portant steps in this direction are revealed in two articles, which treat of the stability of short helices, joined by loops of unpaired bases. In a molecule such as $A_nC_mU_n$, the existence of a flexible link of C residues will favour the pairing of the A with the U, when m is not too large or too small. Uhlenbeck *et al.* (*J. Mol. Biol.*, **73**, 483; 1973) have made a series of such molecules with $n=6$ and m varying between 4 and 8. When the loop is only four or five residues long, it is evidently strained, and the probability of A-U pairing is less than theoretically expected; indeed circular dichroism gives evidence of an unusual geometry for the single-stranded cytosine residues when $m=5$. The most favourable situation occurs at $m=6$. Gralla and Crothers (*ibid.*, 497), working with the oligomer series $A_nGC_nU_n$, arrive at similar conclusions. If $n=4$, the loop is too tight and, in spite of the entropy loss, intermolecular interaction is preferred, because to make an easier intramolecular loop, the G-C pair would have to be prised open. In the range n from 4 to 6, the intramolecular fold thus becomes more stable with increasing loop size. The thermodynamics and statistical mechanics of these systems are treated in both articles in a manner to which one cannot do justice without a fuller account. Some interesting implications regarding tRNA conformation can be drawn.

STEROIDS

Testicular Oestrogens

from a Correspondent

It has long been recognized that males and females secrete the same type of steroid hormones and the difference between the sexes is quantitative, the ovary producing predominantly oestrogens and the testis producing predominantly androgens, in particular testosterone. Many of the hormones, in addition to direct secretion from the gland, may arise by the peripheral conversion of precursors.

A large amount of circumstantial evidence suggests that in man the testis secretes oestrogens: oestrogenic material can be found in extracts of testes and testicular tissue incubated *in vitro* can convert suitable precursors to oestrogens. Application of constant infusion techniques and measurement of the steroids both in blood and urine, however, has produced conflicting evidence; some results suggest that about half of the circulating oestrogens in the male are secreted by the testis, the remainder arising from circulating precursors, whereas other experiments suggest that there is no direct secretion from the testis. There is now direct evidence to support the former view.

In one study (Longcope *et al.*, *Steroids*, **20**, 439; 1972) young males, who were undergoing renal vein catheterization as part of an investigation of essential hypertension, had samples of blood removed by catheterization from the inferior vena cava below the entrance of the spermatic vein and a second sample was taken from the spermatic vein itself. The concentrations of testosterone, oestradiol and in some cases oestrone were higher in the spermatic vein samples than in the samples from the inferior vena cava. These findings confirm the report of Kelch *et al.* (*J. Clin. Invest.*, **51**, 824; 1972) of a positive gradient for oestradiol across the testis in anaesthetized humans. The testis, like the ovary, seems to secrete more of the 17 β -hydroxysteroid (oestradiol) than the 17-oxosteroid (oestrone) in contrast to the adrenal cortex which secretes predominantly the 17-oxosteroid. The cellular origin of testicular oestrogen and particularly its function remain to be determined.

VISION

A New Slant

from our Experimental Psychology Correspondent

THE discoveries by Hubel and Wiesel of neurones in the visual system, each specifically sensitive to a line segment or edge in a particular orientation, have been regarded as of great significance and importance. Yet in spite of widespread interest, and in spite of the fact that these discoveries are now fourteen years old, there is still little clue as to the role of these cells in perception.

Hirsch and Spinelli (*Science*, **168**, 869; 1970) and Blakemore and Cooper (*Nature*, **288**, 477; 1970) seemed to hold out some hope for insights into function by showing that in cats reared in environments where they saw only horizontal or vertical lines, neurones in the visual cortex responded only to stimuli at or near the orientation to which they had been exposed. And indeed this effect of early environment on responsiveness of cortical neurones seems relatively clear. But now Hirsch (*Exper. Brain Res.*, **15**, 405; 1972) has reported on the behavioural experiments which form the complement of this research, and these indicate that the effect of the physiological changes on perception still defies adequate explanation. Hirsch's experiments were on some of the cats in his orientation-specific rearing series which had had electrophysiological recordings made from their visual cortices. When they had recovered from this procedure Hirsch ran them in some discrimination tasks.

The experiments are a little unsatisfactory in that only six of the cats reared with horizontal and vertical visual environments were tested, and in some tests only two of these animals took part. Thus what differences there were between the groups and between the experimental animals and normal controls cannot be regarded as very reliable. It is the finding that cats could perform visual tasks involving shape and orientation discrimination at all with such substantial reduction of their orientation-sensitive neuronal apparatus that is striking.

These cats were raised with all their visual experience in the light confined

Differences between Red Sea Brine Pools

OCEANOGRAPHER DEEP, which is the most northerly of the brine pools in the Red Sea, was discovered in 1967 by echo sounding from the research vessel Oceanographer. In next Monday's *Nature Physical Science* (February 26) Tooms and his colleagues of Imperial College, London, report the analysis of a sediment core recovered during a cruise of the tug Nereus in 1971. The bottom of Oceanographer Deep is about 570 m below the seafloor on either side, and is outside the median valley of the Red Sea. It is about 2 to 3 nautical miles long and 0.6 nautical miles wide about 200 m from the bottom.

Analysis of the core and the water in the core liner above the sediment revealed that although the water is a concentrated brine—the chlorinity of 16 per cent is quite similar to that of Atlantis II Deep—the amounts of trace metals such as iron and copper are very low by comparison with brines from other deeps in the Red Sea. For

example the 56° C brine from Atlantis II Deep contains 0.08 g kg⁻¹ iron by comparison with 0.2 mg kg⁻¹ for Oceanographer Deep and 0.02 mg kg⁻¹ for normal seawater.

Tooms *et al.* say that the core itself has concentrations of metallic elements comparable with those reported for anoxic Norwegian fjords. The smell of H₂S associated with the core and the fact that there was considerable shrinkage during storage indicate that the original environment of the core was strongly reducing.

One of the possible explanations of the brine in Oceanographer Deep suggested by Tooms *et al.* is that it arises from the dissolution of evaporite deposits in surrounding seawater rather than from tectonic activity. They go on to suggest that similar brines might be present in depressions in the seabed of, for example, the Mediterranean Sea where evaporite deposits are known to occur.