ventures.)

Several scientists at the meeting discussed the significance of various kinds of clay on Mars, which Robert B. Singer of the University of Hawaii in Honolulu noted could be important for clues about climatic conditions at the time of such minerals' formation. Several researchers advocated equipping MGCO with a mid-infrared spectrometer, which they said could provide more precise identifications than either near-infrared spectra or the Viking landers' element-by-element chemistry.

Even a reanalysis of earth-based radar indications of possible liquid water under the Martian surface met with a more tolerant hearing at the meeting than during its original presentation in 1980. Because on Mars these days, water is the name of the game. —*J. Eberhart*

Ultrasound as pregnancy predictor

One of the mysteries of infertility treatment is why some women are helped by medical therapy that fails others with seemingly the same problem. A difference in the uterine lining that can be picked up with ultrasound imaging may explain some of these discrepancies, researchers said at last week's meeting in Washington, D.C., of the Radiological Society of North America.

Ultrasound screening could aid in determining for whom the odds of getting pregnant are woefully long, and save women the time, anguish and several thousand dollar cost per try of in vitro fertilization, says Thomas D. Brandt of Michael Reese Hospital in Chicago. Abnormal uteruses that are missing a healthy lining lack a characteristic central stripe and surrounding halo in ultrasound images, he says.

Brandt and his colleagues looked at women whose infertility was due to a failure to ovulate or who were in an in vitro fertilization program because of blocked fallopian tubes. Among 51 women who received medical treatment for ovulatory difficulties, 28 percent (9) of those with normal uteruses got pregnant, compared with 5 percent (1) in the abnormal uterus group. And of the 46 women who had in vitro fertilization, where fewer pregnancies were achieved due to the greater difficulty of the procedure, 15 percent (2) of the women with normal uteruses conceived, compared with 3 percent (1) with abnormal uteruses.

"It appears that we've isolated a subset of patients who have not been described before," says Brandt. The uterus has for the most part been ignored in infertility research, he notes, because a fertilized egg can implant itself in "hostile" environments like the fallopian tube and ovary, so that a "friendly" uterus hasn't been considered crucial. —*J. Silberner*

Immunity: Two sides of the brain

Each hemisphere of the human brain is specialized for certain recognized cerebral functions, such as language skills, music appreciation or spatial recognition. But a more subtle brain activity may also be unequally distributed in the two hemispheres. Experiments on mice indicate that the right and left hemispheres of the brain assume different responsibilities in the control of immune system activity.

Gerard Renoux of the Medical School of Tours in France has looked at the influence of the brain neocortex on immunity. The neocortex is a seat of sophisticated perceptual, motor and thought processes. There is anecdotal clinical evidence that patients with traumatic losses of neocortex have suppressed immune function, Renoux told SCIENCE NEWS.

"B cells [the immune system's white blood cells that make antibodies] and macrophages [scavenger cells] are not under direct control of the neocortex," Renoux told the First International Workshop on Neuroimmunomodulation, held last week in Bethesda, Md. But he finds that the neocortex influences T cells, the major class of white blood cells responsible for cell-mediated immunity. The two hemispheres of the neocortex play different roles in that influence.

In their experiments, Renoux and colleagues surgically removed about a third of the neocortex from one or the other hemisphere of a strain of mice that does not show right or left hemisphere dominance over aspects of behavior. "The surgery produces absolutely no change in gross behavior, feeding, drinking, movement, weight and mating in the female mice," says Renoux. But the removal of right or left hemisphere brain tissue does produce a variety of effects on T cell activity.

The total number of T cells in the spleen, one of the specialized organs where immune system cells react with foreign molecules, is reduced in animals with the left neocortex removed. In animals with the right neocortex removed the number of spleen T cells is the same as in sham-operated controls. The left removal decreases the immune system response to certain foreign materials, whereas the right removal increases the response.

Immune system reaction to a stimulatory drug, imuthiol, and to tumor cells also differs depending on which side of the brain has been removed. Renoux suggests that the left hemisphere most directly controls the immune system, but that the right hemisphere modulates that influence. —*J. A. Miller*

Nerve chemicals direct immunity

The languages of the body's two great communicators — the nervous system and the immune system—seem to share various words. Recent studies have found that many disease-fighting cells produce or have receptors for chemicals, called neuropeptides, which were previously recognized for their role in carrying signals between nerve cells and for influencing mood and behavior. Now scientists report a specific immune system role for some of these chemicals: They attract macrophages, cells that migrate from the bone marrow to injured tissue and contribute to wound healing.

In laboratory experiments, three chemicals that are considered natural opiates are "potent stimulators" of human macrophage migration, Michael R. Ruff of the National Institutes of Health (NIH) in Bethesda, Md., reported at the First International Workshop of Neuroimmunomodulation, held at NIH last week. In work with Candace Pert, he demonstrated that at extremely low concentrations these opiates — beta-endorphin, D-ala-D-leu-enkephalin and dynorphin — attract macrophages. Because naloxone, the standard inhibitor of opiate actions, interferes with this attraction, the scientists are confident that the immune system cells are sensing the chemicals with an opiate receptor similar to those on nerve cells.

Opiates are not the only neurochemicals that set macrophages in motion. Ruff also reports that macrophages are attracted to benzodiazepines, which bind to the receptors where such sedatives as Valium bind. Ruff also has preliminary evidence that two other nervous system chemicals, called bombesin and substance P, attract macrophages.

Whether neuropeptides influence macrophage activity in the body is still uncertain. Macrophage migration can be induced by a large variety of substances, including bacterial products, peptides generated by blood clotting activity, broken-down fragments of the body's structural materials and other products of immune system cells. Ruff and Pert hypothesize that at a site of tissue damage, neuropeptides are released either from pain-sensing nerve cells or from immune system cells.

In a paper to be published in the December issue of the European journal NEUROPEPTIDES, Ruff, Pert and colleagues say, "Because these peptides have potent effects on macrophages, as well as other cells of the immune system and body, these compounds may represent a major class of biochemicals which subserve information exchange between the brain and the body." —*J. A. Miller*