattle, there's much less standardization. Two animals that look the same to the uninitiated might bring a vast difference in price in the market.

So Farmer Jones must become not only an animal husbandman but a judge of carcass quality on the hoof. He must learn about things like conformation, shape of the head, size of loin eye, straight back, straight belly, and the other characteristics that make the difference between the choice or prime steer and a good standard or commercial steer.

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For when he sells the steers or heifers, the man who buys them will know pretty close to what they will yield, their approximate percentage of dressed weight and what the carcasses will grade hung up in the cooler. They can even tell whether the animals drank a little too much water before they got to market.

If he sticks to grass in his livestock operation, Farmer Jones' problems are not so bad. But say he wants to winter his livestock or that he decides that he might as well feed some grain to get a better finish and a better price. Most likely he will go to alfalfa for a spring hay crop and right away he has a new problem, the alfalfa weevil, a pest that has followed this crop eastward over the mountains and chewed its way through hundreds of thousands of dollars worth of alfalfa leaves.

The alfalfa grower soon found out that an insecticide heptachlor in granulated form or mixed with fertilizer was his best bet for controlling the weevil, but as soon as he thought he had the problem licked, another raised its head. Heptachlor as a residue on alfalfa leaves could find its way into the meat of its animals or the milk of his neighbor's dairy and render both products unsaleable.

The alfalfa also means more equipment. His tractor for cleaning the broiler houses did pretty well for preparing his land for grasses and legumes with the addition of a plow. But the alfalfa has to be mowed and raked and baled and then there has to be a place to store the hay. So, Farmer Jones, the banker and credit manager, had to find the money for this new equipment, had to check himself out on keeping it in operating order and Farmer Jones, the architect and engineer, had to design

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himself an effective hay shelter.

The grain for feeding those animals out presented still more problems. Corn seemed to be the best bet and growing his own, his pencil told him, was the cheapest way to get it.

But as with his chickens, corn, he found was not just corn. Did he live in flat eastern Virginia where hurricanes sometimes whirled through? Then he needed a corn hybrid with a good stiff stalk so that he wouldn't come out next morning and find it flat to the ground—a 50 per cent or more loss.

Did he want a corn especially for grain? Then there was a hybrid with a short stalk and big ear. Did he think it would be better to feed silage? Then there were several more hybrids with long stalks.

Did he want his corn early maturing, late maturing, or in between? He had to select a hybrid to handle these details from among the hundreds available to him.

And as always a new plant brought a new crop of insects—root worms, corn borers, bugs of all kinds, shapes and descriptions.

Farmer Jones soon found that corn planting wasn't just corn planting either. He had to take to agronomy to find how many stalks to the acre would give him the highest yield and how far apart the rows should be. He even found in the scientific journal that if he could adjust his planter plates to put the corn kernels point down with sides parallel to the rows his yield would be increased by as much as 25 per cent, because that way the corn stalks spread their leaves over the land between the rows and shaded out most of the weeds.

It was with corn that he first discovered the weed problem in all its ramifications. He had to study pre-emergence sprays, put on before the

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corn came up. He considered the wheel track method of planting which would let the corn grow in the tracks and leave the rest of the ground rough and harder for weeds to take hold.

And, all that he could read said that corn should be side-dressed with nitrogen and from his agronomy, he learned that he could put it on as a solid fertilizer, in liquid form or as a gas with special equipment.

Then perhaps one day Farmer Jones had a chance to buy a neighbor's dairy farm and his education started all over again. He had learned about pastures, something about livestock and their diseases, but he learned on beef and this was milk. He had to take up a new profession—sanitary engineering.

His mechanical engineering, architecture, and construction came in handy in building himself a loafing barn and a herring bone milking parlor to cut down the traditional labors of the milking process.

His efficiency studies in broilers and beef told him that the best bet was a bulk milk tank with its special refrigeration unit and special pipe lines designed to be cleaned in place.

With all of this equipment installed, Farmer Jones still found he had to do major battle with bugs too small to see—bacteria in the milk.

He finally had to learn how to clip the hair on the flanks of his cows, just how long to keep the milking machines on before the udder ran dry and the vacuum damaged the tender tissues of the udder and brought on mastitis.

He quickly learned what a test for brucellosis meant, what a plate count was, and ring test, and he also quickly found that antibiotics that cleaned up mastitis symptoms required special care. Unless the milk from the infected quarter was kept out of his supply for at least 72 hours, antibiotics might come forth in the milk and make it subject to seizure.

In dairy farming too, Farmer Jones, the poultry and beef man, master of many trades, became the full fledged efficiency expert.

Is it best, he read, to let the cows go to the feed or bring the feed to the cows as many dairymen are doing in states like New Jersey?

Or could he, like a few dairymen, raise their feed in pans of water in the basement through the winter to cut down on his hay supply?

Or would it be better, since he already had more work than he could handle, to join the cow pool in which he would merely grow replacements and keep his cows in a central location where a specialist would take care

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of feeding them and taking the milk from them?

In dairying too, Farmer Jones got his master's degree in economics. He found that he could send only so much milk to market at his base price. The rest would be surplus. He learned about a blend price for both base and surplus. He found his milk picked up at his bulk tank by a thermos bottle on a truck and whisked away to end up perhaps 300 miles across Virginia before it reached its market.

Had Farmer Jones tried hogs or vegetables or fruits or grains or peanuts or tobacco, he would have found his scientific education was continued and expanded in still new fields.

But even from his beginnings as a poultryman, and confirmed by his experience in beef and dairying, Farmer Jones soon realized that while he himself must have an often quite scientific knowledge in many fields, he, like any other professional man in business, must get help from a staff of experts and specialists. At the Virginia Polytechnic Institute, research was constantly at his disposal on many of his problems; research answers were brought to him through the extension service by his county agent and brought his boys through vocational agriculture.

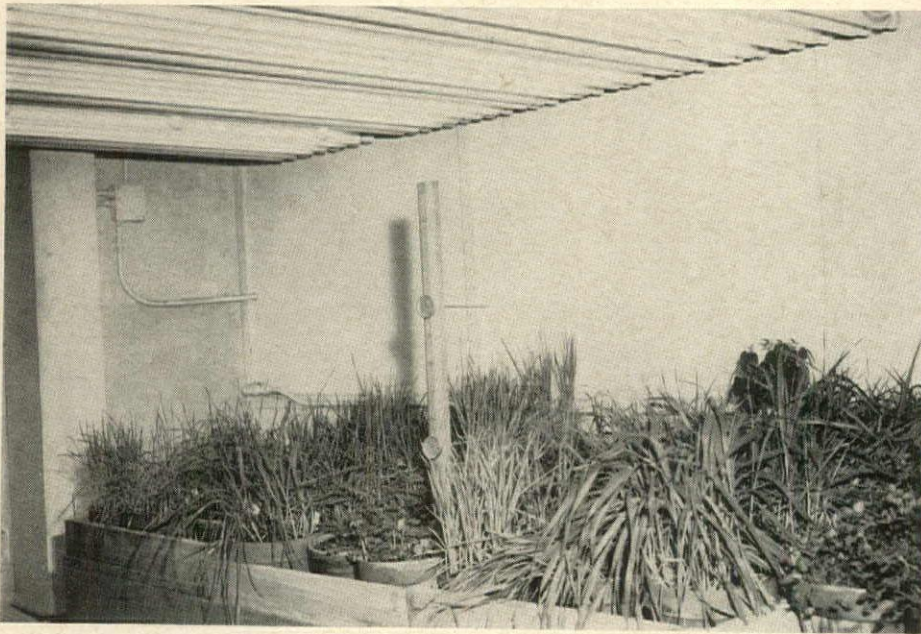
From the State Department of Agriculture he found he could rely on the labels of the supplies he bought because they had been sampled and laboratory tested.

And in the State Department of Agriculture too he found help in marketing his products—development of country point egg grading and handling establishments, testing of breeder flocks for his broilers and laying hens, special programs in the hatcheries that supply his chicks to make sure he got what he had ordered and what would make him money, special graded fat cattle sales for his beef and a whole system of inspection for his dairy farm, including a testing program for TB and brucellosis and tests to safeguard his milk from antibiotics or spray residues.

Even the gasoline on his farm was sampled and tested as were his seeds, feeds, insecticides, paint, and other products.

Farmer Jones is not a man to blow his own horn, but he gets quite a chuckle when he reads or hears about problems of the men in other fields. Could there be, he asks himself, anyone who has more varied problems or who must carry more solutions in his head than Farmer Jones?





A ceiling of light and air conditioning enable growth chamber operators to grow crops out of season to check varieties.

lated for some grains but not for others. The test plots, while they were continued, still had their basic disadvantage of not discovering a problem until the farmer already knew it.

So last year, the Division of Plant Industry remodeled a basement storage room into a climate chamber. The ceiling of this chamber is blanketed with fluorescent light bulbs of different kinds. In addition, an air-conditioning unit controls humidity and tempera-

ture. Thus the climate chamber can create a day in June on the coldest day in January.

Work in the new climate chamber has just got well under way, but already it is possible to grow plants before planting season and get a new look at variety determinations. In the growth chamber, characteristics of the growing plant can be studied as well as those of the seed itself. Differences in color of leaves, growth rates and

many factors can be checked against the known characteristics of different varieties.

While the problem of varietal purity was being tackled, the Department began a new attack on Mother Nature, this time with respect to germination of seed.

In the special germination ovens in the Department seed laboratory, it takes a week to three weeks, depending on the seed, for sprouts to appear and be counted for the standard germination test.

When seed was moving, this was a vital time lag. So the Department began looking for a short cut.

First encouraging results came from the use of a chemical stain called tetrazolium. This chemical had the property of staining portions of the seed which were alive, dead or severely damaged to different degrees. This peculiar property of tetrazolium had been discovered a number of years ago, but no standardized method of preparing samples or reading results had been developed.

In the State Department of Agriculture seed laboratory, this problem was tackled. First break-through was a standardized method of preparing the seeds themselves with tetrazolium stain. This method was very complicated. Seed had to be soaked for specific periods and then the stain applied. Each seed had to be very carefully split with a razor blade to prevent any damage in the process of preparation. The results had to be read within a certain period before the picture left by the tetrazolium became blurred.

Constant staining of samples and checking results against the standard germination test in which the seed actually grow out gradually evolved a method of reading tetrazolium tests which was accurate within a few per cent when compared to the usual germination results.

Only a few seed laboratories are able to make this precise use of tetrazolium. Even the Virginia Department was not yet ready to use it as an official enforcement measure, but as early as last year, on a basis of tetrazolium tests, it was possible to hold up a shipment of several thousand pounds of seed as being low in germination.

The big advance in tetrazolium germination tests was that it side-tracked Mother Nature. In the germinating ovens, even, under ideal conditions crop seeds took from one week to as much as 28 days to grow and sprout efficiently to be counted. Tetrazolium tests were much more precise and re-

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quired many more man hours per test, but under emergency conditions a highly accurate reading of germination potential could be made in the matter of 24 hours.

This last year tetrazolium enabled the seed laboratory to tell peanut farmers that their peanuts were low in germination and enabled them to make adjustment in their seeding rates.

Again this year, tetrazolium tests gave the first indications that soybean seed germination was extremely low and enabled the Department to advise soybean growers to make their adjustments and have their seed tested if they wanted a money-making stand.

The climate chamber has also assisted with another growing problem in the seed business, seed-borne diseases. Varieties of crops differ drastically in their resistance to certain diseases. This is one of the reasons for developing new varieties in the first place. Future climate chamber work will enable the Department seed specialists to inoculate seeds or soil with disease organisms and get a further check on variety by resistance of the various plants to these organisms.

Exposing seed to diseases also has another application. In commercial seed circles it's becoming almost standard practice to treat seeds with certain fungicides to prevent the development of seed-borne diseases. Seed laboratory purity testers can now tell whether seeds have been treated in most cases, either with the naked eye or with ultra-violet or other lights. But still unknown is whether the seed have been treated sufficiently to really control the fungus or disease. There's only one way to find out, and that is to grow the seed where the fungus is present.

In months to come, seed specialists expect to start this sort of test, exposing treated seed to disease organisms to see whether the treatment is really adequate. These tests may provide an easy means of telling whether treated seed really give the protection that proper treatment will afford.

Another characteristic is the presence of hairs and their location on various plants and leaf coloration differences. These too, are now being studied and classified by the Department seed specialists.

And so, in seeds too, it is a constant struggle to keep abreast of flying agriculture, to see that in industry's efforts to meet the farmer's constantly increasing demands, industry's products remain completely acceptable to their purchasers. ●

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Prescription Feeds (Continued from page 9)

goes on a straight broiler ration to fill him out and develop him. Finally, as he nears market age of somewhere between eight and ten or twelve weeks, he goes on a finishing ration to make sure that he ends up on your dinner plate smooth and well fleshed.

A chick that is going to end up laying eggs instead of producing meat starts off on about the same chick starter ration and moves into approximately the same starter or grower bill of fare. But as the young pullet moves toward sexual maturity, another specially designed ration enters the picture.

In the commercial egg business, there's not so much money in pullet eggs and particularly not in peanut eggs, but these are usually the first attempts from the young pullet to do the job that life has cut her out for. Feed company research has found that if the young pullet's sexual maturity is delayed, the period during which the smaller eggs are laid can be reduced. So for a time, the laying hen to be goes on a low protein high-fiber diet, so when the eggs start coming they'll be larger and more marketable.

When the time comes to start producing, the pullet will go on a straight laying mash, formulated to keep her in good flesh, keep the eggs high quality.

Her laying mash must be scientific too because the quality of the egg, the color of the yolk, and the thickness and hardness of the shell depend on the kind of feeds the hen takes in.

It's about the same story for turkeys. Even for young turkeys, the low protein high-fiber diet comes into play to increase the hatchability of her eggs and produce more turkey poult per hundred eggs in the hatchery. Turkey poult are expensive and an increase in healthy poult per hundred eggs means a real difference in the balance sheet.

But even the scientifically formulated feeds sometimes need a little extra preventive medicine. In today's poultry and turkey houses, the owner, or more often the field representative of the feed company, in making his weekly rounds may notice that the birds have symptoms of one of the many diseases poult or chicks contract. If so, into the ration will go the required amounts of specific drugs to aid in the controlling or the preventing of the further development of the disease.

All in all, as far as poultry feeds are concerned, there can be an over three hundred combination of drugs and antibiotics to do various preventive and curative jobs in the poultry business.

Aureomycin for Hogs

Scientific feeding is not quite as complicated with other animals, although prescription feeds for dairy and beef cattle are becoming more the thing and it has been truly said that hogs get more aureomycin than people.

In fact today there are about as many prescription feeds as there are different kinds of birds and animals raised commercially. There are poultry feeds of various kinds, several kinds of hog feed, even more kinds of dairy feeds, feeds for cattle and sheep, horse feeds, and special rations for rabbit, fox, and mink.

Also big business, although it is not now covered by the Virginia feed law, are feeds for pet birds and turtles and other aquatic creatures.

As feeds become more scientific and more specialized and as poultry and livestock develop more sensitivity to changes in their diet, the need becomes more acute for an impartial agency to make sure that feeds are what the label says and what the farmer orders.

This is one of the responsibilities of the Virginia State Department of Agriculture. The Department last year registered approximately 6,500 different kinds of feeds and feed ingredients of all kinds put out by approximately 800 manufacturers. All of these products must be sampled and laboratory

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tested against their label claims. This is the job of the eight feed inspectors in the Department and of the feed laboratory and the special antibiotics and vitamin laboratory.

Actually, three laws are needed to cover today's complicated livestock feed industry. The first is the General Commercial Feed Law covering mixtures of nutritional ingredients, preventive drugs and growth stimulants. The law requires registration of each commercial mixed feed and of all feed ingredients. The Department must also approve the label as to its claims and ingredient statement.

Exempt from the coverage of the law are feeds used exclusively in contracting of broilers, where the birds remain the property of the feed manufacturer, and custom mixing, where the farmer brings in his own ingredients that are ground and mixed with commercial ingredients to make his own finished feed. Also exempt are whole, unmixed grains, which the farmer himself might grow and a number of by-products of the milling industry which have little or no feeding value, such as oat hulls and peanut hulls.

Violations of the feed law carry a financial as well as a legal penalty. The law provides for automatic payment by the manufacturer for any deficiencies in protein, fat or fiber. Penalties are figured on a sliding scale depending on the amount of these ingredients and the amount of the deficiency and the money is payable into the state's Literary Loan fund. Thus, by a quirk of the law, the mistakes of a feed mixer help to build Virginia schools.

Streamlined Sampling

Feed samples picked up by the inspectors are channeled to one of two laboratories. The main feed laboratory checks for the principal feed ingredients, protein, fat and fiber, and for some minor ingredients if claimed.

As the number of feeds in the number of ingredients has increased and streamlined sampling procedures have brought in more samples, the laboratory has developed a special screening process. Every other feed sample gets a quick protein screening test, because research indicates that if protein lives up to label claims, so will the other ingredients in most cases, and conversely if protein is low there may well be other violations.

In addition to the feed law, the same division of chemistry within the department enforces the Animal Remedies Law covering any drug or com-

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bination of drugs which claims to be of medicine value to livestock or poultry. The Animal Remedy Act also covers growth stimulants and appetite stimulants which are also a part of today's poultry and other feeds.

This is also a law requiring registration and covering labeling, but laboratory work is done in the Division of Chemistry's special drug and antibiotic laboratory.

This laboratory literally finds needles in a hay stack, for some feed ingredients amount to only a few grams per ton, and findings may be expressed in parts per million.

Your dog and cat are also protected under the Virginia Canned Animal Food Law which covers any pet food in a can. Canned dog and cat food today is big business and also performs a function of reclaiming poultry by-products and meat and fish by-products which form basic ingredients for a number of the canned foods.

Canned animal foods are also tested for protein, fat, and fiber and deficiencies also rate an automatic penalty based on a sliding scale

But in addition to registration and proper labeling under the Canned Animal Food Act, minimum standards are provided if the food claims to be a complete ration. Minimum guarantees of protein and fat and maximum fiber and ash content are provided in the regulations.

In addition to protecting the livestock, poultry and domestic pets as far as the nutrition and disease problems are concerned, the Department also protects the ultimate consumer of red meats and poultry by requiring instructions on any drug use which might have a harmful effect on humans, to make sure this use is discontinued far enough in advance of slaughter so that residues will be dissipated and create no problems at the dinner table.

Today's prescription feeds including the companies with their push-button operated mills for mixing, their extensive laboratory and research facilities and the regulatory agencies which act as umpires, together are one major reason why the livestock and poultry portions of today's agriculture have made such phenomenal progress and why, through the efficiency of agriculture, an hour's labor in America today will buy more food and more varied food and higher quality food than it ever has anywhere, anytime in the history of the world.

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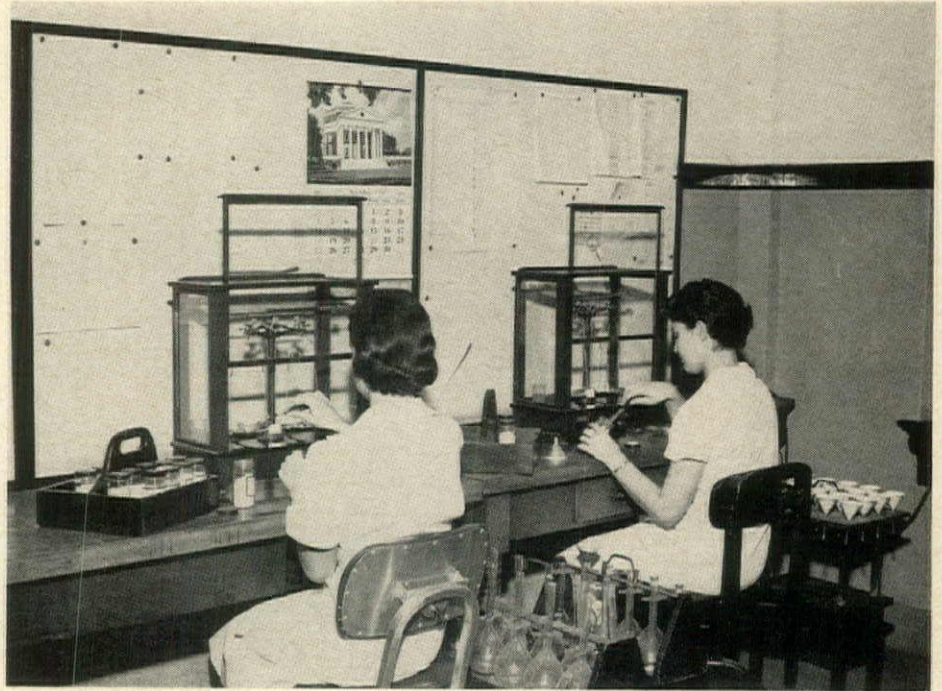
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The Science of Feeding Plants

(Continued from page 15)



Laboratory testing of fertilizers requires exact measurement.

that the material delivered is as represented on the tag or the delivery sheet.

Mixtures of fertilizers and pesticides are a particular problem. In the first place, only a few pounds of the insecticide usually goes into the ton of fertilizer. Unless these are mixed properly and evenly, the bugs don't get a lethal dose in one spot and perhaps so much insecticide might be dumped in another that the resulting crop at that point in the field may be unsaleable.

And too, the Department must always, in cooperation with Virginia Polytechnic Institute, make sure that the pesticide applied to the soil will not impart an odor or taste to the crop itself or to the next crop that may be planted in the field. An insecticide that does a fine job for a plant whose fruit is above ground may be disastrous for a crop like peanuts which is formed beneath the soil.

Any fertilizer must have a good deal of material which is of little or no value to the plants. This is so because nitrogen, which is what the plant uses, is a relatively inert gas in the pure state. Phosphorus, which is again what the plant itself needs for growth, in the pure state is a metal so active that it burns violently in the open air. Pure potassium, the basic necessary ingredient of potash, is almost as active a chemical in the pure state.

These plant foods then have to be

provided in the form of stable chemical combinations which will still make the three basic plant food ingredients available in the soil for absorption by the plant's roots.

But nobody likes to haul around inert material and so the industry, at the farmer's behest, is constantly seeking ways to increase the percentage of the basic plant food ingredients themselves.

Add minor chemicals like boron, manganese and others, and there is some danger that there just isn't enough room in a ton of fertilizer for everything that the farmer wants put in.

This is the latest problem confronting the compilers of the Virginia fertilizer grades list. This is a list of the grades of fertilizer, showing the percentage of plant food, which may be sold in Virginia, compiled each year by the fertilizer grades committee. This committee consists of the Commissioner of Agriculture, Director of the Virginia Experiment Station and Director of the Norfolk Truck Experiment Station.

A limitation on the number of different fertilizer grades that may be manufactured and sold results in a saving in fertilizer cost to the farmer according to department studies, because manufacturers don't have to keep dozens or perhaps hundreds of different grades on hand.

The restricted fertilizer grades list, which several other Southern states also have, is arrived at after a public hearing and on recommendation of specialists at the various experiment stations.

The grades list applies only to farm crop fertilizers, but includes all needed fertilizers for all crops under all conditions, as determined by official experimentation.

To help in determining which grades should be included, and to advise him on fertilizer-related problems, the Commissioner of Agriculture has appointed a special Fertilizer Advisory Committee on which farmers, farm organizations and fertilizer manufacturers are represented.

Fertilizer grades are measured in terms of the percentage of plant foods. A 5-10-5 fertilizer for instance, must contain five parts by weight of nitrogen, ten parts by weight of available phosphoric acid and five parts by weight of potassium.

The ratio of plant food ingredients in commercial fertilizers varies with the crop and with the job to be done. Some, like 0-20-40, contain no nitrogen but concentrations of the other two plant food ingredients. At the other extreme are liquid ammonia compounds or anhydrous ammonia gas which provide only nitrogen, the first plant food requirement.

The present fertilizer grades list consists of 30 farm crop fertilizers including tobacco grades and eight starter solutions and foliar sprays. The list exempts fertilizers in packages of less than 25 pounds which are classified as speciality fertilizers for non-farm use. These are the fertilizers you use around your home or in the potted plants inside the house.

The eight starter solutions and foliar sprays are another new wrinkle in the fertilizer game. They are usually high concentrations of particular fertilizers which are applied in water solutions, usually for vegetables, for example transplanting tomato plants in the field from their special plant beds. With the starter solutions of foliar sprays, the plants can be watered and fertilized at the same time.

But back to the solid form of fertilizer for the moment. The problems involved in trying to pack minor elements and large quantities of plant food ingredients into a ton of fertilizer are followed on out into the procedure of spreading the fertilizer.

Special spreader trucks bring special problems. The small openings in these trucks, which can be adjusted for greater spread per acre, are highly subject to corrosion and of course moisture

cakes up the fertilizer on the equipment and requires special cleaning and care. The equipment itself must be properly designed to do the job and avoid the problems inherent in fertilizer spreading.

As part of its regulatory job the Department of Agriculture's Division of Chemistry has made several studies of bulk spreading, not only checking the equipment itself but has spread pans at various intervals across the fields to collect samples in an effort to

see if the spread and analyses are uniform across the field.

These studies will be continued and emphasized this coming year to see if action is needed in the field for regulating maintenance of trucks and licensing operators, as well as other factors standing in the way of uniform fertilizer spread.

Liquid and gaseous nitrogen further complicate the job of seeing to it that the farmer gets what he pays for. With these two new types of chemicals there

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are no bags to be checked at the factory or on the route to the farm and no central distribution points at which bulk shipments can be checked.

Tank samples of liquid nitrogen can be drawn and analyzed and the Department has designed special equipment for this job. A special coupling is hooked direct to the liquid bulk tank and the liquid runs through a special valve into the container for sampling. The equipment has to be fool proof because the liquid ammonia is still under pressure and if free ammonia escapes as a gas in the sampling process, the analysis will not match up with what is actually in the tank.

Special equipment has also been designed to check the ammonia gas on the basis of its evaporation rate.

Both of these tests are quite accurate but actually the ingredient variation in either liquid or gaseous fertilizer is infinitesimal compared to the granulated forms which contain the other plant food ingredients.

What this really means is that as far as liquid and gaseous ammonia nitrogen are concerned, the farmer has to assume considerably more of the responsibility for getting what he pays for than he does with bag goods or even with bulk fertilizers. There will never be enough fertilizer inspectors in the Department to check each liquid or gaseous delivery of nitrogen on each Virginia farm.

Just as liquid and gaseous fertilizers have required the development of new analysis methods, the other changes in

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the industry as a whole had to be met with counter moves by the regulatory agency.

With plant food violations down to a little over six per cent of samples drawn last year, the Department's fertilizer inspectors began concentrating on the areas and manufacturers whose past records have shown they are having problems in continuously meeting the law's requirements.

Under the law all fertilizers must be registered with the Department and samples as run through the laboratory must match the label on the bag, so far as plant food content and minor ingredients claimed.

The fertilizer law is one of the few where the customer gets at least some of his money back. The law provides for penalties levied on the manufacturer up to three times the market value of any shortage in the plant food ingredients. This penalty is payable to the purchaser of the fertilizer if it can be shown that he actually bought some of the deficient lot.

Last year over fifteen thousand dollars in assessments were made against fertilizer manufacturers with about sixty-four hundred dollars being returned to purchasers as refunds. Most of the balance was deposited in the state treasury to the general fund and is not usable by the Department for fertilizer enforcement.

When a particular firm is having violation problems, the Department more often makes an analysis of his particular violation and sits down and discusses it with him. Applying his

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knowledge of the fertilizer industry, the inspector tries to help the manufacturer find the cause of his trouble and prevent further violations.

New methods of selling and distributing fertilizers have necessitated changes in the sampling techniques by the Department too. Inspectors have been stationed at central points of fertilizer movement instead of in general territories around the state in order to get samples. Some of these points are at truck weighing stations, particularly one at Suffolk through which pass a great many trucks en route to the farm from Norfolk fertilizer plants.

In the initial stages is the development of inspectors into teams. One team at present is working truck scales. Another will be working the plants that ship fertilizer by rail, since there is no central point at which railroad cars may be sampled.

Another team concentrates on plants and areas with high violation problems the previous month to try to find out what is wrong and reduce the violations.

Bulletin Lists Samples

Changes in the fertilizer business have brought changes in the methods of reporting fertilizer violations which are normally tabulated in the Department of Agriculture's monthly bulletin. In order to be fair to all manufacturers and to give farmers a better idea of what their individual fertilizer company record was, the bulletin every three months publishes a list of all manufacturers' samples, together with the number of samples taken, percentage of violations and the type of violation.

This way, each company can find out how it is stacking up and each farmer can find out how his company is doing.

A look at the tables in any bulletin shows that all companies are doing very well indeed at the complicated job of keeping fertilizer formulas uniform and contents in accordance with label claims. In an industry as complicated and mechanized as the fertilizer industry, rigid plant supervision by industry itself is widely practiced to keep mechanical and occasional human errors to an absolute minimum.

There will certainly be more changes in the fertilizer industry, as closely associated as it is with ever-changing Virginia agriculture, but with so much change already accomplished, the fertilizer industry, the Department of Agriculture and farmers themselves will be able to meet them even better than they have in the past. ●

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Gasolines (from page 11)

dicating contamination of the gasoline with substances like kerosene or other heavier petroleum oils.

For your protection, the laboratory also runs a vapor pressure test. If the pressure inside a specially designed container at 100 degrees Fahrenheit exceeds established tolerances, the gasoline will have a greater tendency to form vapor lock in your engine.

Vapor pressure tendencies can be controlled by proper amounts of the more volatile gasoline components, the same ingredients that make for easy starting, and regulations and law provide for different maximum test readings in winter and summer. This vapor pressure of gasolines in Virginia is changed four times a year to match seasonal temperature changes.

But a modern gasoline not only must start quickly, avoid vapor lock, warm up nicely, give good performance on the road and not form excessive carbon, or develop offensive knock, it must also be free of problems like clogged carburetor jets or sticky valves.

These two problems usually result from excessive gum content. The Department of Agriculture's gasoline laboratory checks this too by evaporating the gasoline to see what is left when everything that turns into actual gas has done so. If the sample leaves a residue of more than ten milligrams of gum per 100 milliliters of gasoline, it is liable to give trouble in your engine and the Department takes action.

Modern day gasolines are carefully formulated and manufacturers have no desire for any regulatory agency to find anything wrong with their fuel. But there is many a slip twixt the cup and the lip. Gasoline has to travel many miles and sometimes in several types of vehicles before it reaches your filling station. Even there, underground seepage, storage for too long a period, and other problems can arise.

So Department inspectors regularly take samples and send them to the laboratory for analysis. Last year the laboratory ran about 6,500 of these samples and found some 200 of them far enough off to repeat a test. Even fewer failed to pass the second test, requiring inspectors to go back to the point of sample to see that the situation was remedied.

These inspectors spend a lot of time at collection points for gasoline, the big storages at various points around the state.

Here they can catch a problem load

of gasoline before it is distributed to hundreds of service stations and into thousand of automobile gas tanks.

This too is where sample and laboratory tests can discover that a gasoline tanker or barge was improperly cleaned between loads of gasoline and heavier petroleum products or any one of the other problems in the vast distribution system of getting your gasoline to you.

Checks at the service station help avoid the possibility that you might buy a gasoline of one octane rating and get gasoline of another by inadvertent switching of tanks.

Not all states have gasoline laws and laboratories like Virginia's, but samples picked up in other states and run through Virginia's laboratories indicate that it is a good thing for you that your state does.

Like any law enforcement official the Department's gasoline inspectors are sometimes called pretty far off the beaten track. In Richmond some weeks ago a worried tank truck driver reported to police that a large part of his load of a paint thinner had been hijacked. The truck, which resembled the usual gasoline road tanker, had been recovered but not the toluene which had been inside.

Police theorized that some one might have mistaken the contents for gasoline. If this was the case and any were sold, it would be a sad mortorist indeed who inadvertantly bought some. The toluene might have actually started the engine and run it for a while but it wouldn't have run for quite a while afterwards.

Police called in Department gasoline inspectors indicating to them the suspected area in which the hi-jacked paint thinner might have been unloaded. The inspectors systematically sampled the gasoline stations in the area and found what they wanted in one that had been closed up for two or three days.

When off-grade or contaminated gasoline is found, the tank is sealed until the condition is corrected before sale can be resumed.

In one contamination case, several millions of gallons were found in a tanker contaminated with bunker fuel. The entire lot was returned to the refinery.

Some time this year, a new engine will be added to the Department's laboratory, this one a C-tane engine to begin the testing of diesel fuel, which has always been authorized by the gasoline law but for which money was first appropriated by the 1960 General Assembly. ●

to tell the Virginia Story

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DANVILLE, VIRGINIA

Business Review

(Continued from page 23)

Esso for the Roanoke District have been made, according to **Roy E. McDaniel**, Esso's manager for Virginia and West Virginia, from his Richmond headquarters. They are **Horace M.**

"Mike" Leconey, Jr., manager of the company's Roanoke District since 1954 to general sales manager of the Oklahoma and Pate Oil Companies, with headquarters in Chicago. **Stuart M. Pearman** advanced from assistant district manager to succeed Leconey. **Walter L. Huff** became assistant manager replacing Pearman. Huff comes to Roanoke from Fredericksburg where he was an Esso sales supervisor. . . . **George F. Albright**, agency vice-president and director of the Life Insurance Company of Virginia and **James Gara**, Tidewater district manager for Sears, Roebuck & Company, Norfolk, have been elected to the General Board of Directors of the Bank of Virginia, according to a recent announcement by **Herbert C. Moseley**, bank president. Moseley also announced the election of **Robert E. Collier**, regional manager of All State Insurance Companies, to the Roanoke board of the bank. . . . **Norman R. Dunn** was recently appointed chief national bank examiner for the Richmond district of the Federal Reserve System. Dunn succeeds **John D. Gwin**, who is being transferred to a similar post in Atlanta. . . . **James A. Moore**, terminal manager for Hennis Freight Lines, Inc., at Hickory, N. C., has been transferred to Roanoke to be

a salesman in that area. . . . **W. A. (Bill) Stump** has been made assistant manager of George Thrasher Fine Shoes in Roanoke. . . . **Guy V. Mallonee**, formerly of Richmond, has been appointed assistant manager of Esso Standard Oil Company's New York Sales Division. Mallonee, a graduate of the University of Richmond, has been with Esso since 1934. . . . **Ted B. Jacobsen**, formerly of Philadelphia, has been named special sales representative for East Coast Freight Lines in Richmond. . . . **Norman F. Brewington**, Virginia Electric and Power Company manager at Colonial Beach, has been transferred to South Boston to be the company's manager there, according to an announcement by Southside District Manager **James V. Barker**. Brewington will replace **H. R. Linkous**, recently named manager at Elizabeth City, N. C. . . . The S. P. Hite Co. of Roanoke announces **Nevin Wood, Jr.**, as its general salesman for the four-state area of Virginia, West Virginia, North Carolina and Ohio. . . . **Senator J. Hubert Wheeler** of Ewing has been elected president of the Virginia Crop Improvement Association. . . . **Mayor C. V. Jackson** of Pulaski has been re-elected president of the New River Valley Airport Commission. •

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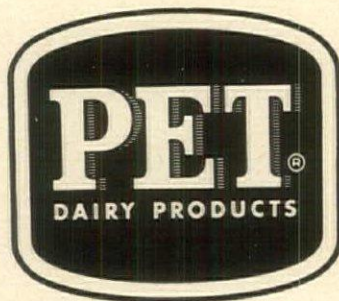
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LETTERS

Confederate Series Meets Approval

To Clifford Dowdey, Editor

Just a note to express my appreciation as a reader of your fine work in the Virginia Record. I think your Confederate series is especially appropriate and, of course, is particularly well done.

Sincerely,

/s/ C. H. Hamilton

* * *

And Our Belated Thanks To Fauquier

To Rosewell Page, Jr., Business Editor

On behalf of the Fauquier County Bicentennial Committee, I would like to take this opportunity to thank you for affording us space in your fine magazine in publicizing the Fauquier County Bicentennial. The success of this event was certainly attributable in part, to the cooperation we received from you and your outstanding publication.

Again, with many thanks and best wishes, I am

Sincerely,

/s/ Philip V. Brennan, Jr.
Publicity Director

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Commissioner Parke Brinkley
and the
Virginia Department of Agriculture*

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The Root of the Matter

(Continued from page 5)

capital of World Communism in such forthright enmity to the interests of America, as well as revealing a barbaric enforcement of despotism, that the Left quite suddenly ceased to be fashionable. Probably no Cause in modern times ever sputtered out so ignominiously, with all the formerly arrogant joiners hastening to disclaim any allegiance to Soviet Communism.

However, during the period of the Russian rapprochement, the measures of the early thirties, which propped up capitalism and warded off communism, continued a drift toward socialization of the economic society, with the resultant centralization of power, and the Liberal attitude, after abandoning the Communist affiliation, continued to be popular. But, with the repudiation of the ultimate expression of the Marxist doctrine and the meeting of many of the economic needs through the socialistic tendencies of the State, there were on firm grounds for the Liberal to operate on. The Liberal was in a movement that had no cause, or, really, reason for being.

For the intellectual this was not too bad a situation, since he had given himself an identification and enjoyed the self-satisfaction of "belonging." At least, even inactive, he could feel superior to the conservative. But the Liberal politician must have a cause. He must be changing something. To favor the *status quo* would be fatal to his standing.

As a vestige of the union between Russia and the vague idealism of the "New Freedom," the notion of civil rights was still around. Also around was an experiment the Communists had made in arousing racial antagonisms and unrest. Since La Guardia, in New York City, had shown the sweet uses of minority groups with his importation of Puerto Ricans, and since Negroes were migrating out of the South to the industrial centers in the North, the Negro as an issue joined hands with civil rights to give the Liberal politicians a cause.

As no honest Northerner was proud of the white and colored relations in the North, and as in most communities the Negro population was too small to create a problem, the new cause could be exploited for all it was worth at the expense of the South. The Southerners were conservatives anyway, so, not only would no votes be lost by attacking them, but they were ideally cast for the role of heavy.

By the present stage, the Negro, the

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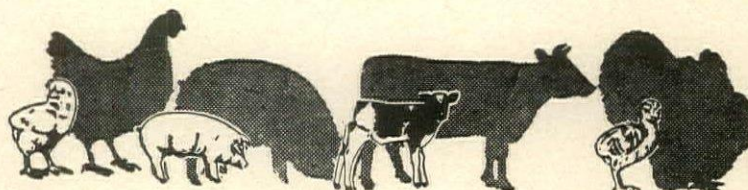
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South, and civil rights are all entangled in a mélange of political quackery, opportunism, and the conformity of the ambitious. But this movement is an attitude rather than a cause. It has its house-rules and creeds, which one can learn by rote. As a columnist pointed out, no single event so illustrated the emptiness of any true principle, or conviction, as the retirement of Nelson Rockefeller from the nominal race. He withdrew only because he could not win. There was no single conviction in his attitude which he felt to be worth fighting for.

This current band-wagon is a shabby and rather frightening substitute for the great forces which have moved mankind in the past. When religion was a great force in the Western World, it helped the mortal in his relation to God, gave a meaningful purpose to life on earth and way of adjustment to death. While, of course, religion still serves these ends for the devout, and the effects of religion in Western civilization are incalculable and immeasurable, its very acceptance (or non-acceptance) has removed it from the forces that bring the action of profound change. When the idealism behind the general theory of Marxism was a force, this promised a change in the environment to which man must adapt. While no change is an unreserved good, nor of equal benefit to all, few would deny that the world is a better place for the many than it was one hundred years ago.

When these forces, religious and economic, had spent their capacities for effecting change, man would seem to have achieved solutions to the two fundamental problems with which mortals are confronted: adjustment of himself in his relation to God and adjustment of himself in relation to his environment. Needless to say, it has not worked that way. Man has found the need to make yet a third adjustment: to himself. Obviously no panaceas for any blue-printed society are going to achieve that, and no forces for action now extant are even approaching this ultimate problem.

Most likely such intimate problems are far from the minds of the liberals concerning themselves with passing civil rights legislation for their political records. In fact, by irresponsible tampering with social structures these civil rightists would only bring chaos, as they have in New York City, to the environment to which the individual must adjust. Committed to some change, no matter what, which at least looks like betterment for somebody's

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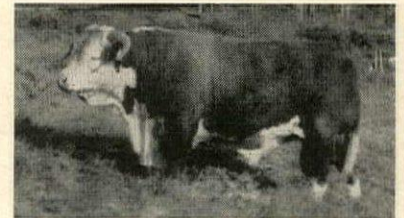
welfare, and having seized upon the Negro as the object, or victim, of their salvation, these leaders under their banners of clichés and generalities are quite dangerously removed from any of the moral forces which have significantly changed the world.

In the single example of the football they made of integration in the schools, they have made their lack of real interest in the Negro's education abundantly clear. The colored school-children in Prince Edward County alone provide a daily illustration of the emptiness of the slogans under which the Liberals stirred up trouble. The pious sentiments of the Supreme Court, about amalgamation in the schools increasing the adaptiveness of Negroes to their environments, have been

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shown for the bogus nonsense they were from the beginning.

As pointed out in the preceding editorial, such indications of the realities that result from the sociological experiments are beginning to come home in the North, starting in New York City. Unfortunately, the Liberals have the initiative now, and the conservatives are on the defensive.

There is an axiom in sports that to score you must have possession of the ball. But, though the Liberals now do have the ball, teams can fumble, and fritter away their opportunities to score. Perhaps the conservatives, without intention, are acting with wisdom in permitting the civil rightists their chances to make fools of themselves.

The only trouble with that is the

potential for harm inherent in any moving thing that is improperly controlled. This is another way of saying that things might get worse before they get better. But there is one certainty: despite all their arrogant claims, the current sociological movements do not possess any inevitability.

As Daniel Bell wrote about 19th century ideologists, "By identifying inevitability with progress, they bor-

rowed the positive values of science." The current ideologists have gone a step farther by identifying their movement with inevitability, and they did a fairly good job of making people believe it for a while. When people cease believing this, the movement will be exposed as a lot of motion without force behind it, and the conservatives can come out of their shelters.



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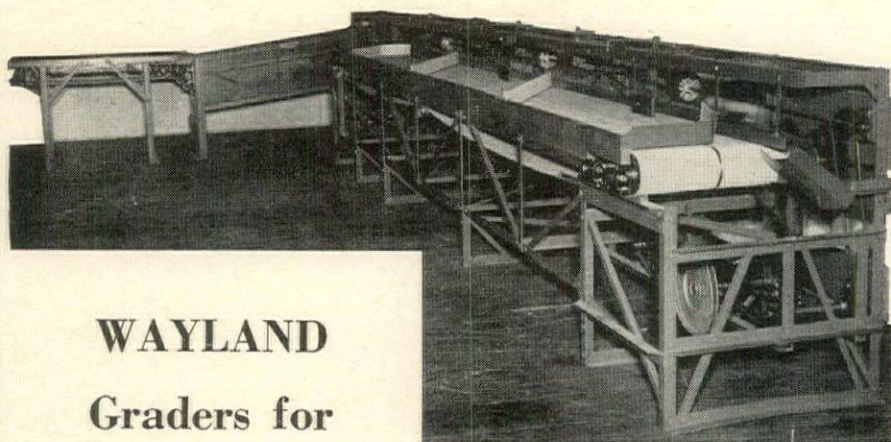


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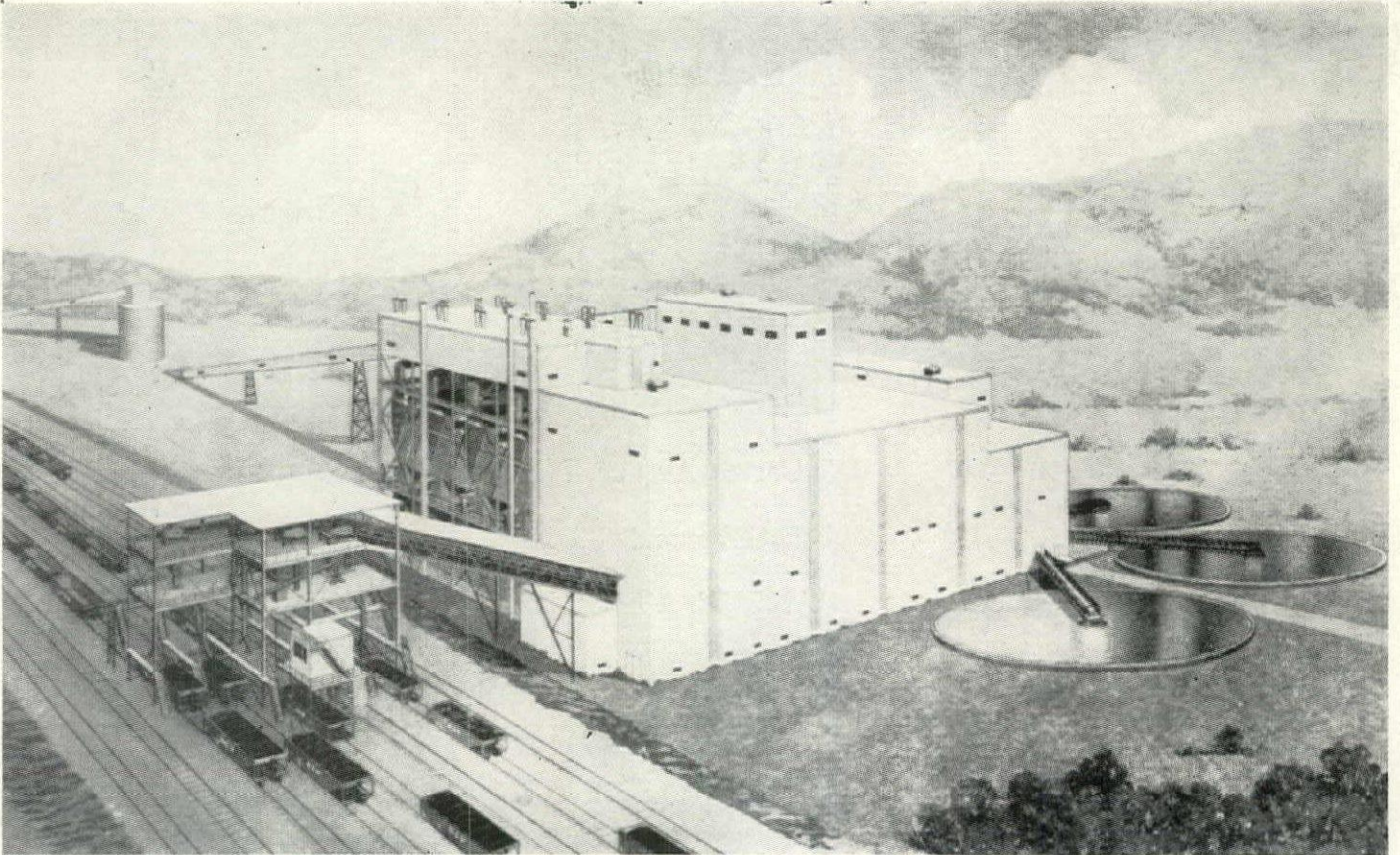
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