The Story
of a
King and Queen
THE STORY OF A KING AND QUEEN

(Parents and teachers are asked to help their children and pupils to understand the full meaning of this story. The data used are all correct and vouched for by the records of the Illinois Agricultural Experiment Station. Cyrill G. Hopkins.)

Once upon a time a young King started out to find a better country and a better people. He had been born and raised among the common children of his country, but none of them suspected him to be a King. Even he himself scarcely realized his royal birth, and never guessed the
golden harvest that one day would be his after he had really discovered his own country and established his rule over it.

So eager was he to find his kingdom and the people he was to rule over that he set out even before he was fully grown, and like all good travellers followed the sun westward, leaving behind the rugged hillsides where as a child he had lived near the great sea.

Westward, ever westward, the young King travelled, and once he thought he had found his land and his people beyond the mountains in the valley of a Great Miami\(^1\); but he soon learned that he was to rule a larger kingdom in a greater country still nearer the setting sun. And, as he wandered on, he came, at last, to the Land of the Illini\(^2\) which stretched away farther than the eye could see, a broad expanse of almost unbroken prairie land.

"This", said he, "is my country, here will I prosper, here will I be happy, and here will I stay and establish my kingdom." The young King found an ideal home for himself on this dark prairie soil, and for many years he lived as a very independent bachelor; but there finally came a time when the supply of food which he had found already prepared in the soil

\(^1\) The Miami Valley in Ohio.
\(^2\) Illini is the Indian name for Illinois, which means the land of men.
became partially exhausted, and in hunger he said to himself, "It is not good for man to be alone". He then sought a princes named "Clover", and thereafter always rejoiced that she consented to be his Queen. Where she prepared the soil, King Corn was again as well fed as ever.

Queen Clover found that the supply of food in the soil had not been completely exhausted during King Corn's life as a bachelor, but only that the supply of some ready prepared foodstuffs was much depleted, and from the remaining total supply of raw materials she was able to prepare much food fit for the King's use, and she was also able to prepare the King's bed in the soil as it had never before been prepared for him.

Years passed, and they were happy and prosperous years; but finally both Corn and Clover were forced to remember the ancient saying: "And this, too, shall pass away." King Corn began to complain again that his bed was getting hard and that the food furnished him was not sufficient. Queen Clover replied that she, too, was suffering from hunger, and that her home in the soil which had always been sweet and clean was becoming sour.

Naturally, Queen Clover was much more sensitive to this condition than King Corn, but she had done the best she could with what she had found in the soil and she had also secured for herself one choice kind of food from the air, and even prepared it for the King so far as she could.
But, in spite of all they could do, Queen Clover's health began to fail; and some years she was entirely helpless, and consequently King Corn suffered greatly. They consulted many doctors. Some said the soil needed more drainage; others said the seed-bed should be better prepared; and still others advised the use of better seed and of more thorough cultivation.

All of these remedies proved helpful, but they afforded only temporary relief. At last Queen Clover said to the King that when she was a child a doctor, whose name was Science, had once visited her family, and that whatever he did was exactly right because his knowledge was true and absolute. He had shown them that all of the members of the Clover family were able to secure nitrogen from the air, and that this was one of the essential foods for plants.

The King and Queen were greatly rejoiced to learn that the old Doctor was still living, and they at once secured his services.

After a thorough investigation of the conditions, Doctor Science reported that he understood the case and that the remedy was simple and still within easy reach, but that they should proceed at once to apply the treatment before it become too late.

"The fundamental trouble", said he to King Corn, "is with the soil in which you live. In order to establish a permanent and healthful home for
yourself and Queen Clover, about one-half ton per acre of pure steamed bone meal, or of fine-ground natural rock phosphate, and two tons per acre of ground limestone should be applied once every four or five years. Then don’t occupy the land too much of the time yourself, but bring in other crops and have a rotation,—such as corn, oats, and clover, or corn, wheat, and clover, for a three-year rotation; or wheat, corn, oats and clover (in grain farming), or corn, corn, oats, and clover (in live-stock farming), for a four-year rotation. In the four-year rotation for grain farming a catch crop of clover may also be seeded on the wheat ground and plowed under the next spring for corn, and the regular clover crop in the fourth year may be mowed once or twice and left lying on the land, the seed crop afterward being harvested with a buncher attached to the mower.

"In grain farming, only grain or seed should be sold from the farm, all clover, straw, and stalks being returned to the land in order to maintain the supply of organic matter and nitrogen, which are just as important as limestone and phosphorus\(^1\); and in live-stock farming all produce should be used for feed and bedding and all manure carefully saved and returned to the land, preferably within a day or two after it is produced, in order to prevent the waste of plant food."

\(^1\) Phosphorus is the valuable element of plant food contained in natural rock phosphate and also in bones, and large amounts of phosphorus are required for clover as well as for corn and other crops.
“Now, do you understand all this?” asked the old Doctor.
“I don’t,” replied King Corn.
“And I don’t,” added Queen Clover, “but I have faith in Doctor Science, and I think we should follow his prescription. I know very well that I can’t do as much as has been expected of me in the past. I can’t make food out of nothing, and the King can’t live on just air and water; and the soil is becoming so worn and hard that I can’t even make a good bed for him, especially when I’m half starved myself most of the time.”

King Corn agreed to this. He had long supposed that Queen Clover could get from the soil and air all of the food they would ever need, but he now remembered how he himself had failed in this as a bachelor, and he felt that Clover had been such a good Queen that anything which Doctor Science prescribed should be provided, because above all else he desired to have the Queen restored to health and happiness, for he did not care to try to live without her again. On the other hand, they both agreed that they would test the Doctor’s prescription on part of the land on which they lived and have also some land without such treatment, in order to compare the results.

There were three very uniform fields of typical prairie land which had been in permanent pasture for many years, but on which King Corn had recently lived for three years in succession, and they had produced for him
as an average of those years the following yields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field A</td>
<td>63 bushels per acre</td>
</tr>
<tr>
<td>Field B</td>
<td>63 bushels per acre</td>
</tr>
<tr>
<td>Field C</td>
<td>66 bushels per acre</td>
</tr>
</tbody>
</table>

They were now sown for three years to oats, clover, and cowpeas, after which each field was divided into three parts and, in accordance with the advice of Doctor Science, limestone and phosphorus were applied, not to all of the fields, however, because a test was to be made of the treatment. Thus no treatment was applied to Field A; limestone alone was applied to Field B, and both limestone and phosphorus to Field C. On all three fields the second crop of clover was plowed under just in proportion to what grew on the land, and in the later years the corn stalks, oat straw, and all clover hay and straw were returned to the same fields on which they grew, thus following finally the complete prescription.

A regular three-year rotation was also begun, one-third of each field being in corn, one-third in oats, and one-third in clover, each year; and the next year, corn followed the clover, clover followed the oats, and oats followed the corn.

As an average of the three years, when only partial treatment was used, the yields were as follows:
Field A ................. 67 bushels
Field B .................. 69 bushels (with limestone applied)
Field C .................. 74 bushels (with limestone and phosphorus)

As an average of these three years, compared with the former record, it was seen that the yield was 4 bushels higher on Field A, 6 bushels higher on Field B, and 8 bushels higher on Field C.

"I think I feel somewhat better," said the King, "and I should like to continue the treatment at least for a few more years."

The oat crop followed corn and thus Queen Clover was compelled to sit at the third table in the rotation, and she had had the full benefit of the limestone and phosphorus for only one year; so she was glad to have a further chance to try the treatment.

As an average of the next six years, the yields per acre of corn were as follows:

Field A ............... 63 bushels
Field B ................ 67 bushels (with limestone applied)
Field C ................ 87 bushels (with limestone and phosphorus)

At the end of these years the King had his accounts all figured up. "Field A has gone down again," said he to the Queen. "It has lost the 4 bushels it had gained by the improved rotation."

"Yes," replied the Queen, "and I don't like that field a bit. I almost
starve when I try to live there, and Field B is growing poor, too."

"So I see," said the King, "by 2 bushels, altho limestone has maintained the yield 4 bushels higher than Field A; and where both limestone and phosphorus are used, the average yield is 24 bushels better than without them. That reminds me of old times, my Dear. When I was a young bachelor, a yield of 87 bushels per acre was not uncommon."

"You might try 'baching' it again," suggested Clover. "You know I'm not considered of much value, and the oat crop isn't worth very much. Surely, three crops of corn would be worth more than one each of corn, oats, and clover."

"No, no," said the King. "I do not care to repeat my experience as a bachelor; and, by the way, I have never confessed to you the real condition I was in when you consented to be my Queen. The facts are that I lived on one field for thirty-one consecutive years, and as an average of the last six years the yield was only 23 bushels per acre. Thus it required three years to produce 69 bushels, whereas 87 bushels are now produced in one year under this system of permanent soil improvement in grain farming; and even 90 bushels per acre are produced where limestone and phosphorus have been used in the live-stock system, which you remember, was also suggested by Doctor Science, and which we have been trying out on Field D."
The writer also has a confession to make:

The six-year averages of 87 bushels in grain farming and of 90 bushels in live-stock farming are the records of the Illinois Agricultural Experiment Station for the last six years, 1904 to 1909.

During the same six years the average yield of oats was as follows:

Field A ....... ...... ......48 bushels
Field B .......... ...... ......50 bushels (with limestone applied)
Field C ...... ...... ...... ......62 bushels (with limestone and phosphorus)

As an average of three years during which the second crop of clover was harvested for seed, 1907, 1908, and 1909, the yield of clover seed was as follows:

Field A .......... ...... ......1.9 bushels
Field B .......... ...... ......2.1 bushels (with limestone applied)
Field C ...... ...... ...... ......2.7 bushels (with limestone and phosphorus)

As an average of the last three years, 1907, 1908, and 1909, the yield of corn on Field A was only 58 bushels, but the limestone and phosphorus together increased the yield of corn by 29 bushels, the yield of oats by 10 bushels, and the yield of clover seed by nearly one bushel per acre. The total value of these three increases is $19.40, counting 40 cents a bushel for corn, 30 cents for oats, and $6.00 a bushel for clover seed. The increase has paid
for the cost of the limestone and phosphorus and given in addition a net profit of more than 100 percent, and besides this the soil of Field C is growing richer and richer, while the soil of Field A and Field B is growing poorer and poorer.

As an average of the three years 1905, 1906, and 1907, the yield of air-dry clover hay in the first cutting was as follows:

- Field A ....................... 8 tons
- Field B ....................... 9 tons (with limestone applied)
- Field C ....................... 1.8 tons (with limestone and phosphorus)

These clover crops were harvested and removed, thus removing much more phosphorus from Field C than from A or B, but since 1907 all clover except the seed is returned to the land, on all three fields; and hence this story is to be continued. Meanwhile, the Illinois farmers and landowners are advised to help their children study circulars 110, 127, and 141, and bulletins 123 and 125, all of which, upon request to the Agricultural Experiment Station, Urbana, Illinois, will be sent free of charge; and all the friends of King Corn and Queen Clover are welcome to visit these demonstration fields, which lie only two blocks south of the street car line on Mathews Avenue where it passes the Agricultural Building at the University of Illinois.
1909 corn, where the clover and all crops are removed and no treatment applied; yield, 35 bushels per acre.
1909 corn, where clover and crop residues are plowed under and limestone and phosphorus applied; yield, 79 bushels per acre.
1909 corn, where manure, limestone and phosphorus are applied; yield, 86 bushels per acre.
Nota bene.—Once upon a time a young man came into what is now the heart of the Illinois Corn Belt and found the green grass growing luxuriantly upon the dark prairie soil as far as the eye could see. He had very little money, but the land looked good to him and since it could be obtained from the Government at small cost he decided to buy a farm. He began to raise corn and cattle, and even tho the price of those products was very low he was soon able to buy more land, and by continuing as he began he became the owner of twenty-seven thousand acres of land before his death. His children and his grandchildren are still living upon the land, which is now worth $200 an acre, even tho it requires fertilizing to maintain its productiveness.

While there are eight times as many people in the United States in 1910 as there were when that young man came to McLean County, Illinois, there is now no cheap land anywhere on which corn can be grown with success and profit. Thus the farmer of the present and the farmer of the future must make his success and profit by improving the land now occupied.

NOTE.—Another story circular is the “Story of Rose and Queen”, published by the Agricultural Experiment Station as Circular 103, copies of which can be secured free upon request.
1910 clover on the Fairfield Experiment Field in Southern Illinois. Manure alone (on left) supplies but little phosphorus and will not correct the soil acidity. Manure, limestone, and rock phosphate (on right) produces a large yield of clean clover. (If the Corn Belt needs limestone and phosphorus, what shall we say of "Egypt"?)