

THE MINUTES TICK BY...AT 8.14 TONIGHT NEIL ARMSTRONG AND EDWIN ALDRIN BEGIN THEIR HAZARDOUS DESCENT INTO THE DARK UNKNOWN

THE START of man's most momentous adventure is only a few hours away—but they are hours of awesome danger and immense hazards which could dash the landing crew to pieces on the moon or strand them there to face a lingering death without hope of rescue.

The spaceship Apollo 11 with its crew of three is now in orbit round the moon and 60 miles above the surface.

America's dream

Tonight Neil Armstrong and Edwin "Buzz" Aldrin will crawl into the fragile landing ferry, code-named Eagle, and cast off from the parent craft, Columbia, leaving it to continue in lunar orbit with Michael Collins at the controls.

With a "burn" of its rocket descent engine, the landing craft will lower four spiderly legs and flit down the last unknown miles to seek a landing place in a sea of dead lava under the dark lunar sky.

But before America's dream of a moon landing is finally realised, with Armstrong the first man to set foot on the surface, the fearsome perils which surround the descent must be overcome.

The spider-like ferry will float over the fangs of mountains which rise stark for 12,000ft. and skim past the jagged rim of craters torn in the moon by volcanic eruption or crashing meteorites.

Edwin Aldrin, who will pilot the 15-ton ferry craft down, must land it evenly and undamaged.

Rescue

If he sets it down at a tilt or slams into a boulder the craft will be unable to take off again after its scheduled 22-hour stay—and rescue for the two men will be impossible. Michael Collins cannot land the parent craft to take them off. No rescue mission from earth could reach them in time.

Until now, h u m a n

experience has ended nine miles above the lunar surface. That is the closest man has previously dared to go. That is the distance which will separate Armstrong and Aldrin from fame—or possible disaster—as they start their death or glory glide.

On those last nine miles the two men will stake all America's prestige and their own lives on ice-cool nerves and split-second judgment.

They do not know how their flimsy ferry in its one-eighth-of-an-inch thick aluminium sheath will behave.

In their pressurised cabin the firing of the rocket engine which controls their descent will sound as though a hundred wooden spoons

were beating a metal basin on their heads.

This could be the drumming of disaster, because if the initial "burn" of the rocket engine lasts just three seconds too long as it sends them on their way down, the ferry will gain too much speed for the two men to be able to check it sufficiently to ensure a safe landing.

Harness

But if all goes well they will have braked by means of reverse-firing rockets to a mere 400 miles an hour by the time they are a mile and a half above the surface and seven miles from the planned landing site.

Held by safety harness, they will stand at the con-

trols in their cabin the size of two telephone kiosks side by side and peer through canted triangular windows to choose the exact spot for the touch-down.

When they are 500ft. above the surface they will have slowed to 60 miles an hour and this is when they will try to make sure that there is a spot flat enough and clear enough of big boulders to set their craft down all-square and safe.

They have enough fuel to let them hover for up to three minutes as they manoeuvre to choose the right spot.

The perils that await the first men on the moon...

by John Atkinson



Sixteen small steering rockets clustered round their landing craft allow them to move right or left.

Radar will tell them the angle and speed of their approach and the ever-decreasing height. The shock struts in the legs of their ferry are filled with plastic honeycomb to absorb the crunch as the four round, dish-like feet hit the surface at what is hoped will be only three miles an hour.

But all the scientific aids crammed into their ferry to ensure a safe, four-square touch-down could be badly upset by the tug and pull of

the mysterious lunar mascons.

The word "mascon" stands for mass concentrations of matter which lie under the moon's surface. Nobody knows what this substance is. Analysis of thousands of photographs of the surface has yielded the scientists no definite clue as to what exists below.

Critical

The sudden pull of the mascons caught the last Apollo crew nine miles up on the final reconnaissance in May and they described the danger later: "We were pulled downwards. Our speed accelerated by 20ft. a second and we were swung four miles off course. If a mascon

area grabbed you when you were trying for a moon landing you could rip your britches."

In the opinion of tonight's moon landing commander, Neil Armstrong, the most critical moment of all will come when Aldrin and he are still 500ft. up and Aldrin takes over manual control from the computers.

Armstrong has put his fears on record: "It will be critical until we are sure the vehicle responds the way we want it."

They will be aiming to land on a plateau measuring eight miles by four in the so-called Sea of Tranquility—a dark area of extinct lava which is clearly visible from earth when the moon is full. It lies just right of centre.

Besides the screen of

An artist's impression of one of the tasks scheduled for early tomorrow—collecting moon 'soil' samples

mountains and the high rims of the craters which must be passed on the way in, Armstrong and Aldrin will have to beware of fields of massive boulders which litter the floor of the sea. Some of these boulders are estimated to be 300ft. high.

Even if the two men do find a completely boulder-free area on the plateau and a site for touchdown which looks smooth and safe, there will be no means of knowing whether the surface is solid enough to take the impact of landing without a sudden and calamitous shift. Thin steel probes protruding downwards from the dish-like landing feet of the ferry may give a clue.

But there is always the danger that what seems safe under the prod of the steel probes may cave in under the weight of the whole ferry, just as a snow bridge can hide a yawning fissure on the Alpine heights of earth and collapse under the weight of a man.

If the lunar surface holds firm under the impact of landing, Neil Armstrong—plain Mr. Neil Armstrong, a civilian scientist—will still take immense care when he goes down the nine-rung ladder to become the first man to walk on the moon.

No sound

He is likely to pause on the last rung and stamp on the surface with one foot to test it.

Aldrin, who is a colonel in the Air Force, will follow him out of the landing craft some 25 minutes later. They will set up TV and a seismometer built to listen for moonquakes and the impact of crashing meteorites.

This seismometer is sensitive enough to detect the vibrations caused by a man walking.

Scientists believe that the lunar surface is made up of small granules of matter—a crisp substance which should crackle like cornflakes when trodden upon if only there were air to carry the sound waves. But the moon is airless, so we will only see the feet as Armstrong starts his lunar walk—still scheduled to start at 7 a.m. tomorrow.