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UNITED STATES  
DEPARTMENT  
OF AGRICULTURE

**Radio Service**

OFFICE OF  
INFORMATION

JUL 21 2010

National Oceanic &  
Atmospheric Administration  
U.S. Dept. of Commerce

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OUTDOORS WITH THE SCIENTIST

Tuesday, October 2, or later 1928

NOT FOR PUBLICATION

READING TIME: 10 minutes.

ANNOUNCEMENT: Today we begin a weekly series of excursions into the great out-of-doors with the scientists of the United States Department of Agriculture. A chat with the Weather Man and a tour through his maze of instruments and charts, indoors and outdoors too, begins the schedule of Tuesday trips for nature lovers.

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"Are you just going to take this thing up where you left off last year--?"

It was the Weather Man speaking and I was listening. Every now and then I would put in a question or two.

"Well, we believe that people are interested in the weather and that they like to hear talks about it," said I.

The Weather Man smiled. "I have been studying weather--- and people--- for a long time," he said, "and I don't know of anything that furnishes more people with a subject for brief conversation."

It was my turn to smile. I grinned. "How about the Younger Generation for a subject for conversation?" I asked.

"You must remember," he said, "that the weather never grows up."

I laughed right our loud. "We were speaking about rain," I said. "Suppose you tell me a little bit about rain. I know of nothing that has spoiled more picnics."

"Nor watered more crops," said the Weather Man. "Take the Big Rain of August 11 and 12 here in Washington. Suppose I tell you a bit about that."

"Do," said I. "It broke all the records, didn't it?"

Just then a rugged man with sandy hair came into the Weather Man's office. "Mr. Mosby," said the Weather Man, "this gentleman wants to know something about our big rain of last August." Mr. Mosby brightened up. "Mr. Mosby, the Weather Man said to me, "knows how to measure rain. He is one of our Weather Bureau men and he specializes in rain and rain measurements."

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"Come with me," said Mr. Mosby.

Well, we went up a flight of stairs and entered a large sunny office. It was full of desks and tables and charts and instruments. I could hear a queer ticking coming from a shining brass instrument on the table. Mr. Mosby led me to a door, open, and we walked through, up a flight of steps and came out suddenly into the sunshine. We were on the roof. The great green squares of Washington were spread out below us. It was a dramatic moment, as the moving-picture writers say.

Things were moving pretty fast. The Weather Man had begun by asking me a question and here another Weather Man and I were up on the roof of the Weather Bureau in Washington--- all within five minutes.

We took a turn around an air shaft. Mr. Mosby pointed to what looked like an aluminum funnel fitted into a bucket standing on four legs. "This is the TIPPING BUCKET RAIN GAUGE," he said. "This instrument is used at all of our 200 weather stations to measure rainfall. It was developed by Professor Marvin of the Weather Bureau and is efficient and accurate." Mr. Mosby opened the instrument up and I saw two little buckets nicely balanced on a rod arranged like a see-saw. "The rain comes down through the funnel--- fills one of these little buckets--- and when one-hundredth of an inch of rainfall drops into the bucket, it is registered and the bucket automatically empties itself. Then the other bucket fills up. As the buckets fill and empty, the process is recorded on a revolving cylinder down in my office," said Mr. Mosby.

Then we took a look at the instruments used to measure snowfall and sleet--- those to measure sunshine and wind--- and went back to Mr. Mosby's office. He took me to one of the instruments on a table. Tiny pens were drawing straight, dotted, and jagged lines on a record sheet fastened to a revolving cylinder. I could hear the ticking of a clock which revolved the cylinder. "This instrument," said my guide, "is the office end of the instruments you saw on the roof. With this, we can measure wind direction and force, sunshine, and rainfall."

I looked at the small machine with new respect. I remembered the Big Rain of last August, in Washington, and decided to ask Weather Man Mosby about it.

"Have you the records of last August's rain?" I asked.

He showed me a record card, divided into little squares with pale brown ink lines. Jagged lines in lavender ink seemed to tell some story or other. My friend pointed to the lines with his sharp pencil. "There's your storm," he said. "The storm that swept over Washington and the Chesapeake Bay region on August 11 and 12 was the greatest since the Weather Bureau began to keep records," he said. Seven and one-third inches of rain fell in 24 hours. Way back in 1878, five and four-fifths inches of rain fell in 24 hours.

"How about the rainfall record for the whole month of August?" I asked.

"Almost 14 and one-half inches for the month, in Washington," Mr. Mosby said. "It broke all records not only for August but all other months. Back in 1906, 14 and 36-one-hundredths inches of rain fell in the month of August, though."

"What's the average rainfall during August for this part of the country?" I asked.

"Four and one-one-hundredth inches," he told me.

I bade Mr. Mosby good day and told him I wanted to talk with him about rain some day soon. Then we went to see another Weather Man in the Weather Bureau, Dr. Day, who knows about many things interesting to people.

"Dr. Day," I said, "I have just heard many interesting things about rainfalls. I have heard that more than 14 inches of rain fell on Washington during the month of August. Can you tell me how much an inch of rain is?"

"One inch of rainfall per acre would mean that more than 27 thousand gallons of water would fall on that acre. That would be 113 tons. If a farmer had to haul only one inch of rainfall to an acre of crops, he'd have to put on 113 loads of one ton each."

I was surprised and showed it. "That ought to last the crops a long time, seems to me," I said.

Dr. Day smiled. "From 10 to 15 inches of rain a year are needed even for dry-farm crops," he said.

I sat down and began to figure things out in my head. Say a dry farmer had 160 acres of crops, I thought. Now say he needs 10 inches of rain per acre per year to get a crop. That would mean that he would have to haul more than 180 thousand tons of water to his farm to get a crop--- if no rain fell. I began to have more respect for the value of rain.

"What is the driest spot in the United States--- meteorologically speaking?" I asked.

"They get only about 2 inches of rain in one spot in southeastern California," said Dr. Day. "But you can't raise crops on that. Some parts of our country get from 40 to 60 inches of rain a year. The annual rainfall in Washington, D. C. is about 44 inches."

Dr. Day began to sum things up. "The farmer may think he has a hard time cultivating and harvesting his crops," he said. "But if nature should refuse to lend him a hand for a single season, he would go to the poorhouse with all his

family. Nothing will quite take the place of rainfall, but some parts of the world get a lot more than others. Damage may result from too much rain, just as it does from too little. Heavy rains wash away the soil and there's a constant loss of soil fertility because of rain. Millions of acres of fertile soil are carried to the sea every year by rivers which are fed by rains. Take the famous Yellow River of China--- sometimes called the Yellow Peril or the River of Sorrow. This river has had such vast floods in the past that as many as 50 thousand people have been killed by one tremendous fall of rain. Rain doesn't always come down as lightly as the poets like to say, but it won't take much deep or painful thought to understand that the advantages far outweigh the disadvantages. If rain washes away some of our choicest soil, it breaks down rocks to make a new supply. If rain washes some of the farmer's fertilizer away, it is always bringing more of that valuable substance down from the air. Every thunderstorm brings a fresh supply of ozone to purify the air we breathe. Though rain may cause the noxious and poisonous weeds to grow, it likewise nourishes the bounteous harvests that feed us. There's a reason why rain has been called the oil of gladness which lubricates the mental and physical machinery of the farmer and so makes us all happier and more prosperous."

Dr. Day paused a moment and smiled. "And then just look what the rain means to poets," he said. He began to quote a few lines softly. Here are the lines:

'Tis like the birthday of the world  
 When earth was born in bloom.  
 The light is made of many dyes,  
 The air is all perfume.  
 There are crimson buds, and white and blue,  
 The very rainbow showers  
 Have turned to blossom  
 Where they fell, and sown the earth with flowers."

"Of course, those lines were written for spring, but what would spring be without April showers?" he said.

"As I remember April--- not very much," I said as I took my leave.

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**ANNOUNCEMENT:** Next Tuesday we go into the National Forests with one of Uncle Sam's Foresters. On succeeding Outdoor days we'll travel and talk with scientists who know insects and wild animals and birds. The Weather Man will join us on the first Tuesday of each month.

# **National Oceanic and Atmospheric Administration**

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July 23, 2010