into high gear just as researchers of the National Oceanic and Atmospheric Administration concluded a meeting of Project Hurricane Strike, an experimental effort designed to improve hurricane forecasting. The thinking behind the project is that by continual monitoring transmitted in real time — without the delay of computer storage and analysis — the forecast of the time, place, intensity and potential destruction of the hurricane can be narrowed. According to the plan, four instrument-packed aircraft, three from NOAA and one from NASA, are flown, two at a time, through the storm. Using a geostationary NOAA satellite, the researchers on board the aircraft relay measurements of storm position, winds, pressures and other conditions to the National Hurricane Center. David became the first hurricane to receive such full treatment.

And, according to Robert Sheets, a NOAA meteorologist in charge of the research group, they "got everything [they] wanted," which was a near-continuous record of David and "very clearly more data than ever before on a hurricane." Though several hours of flights were lost each time the planes had to be moved from storm-threatened Puerto Rico and Miami, Sheets said the planes were able to follow the storm all the way to landfall in South Carolina. Because of the improved storm information, the forecast, he said, was "very good compared to the average track." □

Hot flashes: More than one culprit

Menopausal "hot flashes," characterized by sudden waves of heat in the face, neck and chest and by an outpouring of perspiration, afflict about one-quarter of all women going through menopause. It has been well established that hot flashes are associated with decreasing production of estrogen by the ovaries, but apparently other culprits are involved as well, according to a report in the Aug. 24 SCIENCE by R. F. Casper, S.S.C. Yen and M. M. Wolkes of the University of California at San Diego. Luteinizing hormone (LH) and possibly also luteinizing hormone-releasing hormone (LRH) and brain neurons may be involved.

Other investigators have shown that LH is responsible for estrogen secretion from an egg follicle prior to ovulation, and that this estrogen secretion in turn helps prepare the vagina and cervix for egg fertilization at ovulation. Casper and his colleagues thus suspected that hot flashes might also involve LH.

They studied hot flash episodes in six menopausal women for a total of 66 episodes. At the same time, they monitored the women's blood levels of LH and also of two other pituitary hormones involved in reproduction. One was follicle-stimulating hormone (FSH), which is known to help prepare an egg for release at ovulation. The other was prolactin, which causes milk secretion in nursing women. LH rose in the blood of women 66 times in the course of the study, and the women experienced hot flashes right before 55 of the 66 LH pulses. In fact, whereas LH pulses were not always accompanied by flashes, flashes were never seen without an LH pulse. In contrast, the researchers were not able to find any correlation between prolactin pulses in their subjects' blood and hot flashes, and only a small link between FSH pulses and hot flashes. So they conclude that menopausal hot flashes are "invariably associated with the initiation of pulsatile pituitary release of LH."

However, because hot flashes are known to occur even in menopausal women who have had their pituitary glands removed, Casper and his co-workers reason that estrogen and LH cannot be the sole initiators of hot flashes. Rather, they suspect that a more remote trigger might be LRH, since LRH is known to control the release of LH from the pituitary gland, and a temporal link has been found between LRH pulses and LH pulses. But is LRH even the ultimate spark behind hot flashes? Casper and his team suspect not. Because of their own past research, and because other scientists have shown that the secretion of LRH is at least partly under the control of neurons, they believe that the ultimate trigger of hot flashes might be decreasing ovarian estrogen alerting brain neurons to switch on LRH, and then LH. □

First carnivorous dinosaur eggs found

On July 12, about 20 miles west of Choteau in north-central Montana, Shell Oil Co. had set up a seismic exploration line — a series of blasts whose rebounding shock waves geologists use to determine an area's oil potential. Geologists John Horner of Princeton University and Robert Makela of Rudyard, Mont., and a fluctuating number of students and helpers had spent the summer digging for dinosaur fossils nearby. They decided, though they'd looked over the area before, to check it out once more before it was disrupted by the blasting. As they walked along the sandstone foothills of the Rockies, Fran Tannenbaum, a senior at Princeton and a geology major, suddenly shouted to her companions.

She had spotted, embedded in a mudstone slope, the first egg of a carnivorous dinosaur ever to be found.

The Shell Oil Co. cooperatively moved their blasting elsewhere and the diggers went to it. When they returned from the field last week, their booty included 30 eggs — five of which appear to be whole and, if so, are the first intact dinosaur eggs found in North America — and assorted bones, including partial skulls, vertebrae and leg bones, of baby dinosaurs of the same species. Whole dinosaur eggs — though from plant-eaters — have been found in Mongolia and France. And last summer, about one and a half miles north of this year's site, Horner and Makela found pieces of 70-million-year-old eggs of herbivorous duck-billed dinosaurs as well as the skeletons of baby duck-bills. But the eggs of carnivorous dinosaurs had not been recovered. Horner and Makela suspect that the area was once a dinosaur nesting site, possibly for tens of thousands of years, and that it may reveal much about the reproductive and parenting behavior of dinosaurs.

The pebbly-surfaced eggs — "more like bird eggs" than leathery reptile eggs, says Horner — are 6 to 8 inches long, possibly 3 to 4 inches in diameter and are thought to be about 85 million years old. They were found standing on end in two clutches — or nesting clusters — one higher on the slope, and therefore possibly thousands of years younger, than the other, according to Makela, a high school science teacher who has been exploring the area with Horner for about 10 years. Because of the type of teeth and bones of the baby skeletons found near the eggs, the researchers conclude that the creatures were meat-eaters, though the lack of adult bones or complete baby skeletons make immediate species identification impossible, he said.

The recent find seems to support some of the researchers' hypotheses about di-

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Bert Lindler/Great Falls (Mont.) Tribune

Princeton University's Fran Tannenbaum holds rock containing the first egg of a carnivorous dinosaur ever found. Closeup shows the egg, the pebbly material in the center of the rock.