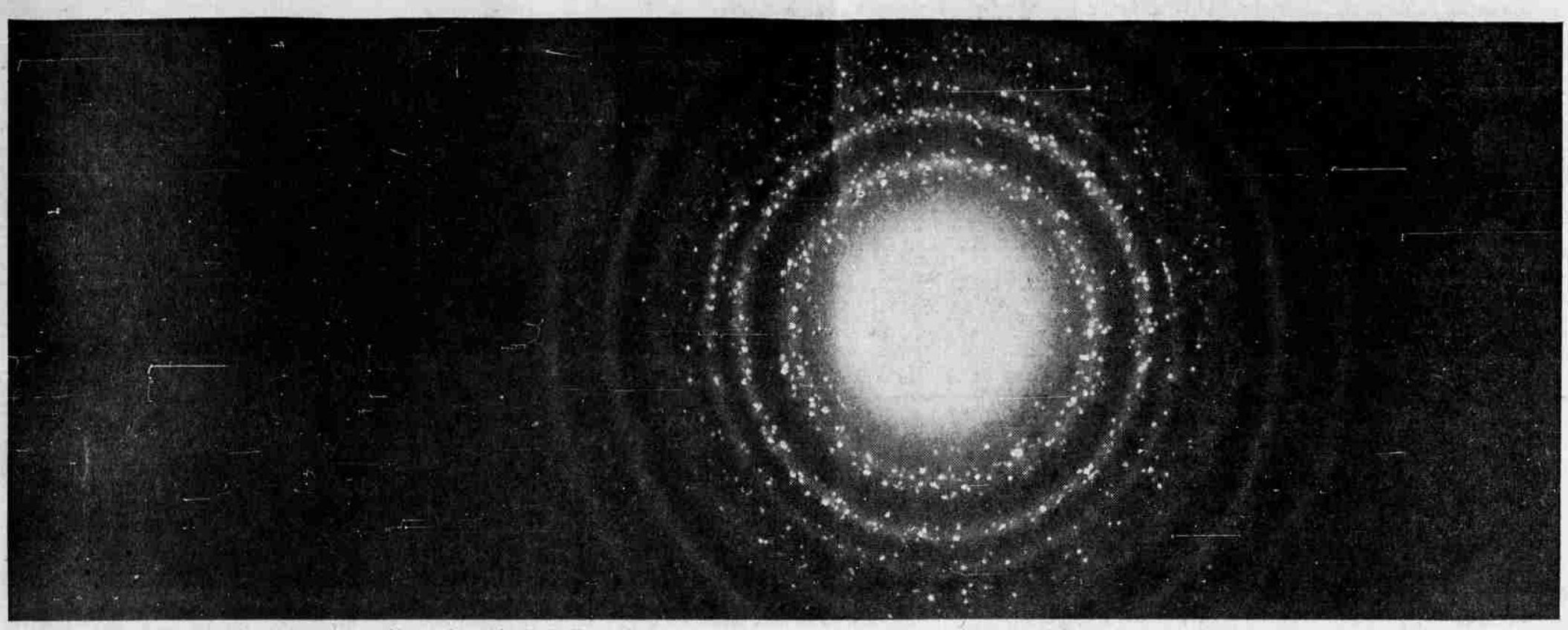

Circular pattern identifies deposits scraped from combustion chamber. It tells researchers many secrets. To get this pattern, deposits are ground up and placed above a film. Electrons are beamed directly at the deposits. The beam is diffracted—scattered at precise and characteristic angles. This registers as the pattern of dots shown above. Reading this photograph, Shell scientists learn composition of deposits, determine how to neutralize them.

BULLETIN:

Weird electron "pictures" help Shell scientists develop improved TCP for today's Super Shell —to give your car top performance

Read how electron diffraction revealed the inner secrets of the combustion deposits in your car's engine. How improved TCP was developed to neutralize these deposits, prolong spark-plug life, increase mileage—and release up to 15% more power.

Here's the full story of today's Super Shell—and the 9 ingredients that give your car top performance.

THE TCP in today's Super Shell does its job better than ever. It neutralizes certain harmful effects of combustion deposits—deposits that can prevent you from ever knowing your engine's top performance.

There's not a single engine with more than a few thousand miles on it that doesn't have this type of deposit in its combustion chambers. These deposits can cause real trouble when you need power most.

They glow red-hot and set off the fuel before the spark plug has a chance to get into the act.

The experts call this pre-ignition. The explosion punches the piston on the way up. Two forces meet head-on. No wonder your power falls off.

Deposits can also cramp your car's performance by short-circuiting the spark. What happens? No firing—you get a miss.

Problem: How to add something to gasoline that neutralizes the effects of deposits. *Answer:* Shell Research.

A scientific detective story

Shell scientists announced the first TCP* additive eight years ago, after research had proved it could virtually end this misfire problem once and for all. TCP was hailed as the greatest advance in gasoline in thirty-one years. Now Shell has improved it.

Scientific detectives like the electron "photograph" (above) made new, improved TCP possible. They helped Shell scientists to look engine deposits right in the face. And to find how best to neutralize them.

Test proves how TCP neutralizes glowing deposits. The electrically heated piston, above, has been sprinkled with two kinds of engine deposit. The glowing deposit, at left, had *not* been neutralized with TCP. The deposit on the right *had*. With TCP in action, there is no trace of glow.

What today's TCP can do

Tests have already proved that TCP can help you get up to 15 per cent more power, up to 17 more miles per tankful. And it can make plugs last up to twice as long.

Yet TCP is only one of *nine* ingredients in today's Super Shell. Read about the others. And how each helps your car deliver its top performance.

Ingredient #2 is "cat-cracked" gasoline for power with a purr

This is petroleum that has actually *cracked* under 900-degree heat and catalytic action. Its heavier molecules have been shattered into livelier, lighter ones.

The result is a super-octane ingredient that makes your engine purr with power the moment you put your foot down.

NOTE: "Cat-cracking" refers to the use of a catalyst—the mysterious substance that can alter molecules without changing itself.

Ingredient #3 is Alkylate, noted for knock control in hot engines

Jimmy Doolittle helped pioneer this outstanding high-octane ingredient for Shell aviation fuel.

Alkylate—the ingredient that took the dream of 100-octane gasoline out of the lab and put it into the skies—is now in Super Shell. It controls knocking in hot engines at high speeds better than anything else yet available.

NOTE: Speaking of controlling knocks at high speeds, remember that car engines frequently turn *even faster than the engines of a DC-7*. Think of this next time you pass another car.

Ingredient #4 is anti-knock mix for extra resistance to knocks

You might think that two high-octane ingredients are enough for knock-free performance. But Shell's scientists have keen ears.

They insist on adding a special anti-knock mix. A mix so effective that one teaspoon per gallon can boost anti-knock rating by five points.

This mix has the tricky job of *regulating* combustion so that Super Shell gives each piston a firm, even push—rather than a sharp blow which would cause a knock.

Ingredient #5 is Butane for quick starts on cold mornings

Butane is so eager to get going that Shell keeps it under pressure 400 feet below ground to stop it from vaporizing by itself. Think what this extra volatility means in cold weather. Your engine fires in seconds. There is less strain on your battery. And none on your patience.

NOTE: Super Shell is primed with Butane all year round. In winter, Shell scientists simply increase the quick-start dose.

Ingredient #6 is Pentane mix for fast warm-ups on cold days

Pentanes are made by tearing gasoline apart, much as you split kindling to start a log fire.

In this case, the "logs" are petroleum's heavier hydrocarbons. A special process transforms their molecules from slow-burning "logs" into the quicker-firing "kindling."

NET RESULT: Fast warm-up and top performance in a hurry.

Ingredient #7 is an "anti-icer" to check cold-weather stalling

Super Shell's formula is adjusted as often as eight times a year to beat the weather. For example, whenever the temperature is likely to be less than forty-five degrees, a carburetor anti-icer is added.

Why add anti-icer at forty-five degrees? Because, even then, frost can form in your carburetor just as it does in your refrigerator. It can choke your engine dead.

Ingredient #8 is gum preventive to keep carburetors clean inside

Even the purest gasoline can form gum when stored. This can clog carburetors and foul automatic chokes. But, with Super Shell, you needn't worry. A special gum preventive does the trick.

It acts like a policeman controlling a mob. Regulates unstable elements to help keep them from clotting. Hence no gum problem.

Ingredient #9 is Platformate for extra energy, more mileage

It takes eight million dollars' worth of platinum catalyst for Shell to produce Platformate. But fortunately for you and for us, this precious stuff can be used over and over again.

The platinum re-forming process, which gives Platformate its odd name, converts petroleum into super-energy components—such as benzene, xylene and toluene.

These three alone release 11 per cent more energy per gallon than the finest 100-octane gasoline.

But make no mistake. This is not untamed energy. Far from it. The super-energy of Platformate is harnessed by the eight other ingredients in Super Shell, where it behaves so well you scarcely know it's there. That is until you note your extra mileage. After that, there is no doubt.

Test Super Shell for yourself

Try Super Shell next time you fill up. You'll soon *feel* and *hear* a difference in the way your engine runs.

That difference is *top performance.*

SHELL ®

A BULLETIN FROM SHELL RESEARCH —where 1,997 scientists are working to make your car go better and better.

*Trademark for Shell's unique gasoline additive. Gasoline containing TCP is covered by U.S. Patent 2910358