ENGINEERING

New Method Pumps Oil Down, Not Up, Through Sand

Ordinary Soap Flakes Make Radical Change in Capacity of Limestone to Transmit Oil; Other Compounds Successful

A NOVEL method of drilling and pumping oil wells—pumping the oil so that it goes down instead of up through oil-bearing sands—was recently described at the meeting of the American Institute of Mining and Metallurgical Engineers in New York. The new method, studied and worked out in the laboratory, will perhaps solve a difficulty confronting oil men everywhere; what to do with a well of the "marginal" variety that is pumping about 90% water and only 10% oil.

Two university scientists, Prof. F. B. Plummer of the University of Texas and H. K. Livingston of the University of Chicago, announced the new results, which may be regarded as laboratory signposts pointing to a more efficient drilling and pumping of the nation's petroleum resources.

Making experimental counterparts of oil fields and pumps, the scientists found:

1. That ordinary upward pumping creates a "cone" of water about the well which often shuts out the flow of oil in the oil-bearing sands.

2. That detergent chemicals—in some cases merely soap flakes—can reduce the surface tension forces on the water so that it is not pulled through the sands so easily by capillary attraction.

3. That downward pumping of the well—so that the flow of oil in oil-bearing strata was downward instead of up—tends to prevent the formation of the water cone which previously excluded the oil.

In one test, where the experimental oil and water mixture was passed through limestone, it was found that 5% oil and 95% water was coming through. Then a very small dose of soap flakes of a popular variety was added to the oil-water mixture. This changed the ability of the limestone to transmit water so much that quickly the laboratory "well" was pumping 68% oil and only 32% water.

Soap flakes would not work for all waters encountered in typical oil well fields but where it failed other chemicals such as Aerosol OT, Igepon AP/1 and phenol worked successfully.

Drilling oil wells so that the oil is pumped downward instead of upward was explained by the scientists:

"The wells are drilled below the level of the producing sand, cased, and cemented. The casing is perforated with a few small perforations at the top of the sand. The well is pumped in such a way that the fluid level in the casing does not reach the level of the oil sand. In this way, the water, if any comes through with the oil, does not come in contact with the producing face of the oil sand above the level of the cones."

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MEDICINE

Synthetic Gland Extract Prevents Surgical Shock

SAFER surgical operations and speedier recovery from them, especially for debilitated patients, seem promised by a new treatment for preventing dangerous shock during and after operations. The treatment, using a synthetic adrenal gland hormone, was developed by Dr. David Perla, of Montefiore Hospital, New York.

"Striking benefits" in 14 cases at this hospital are reported by Dr. Perla, who said that the treatment will shortly be adopted in two other New York City hospitals.

The patients treated at Montefiore were what would be considered poor surgical risks because serious chronic illnesses such as cancer and tuberculosis had weakened them so that they would have little strength to withstand an operation. Without the new treatement, patients of this type might have had to forego the chance of being helped by surgery because the shock of the operation might cause fatal prostration and collapse.

With the new treatment, patients are prepared for operation by being given quantities of salt solution and carefully prepared doses of desoxycorticosterone acetate. This chemical is the synthetic vital hormone of the adrenal glands. Earlier studies have shown that these glands play a significant role in the body's fight against intoxications, poisons, shock and infections. The adrenal cortical hormone, Dr. Perla explained, influences the transfer of water from tissues to cells and the level of salt in tissues and cells. Disturbance of this glandular balance, which frequently occurs in an exhausting operation, leads to collapse.

"In all instances the patients were strikingly benefitted," Dr. Perla said in his report of the new treatment. "There was no objective evidence of shock. The blood pressure was maintained or elevated. The temperature in general returned to normal within 24 to 48 hours. Post-operative exhaustion and toxemia were definitely lessened. Complications did not occur. Operative recovery seemed to the surgeons concerned to be more rapid than in their preceding surgical experience in our hospital."

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