mid-afternoon when the sun is hottest. Then the descent will be made and the landing should be made in the evening.

The great crowd of spectators which will throng famous Soldiers Field to watch the beginning of the flight will get a thrill as the balloon rises. A few hundred yards to the southeast of the starting point there are the 628 foot towers and cables of the Century of Progress skyride and the balloon will be shot up at about twenty miles per hour in order to clear this hazard.

The exact day of the start will depend upon weather conditions. Where the balloon will land will depend on wind directions and other meteorological factors. Even if the magnesium metal sphere drops into one of the Great Lakes, it and its human and scientific freight will be rescued safely because the air-tight ball will float for hours.

Commander Settle has won many balloon races for the Navy, including the international race in Switzerland last year. He is said to be the only man in the world who is licensed to fly a balloon, an airplane, an airship the size of the U. S. S. Macon and a glider. One of his feats was a descent from the airship Los Angeles in a small glider. He crossed the Atlantic on the Graf Zeppelin as Navy observer. One of his most perilous experiences was a wild balloon ride in 1928 during the national races, when an electrical storm killed two other pilots and jeopardized Commander Settle and other contestants.

The Navy is lending Commander Settle to the Century of Progress exhibition for the stratosphere flight.

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PSYCHOLOGY

Scientists Penetrate Unknown Surrounding Newborn Babies

They Find That Very Young Babies Smell Flower and Other Odors and Know When Light Dims or Brightens

CAN THE BABY just arrived in this world smell the flowers banked in mother's room or the less agreeable odor of disinfectant on the hospital floors.

Yes, he can, it appears from experiments reported to the Midwestern Psychological Association meeting at Ames, Iowa, last week by Dorothy R. Disher of Ohio State University. Her research is still in progress under the direction of Dr. F. C. Dockeray.

Psychologists have been hampered in all attempts to find out exactly how sensitive the newborn is to what is going on about him. The child cannot tell what he sees, hears, smells, or feels. The scientist can find out only by the most indirect means.

Miss Disher gets around this obstacle by making the experiment when the baby is sleeping. She then lets him smell an odor of a definite quality and strength and measures the activity which results. Moving pictures taken at the same time record all the kicks and jerks, puckers of the face, movements of the head, and so on.

No race, sex, or age differences were noticed in this experiment, but it did seem as though the right nostril may be more sensitive than the left. Considerable difference was found between individuals.

Even very young babies from one to ten days old can notice the difference between dim light and moderately bright illumination and demonstrate that fact by a reduction in activity in the stronger light. The newborn is much more keenly aware of his surroundings than has been realized, the psychologists learned from a report of LaBerta Weiss, of the Iowa Child Welfare Research Station.

The ingenious method devised by Miss Weiss for revealing what the baby can see and hear is that of recording the movements of the child. A machine appropriately called a stabilimeter records each little wriggle, squirm, and jerk of the tiny body.

These movements are consistently stronger in the dimmer illuminations, Miss Weiss found, and are reduced in direct proportion to the intensity of the light turned on.

Similar effects resulted from exposing the babies to noises of about the intensity of a vacuum cleaner and of an average motor truck.

These results showed that newborn babies can differentiate between moderate and dim lighting and between comparative silence and moderately loud noise.

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GEOLOGY

Petroleum Said to Come From Garbage of Sea

PETROLEUM, now one of the principal wealths, was originally garbage—offal from the endless complex banquet of the sea, that not even the bacteria in the bottom slime would eat.

This un-pretty picture of the origin of "black gold" comes from a report presented at the meeting of the American Petroleum Institute in Tulsa, Okla., last week by Dr. Parker D. Trask of the U. S. Geological Survey. Dr. Trask and his associates have for a number of years been conducting an exhaustive study of both modern and ancient sea-bottom deposits, seeking for further knowledge of how petroleum was formed in the first place, so that seekers after oil may have a better idea of what kinds of geological formations are likely to yield paying results to their expensive drillings.

They found that fine-grained beds contain more organic matter than coarse-grained: clay more than silt, silt more than sand. They learned, as was to be expected, that where the sea bottom is rolling and irregular, richer deposits are to be found in the hollows than on the submarine hilltops or slopes. They found, above all, that the dead bodies of the myriad sea plants that escaped eating by fish and other marine animals were not left as raw materials

for oil-making until even the bacteria of the bottom slime had taken from them such materials as they wanted.

This bottom bacterial action seems to be of the highest importance in the formation of the stuffs that eventually become petroleum. Crude plant materials, and such fishes and other animal carcasses as settle to the bottom, have relatively high nitrogenous and carbohydrate contents, which are unsuitable for working over into oil. The food requirements of the bacteria seem to be especially aimed at these non-oil-producing food materials, thereby leaving the organic debris in better condition for the oil-making processes themselves.

Oil-making seems to be an exceedingly slow job. It is not going on in the sediments now forming on the ocean bottom, but it is in progress in sediments laid down on the sea bottoms of geological yesterdays. The steps are not known with anything like satisfactory certainty, but there seems to be no doubt that great increase in sedimentary thickness, with resulting pressure and heat, squeeze and fry out the material that eventually becomes petroleum. It then seeps along migration paths through sandy strata, and collects in pools where impervious rock layers bar its further wanderings.

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HOROLOGY

New Inventions Make Possible More Accurate Time Keeping

Watches Regulated in Ten Minutes Instead of Ten Days "Robot" Clock Errs Less Than 1-1000 Second in 24 Hours

TEN MINUTES instead of ten days is the time required by a jeweler to regulate a watch to maximum time-keeping efficiency with the use of a new electric watch timer demonstrated to the Horological Institute.

Accurate time intervals are given by a special electrical current of 100 cycles per second accurate to one part in ten million furnished by telephone companies from a constant frequency generator in New York. This current drives a synchronous motor similar to those that have come into such wide use in electric clocks.

Within the new timer developed by the Bell Telephone Laboratories an image of the watch balance wheel is reflected on a mirror and a flashing lamp controlled by the precise synchronous motor flashes. This makes the watch's balance wheel seem to stand still when the watch and motor have exactly the same speed.

The stroboscopic effect allows the jewelers to inspect and diagnose any trouble in a watch as well as regulate its time-keeping quickly and accurately.

Future time signals from the U. S. Navy's great radio station at Arlington, NAA, will be more frequent, more accurate, and yet require no additions to the Naval Observatory personnel, because of a remarkable new type of crystal-controlled "robot" clock which has been invented by two members of the Naval Research Laboratory. The clock was described before the meeting of the American Geophysical Union, by Paul Sollenberger, astronomer of the Naval Observatory.

Three such clocks have been built. They embody a new principal in crystal control, in that the piece of quartz whose vibrations govern the movement is longer than in former clocks and therefore vibrates at a rate so low as to require no electrical reduction, as is the case in crystal-controlled clocks now in common use. Tests of the new clocks indicate that they will run indefinitely with an accuracy within a thousandth of a second a day.

An automatic mechanism has been developed by Mr. Sollenberger which will attend to the sending of the NAA time signals, performing all its functions without human prompting. In carrying out this automatic program it will start and stop the recording chronograph and turn on the radio receivers. The presence of an operator, however, will be required because the frequencies to which the receivers must be tuned vary from signal to signal. The duties of the human attendant, however, are so much lightened by the "robot" activities of the program device that although a time-signal program may in future be sent twenty times or more in a day, no new men will need to be taken on for this increased work.

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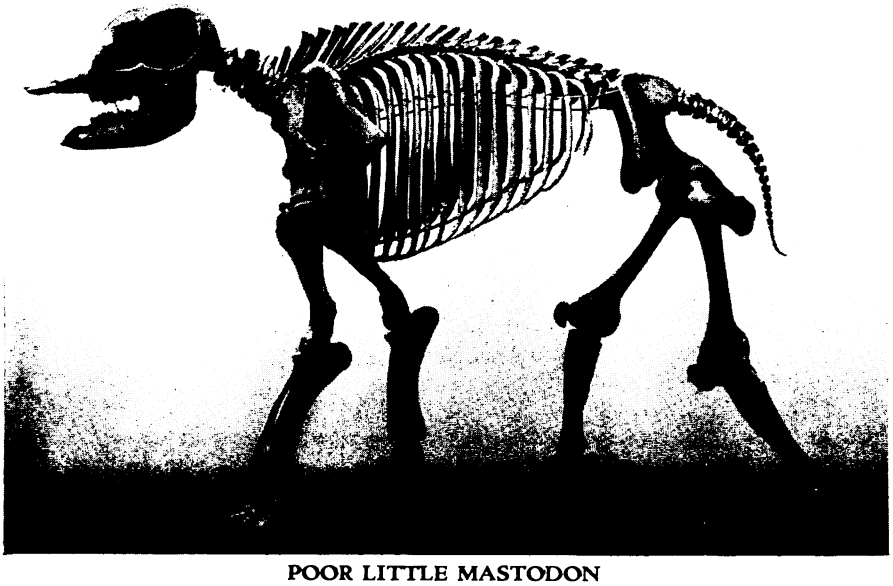

POOR LITTLE MASTODON

This victim of the great Ice Age asphalt trap at Rancho La Brea stands five feet high and measures five feet six inches in length, a size approximately equivalent to that of a five-year-old Indian elephant. The condition of bones indicates that his few years were not entirely untroubled. It is evident that he suffered from curvature of the spine, and one of the limb bones is marked by an exostosis probably resulting from an injury. Two broken ribs which were completely healed indicate an early accident. So far as is known, no specimens of the young of this elephant-like creature have been recorded outside of Rancho La Brea, and this skeleton recently put on exhibit in the Los Angeles Museum is the only mounted specimen of a baby mastodon in exsistence.